DISRUPTIONS IN INTERGENERATIONAL CHILDHOOD MALTREATMENT FOR DUAL SYSTEM-INVOLVED WOMEN: INVESTIGATING THE PROTECTIVE ROLE OF PARENTING

by

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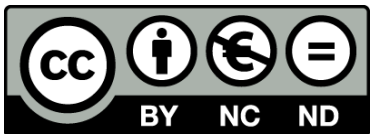

DISSERTATION ABSTRACT

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Title: Disruptions in Intergenerational Childhood Maltreatment for Dual System-Involved Women: Investigating the Protective Role of Parenting

Childhood maltreatment is a prevalent and costly public health problem, which confers significant negative mental and physical consequences to the children and families who are affected. Among the negative sequelae of childhood maltreatment is increased risk of one's own child experiencing maltreatment, a phenomenon called intergenerational child maltreatment continuity. Because the literature demonstrates that many parents who experienced child maltreatment do not continue the cycle of maltreatment with their offspring, this study sought to determine the risk and protective factors within the parenting context that might contribute to greater child maltreatment discontinuity. This dissertation study draws data from an existing prospective, longitudinal study of 147 women who experienced dual-system involvement with both child welfare and juvenile justice as youth. The participants were originally recruited in adolescence for a randomized control trial assessing the effectiveness of the Treatment Foster Care Oregon (TFCO) intervention. Participants reported on adverse childhood experiences (ACEs) in adolescence, and on parenting behaviors and developmental expectations for children in a longitudinal follow-up in young adulthood. Child maltreatment continuity was indexed using participant self-report of contact with child welfare throughout young adulthood and official child welfare reports collected at the end

of the study. In this sample of dual system-involved women, approximately half displayed maltreatment continuity (48%). On average, women reported experiencing 6.7 ACEs during childhood and adolescence. Participant ACEs were not associated with maltreatment continuity. Contrary to study hypotheses, there was no evidence that harsh parenting or positive, supportive parenting moderated the association between ACEs and child maltreatment continuity. In contrast, parental developmental expectations significantly moderated the association between ACEs and official report of maltreatment continuity, though in the opposite direction as was hypothesized. Given the paucity of literature on rates of child maltreatment continuity and parenting in this unique dual system-involved population, this dissertation study presents valuable preliminary evidence about maltreatment continuity and experiences of early adversity among women with dual system involvement. Study limitations, future directions, and implications are discussed.

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CHAPTER I

GENERAL INTRODUCTION

Prevalence and Impact of Childhood Maltreatment

In 1974, the Child Abuse Prevention and Treatment Act (CAPTA; Public Law 93-247) was implemented as the first federal legislation to mandate funding for efforts aimed at identifying, treating, and preventing child abuse and neglect (U.S. Department of Health and Human Services, 2019). Since CAPTA's enactment over four decades ago, and the preceding ground-breaking work of Kempe and colleagues in 1962 in which child abuse and neglect was first framed as a public health concern, research regarding the prevalence of childhood maltreatment (CM), programs and treatments to address the negative consequences of CM, and prevention efforts aimed at reducing the occurrence of CM have proliferated. Despite growing attention to this issue, child abuse and neglect remains a public epidemic, with national data showing that this early and potent trauma affects more than 4 million U.S. children and families each year (US Department of Health & Human Services, 2020). Moreover, multiyear estimates show that by age 18, 12.5% of all U.S. children will have come into contact with child welfare due to allegations of abuse or neglect (Wildeman et al., 2014). The widespread problem of CM is magnified when considering the well-documented and far-reaching consequences of CM.

Exposure to child abuse and neglect comes at a great economic cost to children, families, and the systems that seek to support them. The Centers for Disease Control and Prevention estimates that the average cost for each nonfatal victim of child abuse and neglect is $830,928 over the lifetime (Peterson et al., 2018). These economic costs

include proximate burdens placed on juvenile justice, foster care systems, welfare programs, and educational systems and more distal costs such as physical and mental health care expenses and lost revenue through associated workforce productivity challenges and increased criminal justice activity (Fang et al., 2012; Peterson et al., 2018).

Experiences of CM are also linked to many long-term mental and physical health consequences such as substance abuse (e.g., Cicchetti & Handley, 2019; Norman et al., 2012), psychopathology (e.g., Lansford et al., 2002; Vachon et al., 2015), and increased risk for developing chronic disease (e.g., Afifi, 2016; Felitti et al., 1998). Persons who experience CM are at greater risk for engaging in delinquent behaviors and criminal activity (e.g., Currie & Tekin, 2012; Allwood & Widom, 2013). Moreover, the psychological trauma of CM extends to the biological level, resulting in alterations in the neurobiological functioning of the developing child; such impacts on the interconnected physiological stress response systems have cascading effects on socioemotional, cognitive, and behavioral functioning later in life (e.g., De Bellis, 2001; Lupien et al., 2009; Masten & Cicchetti, 2010). Taken together, these observations demonstrate the complexity of treating CM, and the urgency to better understand how to prevent experiences of abuse and neglect *before* they occur.

Intergenerational Child Maltreatment Continuity

Among the negative sequelae of CM is increased risk of one's own child experiencing maltreatment. This phenomenon is known as intergenerational child maltreatment continuity (Berzenski et al., 2014; Thornberry et al., 2012), and it is widely believed to be one of the most salient risk factors for child abuse and neglect in

subsequent generations (Belsky, 1993; Egeland et al., 2002). Empirical studies have found that experiencing maltreatment early in life increases the likelihood of coming into contact with child welfare due to maltreatment of one's own children (e.g., Bartlett et al., 2017; Kim, 2009; Thornberry & Henry, 2013; Valentino et al., 2012; Widom, 1989) and increases the potential for maltreatment of one's offspring (Rodriguez & Tucker, 2011; Smith et al., 2014). Yet existing research also demonstrates that many parents do not continue the intergenerational cycle of maltreatment (e.g., Kaufman & Zigler, 1987; Madigan et al., 2019; Widom & Wilson, 2015). Documented rates of intergenerational maltreatment continuity show similar inconsistency, from 30% in one of the earliest studies on intergenerational continuity (Kaufman & Zigler, 1987), to more conservative estimates ranging from 1% to 38% (Ertem et al., 2000), and up to nearly 54% in more recent studies (Bartlett et al., 2017; Valentino et al., 2012).

Indeed, the child maltreatment literature has been criticized for a lack of methodological rigor thought to be responsible for these inconsistencies (see Thornberry et al., 2012 for a systematic review on the topic); however, a recent meta-analysis involving 142 primary studies in which the intergenerational transmission hypothesis was tested, showed significant small to medium effects in support of the intergenerational continuity hypothesis (Madigan et al., 2019). Moreover, moderator analyses showed that study quality (e.g., prospective vs. retrospective studies; multi-informant, multi-method validated measurement of child maltreatment; participant attrition) did not attenuate effects, except in the specific case of child abuse transmission (Madigan et al., 2019). Thus, while these estimates suggest that CM is a potent risk factor for child abuse and neglect in future generations, intergenerational maltreatment continuity is in no way

inevitable (Kaufman & Zigler, 1987). For this reason, the topic of intergenerational maltreatment requires moving beyond estimating rates of transmission to nuanced research questions that address what is perhaps a more important line of inquiry: elucidating how, when, and for whom the cycle of maltreatment does and does not occur.

Risk and Protective Processes for Child Maltreatment Continuity

A small handful of high-quality prospective studies have sought to identify mechanisms and conditions that increase the likelihood of continuing the intergenerational cycle of maltreatment. For example, Valentino and colleagues (2012) conducted a prospective, longitudinal study on adolescent mothers and their children and found that greater exposure to community violence was associated with higher risk of intergenerational maltreatment continuity. Berlin and colleagues (2011) followed a community sample of nearly 500 mothers and their newborns for approximately seven years post-birth. Social isolation, greater maternal mental health problems, and maladaptive attributional styles mediated the continuity of intergenerational maltreatment (Berlin et al., 2011). Similarly, a number of scholars have documented that greater maternal mental health problems partially explain the cycle of intergenerational maltreatment (Dixon et al., 2005; Plant et al., 2013). As evidenced in this brief review, the majority of studies examining mechanisms of intergenerational maltreatment continuity do so through a risk factors lens, and although this represents integral work, the positive and protective conditions in which maltreatment is not passed from generation to generation are less explicated.

Research suggests that positive social supports, financial stability, and knowledge about child development and parenting are all positive factors associated with the

likelihood that parents do not maltreat in the next generation (Dixon et al., 2009; Egeland et al., 1988; Shaw & Kilburn, 2009). Nevertheless, less is known about which positive factors moderate the intergenerational transmission of maltreatment. Along this vein, Schofield and colleagues (2013) conducted a meta-analysis to assess the moderating role of safe, stable, and positive relationships on the intergenerational cycle of maltreatment between parents and their offspring. Although few studies have examined this hypothesis with longitudinal designs, the meta-analysis results showed that nurturing and supportive relationships may reduce maltreatment continuity (Schofield et al., 2013). Related to this work but more proximal to the parent-child relationship, the current study seeks to explore how parenting factors might mitigate the risk of child maltreatment continuity across generations in a high-risk sample of women.

Elevated Risk for Dual System-Involved Individuals

Crossover individuals are one understudied and particularly vulnerable segment of the child welfare population for which prior research examining the intergenerational continuity of maltreatment may not generalize. At the broadest level, crossover individuals have experienced significant histories of child maltreatment and have also engaged in delinquent acts, regardless of whether systems involvement is documented (Herz & Ryan, 2008). A smaller subpopulation of crossover individuals is dual system-involved individuals; these individuals have either concurrent involvement with both the juvenile justice and child welfare systems or fluctuating involvement between the two systems (Herz et al., 2010). Crossover individuals are at elevated risk for negative outcomes such as substance use problems (Halemba et al., 2004; Herz et al., 2016), poorer mental health and increased suicidality (Dierkhising et al., 2019), and higher rates

of delinquency and recidivism (Baglivio et al., 2015; Halemba et al., 2004). Contributing to their elevated risk, these individuals commonly experience multiple placement transitions, including histories of out-of-home care or foster care (Citizens for Juvenile Justice; 2015; Dierkhising et al., 2019; Herz, 2016).

Due to the varying definitions of crossover individuals and the commonly bifurcated structure of child welfare and juvenile justice data systems, accurate prevalence estimates of this population are difficult to obtain (Herz et al. 2012). However, studies employing records matching from dual system administrative records ranging show that prevalence of crossover individuals range from 7 – 30 % (Cutuli et al., 2016; Shrifter, 2012; Smith et al., 2005). Researchers have suggested that the dual system-involved subpopulation, though small, may differ in important ways from other crossover individuals (Herz et al., 2010).

In addition, because both delinquency and child maltreatment are risk factors for later maltreatment perpetration and child welfare involvement (e.g., Baglivio et al., 2015; Bartlett et al., 2017; Halemba et al., 2004; Thornberry et al., 2001), it follows that dual-system individuals may be at elevated risk for child maltreatment continuity, although no estimates on intergenerational continuity for this subpopulation exist. Furthermore, extant research on this population has largely been drawn from cross-sectional studies, or relatively short-term longitudinal studies, both of which make it difficult to examine developmental processes across time and factors that might exacerbate or mitigate the effects of CM and adversity on maltreatment in subsequent generations. Accordingly, this study aims to address this gap by using a prospective, 10-year longitudinal study

following dual system-involved women studied from adolescence through emerging adulthood.

Measurement Challenges in the Study of Child Maltreatment Continuity

One challenge in conducting research on intergenerational child maltreatment continuity that has been widely recognized are the ways in which maltreatment continuity is measured (Cicchetti, 2004; Kaufman & Zigler, 1987; Madigan et al., 2019; Thornberry et al., 2012; Widom et al., 2015). Clearly, a multi-method measurement approach is the most rigorous; however, researchers do not always have such methods and data available. Consequently, many studies on the topic of intergenerational maltreatment have used singular measures to identify maltreatment in subsequent generations, each of which contains potential sources of bias. These measures include the self-report of CM (often retrospective); official child welfare records; self-reported child welfare contact; and proxy measures of maltreatment, including self-reports of child abuse potential or abusive or neglectful parenting behavior. Importantly, prior work has demonstrated only modest associations between these measures (Leve et al., 2015) and suggested that self-reports, offspring reports, and official records of maltreatment differentially predict maltreatment continuity (Widom et al., 2015). Leve and colleagues (2015) suggested that such discrepancies could indicate over or under-identification of those most at risk for continuing intergenerational maltreatment depending on the type of measure being used. Together these measurement challenges highlight the advantages of employing multi-method and multi-informant measurement approaches if possible when studying intergenerational maltreatment continuity.

A second measurement challenge in the intergenerational maltreatment literature lies in the two distinct conceptual definitions of child maltreatment continuity. As described by Madigan and colleagues (2019), the first approach is "victim-to-perpetrator," rooted in Widom's (1989) theory on the "cycle of violence," by which persons who are victimized by child maltreatment are theorized to go on to perpetrate similar acts of violence. The second conceptual approach is referred to as "victim-to-victim" (Madigan et al., 2019); this approach represents an indirect transfer of maltreatment across generations, conferred through multiple levels of risk without distinguishing parent from perpetrator. The focus of this investigation is on the latter, maltreatment continuity more broadly, (e.g., conditions in which a parent experienced maltreatment as a child, and their child also experienced maltreatment; however, the parent *may* or *may not* have been the perpetrator) with the specific goal of better understanding the conditions whereby the intergenerational cycle of child abuse and neglect is interrupted.

Purpose of Dissertation

The present study was designed to better understand the processes involved in intergenerational continuity for dual system-involved women and to elucidate protective factors that might contribute to breaking the intergenerational cycle of maltreatment. The reviewed literature, presented in this chapter and covered more in-depth in the following chapter, points to several gaps in the literature that will be the focus of this dissertation.

First, much of the existing literature on intergenerational continuity of maltreatment has not examined such processes for women with dual system-involvement. Dual system-involved individuals represent a unique risk profile in which the complexity

of intergenerational continuity may manifest differently than for single system involved individuals (Halemba et al., 2004; Herz et al., 2016; Herz & Ryan, 2008). The need for further research on dual system-involved individuals, particularly *women,* is highlighted by evidence suggesting dual system-served women are overrepresented in the justice system relative to their women counterparts with single justice systems involvement: across the U.S., women represent approximately 28% of all juvenile arrests (Sickmund et al., 2017); however, when considering women with dual systems involvement, the proportion of women rises to 33-51% (Dierkhising et al., 2019; Halemba et al., 2004; Ryan et al., 2007; Sickmund et al., 2017). Moreover, women with prior juvenile justice involvement have been shown to be at elevated risk for future involvement with child welfare relative to men (Colman et al., 2010). In a prospective longitudinal study, Colman and colleagues (2010) found that 62% of women with prior juvenile justice involvement had documented official child welfare contact as an alleged perpetrator of maltreatment between the ages of 16 and 28, relative to 17% of men in the sample. Additionally, over half of these women additionally recidivated into the adult legal system (53%) during that same period of time, whereas only 16% of men showed dual-system involvement (Colman et al., 2010). Together these findings emphasize the crucial need for increased research on the complex intersection of juvenile justice and child welfare for women and on the factors that might mitigate future risk for child maltreatment.

Second, much of the existing research on factors that might exacerbate the intergenerational continuity of maltreatment has focused predominantly on risk factors, and these findings have importantly aided targeted intervention efforts to mitigate

negative outcomes. However, what is less known are the nurturing conditions and protective factors that increase positive outcomes for families entrenched in the child welfare system, including supporting parents in "breaking the cycle" of intergenerational maltreatment (Egeland et al., 1988). This dissertation was designed to understand how a more proximal protective factor, the parenting context, might mitigate risk for intergenerational CM among dual system-involved women. Consideration is given to the many adverse childhood experiences that participants may have endured, in addition to exposure to CM, to assess the buffering effect of parenting on the relationship between cumulative early adversity and intergenerational child maltreatment. A better understanding of factors that are associated with maltreatment discontinuity would inform interventions, policies, and practices that may best nurture conditions to increase resilience and to help interrupt the cycle of maltreatment and reduce negative consequences for the next generation.

CHAPTER II

LITERATURE REVIEW

Exploring Heterogeneity in the Phenomenon of Intergenerational Maltreatment Continuity

Although an extensive body of literature has documented that the experience of CM is a risk factor for later involvement in child welfare with one's own children (Bartlett et al., 2017; Madigan et al., 2019; Thornberry & Henry, 2013; Valentino et al., 2012; Widom, 1989), actual rates of transmission vary considerably (Bartlett et al., 2017; Ertem et al., 2000; Kaufman & Zigler, 1987; Valentino et al., 2012). These inconsistencies leave child welfare researchers with unanswered questions regarding the divergent pathways by which parents either do or do not continue the cycle of maltreatment. Moreover, it is widely acknowledged that the transmission of child maltreatment is complex and multidimensional in nature (Belsky, 1993; Dixon et al., 2005; Sidebotham, 2001). Therefore, it is essential that studies on the continuity of child maltreatment across generations consider the various environmental levels in which parents and children may be exposed to greater risk or buffered from such risk. The current study uses an ecological approach to further investigate heterogeneity in intergenerational CM continuity by assessing multiple levels of risk among a sample of dual system-involved women. Specifically, this dissertation aims to investigate how cumulative adversity in childhood, beyond exposure to child abuse and neglect and including stressors related to the family and peer contexts, predicts maltreatment continuity. Second, I sought to identify protective factors in the parenting context that are associated with families in which the intergenerational cycle of maltreatment is not maintained.

Adverse Childhood Experiences and Maltreatment Continuity

The early formative experiences of young children, including those involving the caregiving context, have been shown to affect the developing child's social, emotional, cognitive, and biological functioning (e.g., Bernier et al., 2012; Cicchetti & Rogosch, 2001; Luecken & Lemery, 2004). When adversity occurs in early childhood, the negative consequences on emotional and behavioral functioning can persist into adolescence and adulthood (e.g., De Bellis, 2001; Gunnar & Quevedo, 2007; Repetti et al., 2002; Taylor et al., 2011). Research has suggested that CM, one potent experience of early adversity, may increase the risk of maltreatment victimization for one's offspring by affecting the caregiving environment in negative ways, such as through interpersonal violence, challenges with educational attainment, substance use behaviors, and psychopathology (Noll et al., 2009). Thus, there are many ways whereby childhood adversity and its sequalae may increase risk for the next generation.

With growing recognition that there is no single cause nor single risk that is responsible for intergenerational maltreatment, researchers have emphasized the need to move beyond modeling single indicators of risk when examining childhood abuse and neglect (Belsky, 1980; Cicchetti et al., 2000; Neugebauer, 2000). Furthermore, a number of scholars have argued that examining the effects of only one type of adversity is insufficient for pushing forward the field's understanding of how to prevent child abuse and neglect (e.g., Herrenkohl & Herrenkohl, 2009; Van Scoyoc et al., 2015). This is in part because polyvictimization, defined by Finkelhor and colleagues (2011) as experiencing multiple types of child maltreatment and exposure to other forms of adversity, crime, and violence, is a common experience for individuals who have

experienced CM (Cyr et al., 2012; Finkelhor et al., 2013; Higgins & McCabe, 2000). For example, Cyr and colleagues (2012) assessed familial and extrafamilial exposures to adversity in a sample of child welfare-involved youths and found that 93% of children experienced more than one form of victimization, and just over one-half of children (53%) had experienced four or more types of victimization. Relatedly, in a review of 20 primary studies on multi-type maltreatment, 33-94% of youths with child maltreatment histories reported experiencing more than one type of abuse or neglect (e.g., sexual abuse and physical abuse; Herrenkohl & Herrenkohl, 2009). Moreover, individuals with multi-type maltreatment or high polyvictimization are more likely to experience negative outcomes in adulthood such as depression, anxiety, antisocial behavior, and long-term health problems (Price-Robertson et al., 2013). These findings suggest that child welfare-involved individuals likely have experienced multiple forms of adversity, and these cumulative adverse experiences negatively affect later adult health. However, less is known about how other childhood adversities, in addition to child abuse and neglect, accumulate to predict maltreatment continuity (Neugebauer, 2000). Addressing this gap is essential for developing more targeted interventions to reduce the reoccurrence of maltreatment across generations for persons who have experienced *multiple types* of adversity.

The Adverse Childhood Experiences (ACE) framework is among the most widely used approaches for indexing cumulative experiences of adversity in childhood (Felitti et al., 1998). Research on ACEs shows a strong graded relationship between these experiences of adversity and poorer long-term physical and mental health outcomes (Felitti et al., 1998; Gilbert et al., 2015; Hughes et al., 2017). Dual system-involved

women are a particularly vulnerable group who may be at greater risk for such negative outcomes due to their complex histories of trauma and adversity (Baglivio & Epps, 2016; Halemba et al., 2004; Herz et al., 2016), including their dual experiences of CM and delinquency (Herz & Ryan, 2008). Given the high prevalence of ACEs among dual system-involved individuals (Baglivio et al., 2016), it is important to understand how such early adversity might also place their offspring at elevated risk for abuse and neglect. Thus, in the current study, I employed a cumulative adversity measurement approach to understand how multiple interrelated and compounding adverse experiences (e.g., CM, substance use exposure, parental mental health problems, poverty, social isolation, and others) predict child maltreatment continuity in this population.

Guiding Theoretical Frameworks

Bronfenbrenner's (1979) ecological model has been previously applied to understand intergenerational maltreatment (e.g., Leve et al., 2015; Schelbe & Geiger, 2017; Sidebotham, 2001; Valentino et al., 2012) and this dissertation similarly uses ecological theory to guide the inquiry of child maltreatment continuity among dual system-involved women. While acknowledging that individuals operate within multiple levels of ecology, this dissertation study narrows in on protective factors that may exist with the microsystem (i.e., women's interactions with their children), while also accounting for the accumulation of risk at various ecological levels (i.e., ACEs).

Several complementary theoretical frameworks may also be helpful for more specifically understanding the role of parenting in the perpetuation of child maltreatment from one generation to the next. First, developmental psychopathology and family systems theories suggest that risk for child maltreatment develops out of a dynamic

interplay between environmental hardships (e.g., socioeconomic status, adversity, stress), and parent or family characteristics, including parent psychopathology and dysfunctional family patterns (Belsky, 1993; Cicchetti & Rizley, 1981; Cicchetti & Toth, 2005). Additionally, Social Learning Theory (Bandura, 1973) posits that the cycle of maltreatment is continued through the replication of abusive behavior that was modeled in childhood. For example, children may experience harsh forms of parenting in childhood, may learn that such forms of parenting are acceptable, and might then repeat such parenting with their own children. Each of these frameworks considers the parenting context as central in the continuity of maltreatment. Drawing from these theories, I explored the hypothesis that maternal behavior, as it pertains to parenting in the second generation (i.e., participants' parenting behaviors with their offspring), may play a potential protective role in the relationship between participant ACEs and the continuity of maltreatment across generations.

The Protective Role of Parenting on Intergenerational Maltreatment Continuity

Parenting is considered one of the most proximal risk and protective factors in the occurrence of child maltreatment (Stith et al., 2009). Indeed, parents are implicated in approximately 91% accounts of child abuse and neglect (DHHS, 2014), making them an important focus of child maltreatment prevention efforts. Whereas many studies have examined the role of individual parent characteristics in the occurrence of child maltreatment (e.g., substance use; psychopathology; cognitive functioning, for a review see Milner & Chilamkurti; 1991), this study instead takes an ecological approach involving the caregiving context, examining parenting behaviors and parental expectations of children as potential protective factors that might distinguish

intergenerational maltreatment “cycle breakers” from “cycle maintainers” (Dixon et al., 2009). I propose that parenting behaviors could potentially have a role in the continuity of child maltreatment through two paths: direct links between their parenting and subsequent maltreatment of their child, and the moderation of the relationship between cumulative adversity and intergenerational maltreatment continuity.

In the following paragraphs, I outline two dimensions of parenting behavior that have been widely studied as correlates of child abuse and neglect: harsh, controlling parenting and supportive parenting. These parenting behaviors will be considered in the context of parental redirection and discipline. Power assertive discipline, including overly harsh or controlling parenting, is one parental behavior shown to distinguish maltreating and non-maltreating parents (Baumrind, 1994). In a meta-analysis on observed parenting behaviors and child maltreatment, Wilson and colleagues (2008) found that parents with maltreatment histories displayed greater aversive behaviors in interactions with their children (e.g., raised voice, negative physical touch) relative to parents with no documented maltreatment. Similarly, Skowron and colleagues (2011) documented greater observed harsh and strict control in response to child led behaviors as a factor that differentiates parents with and without maltreatment histories. These findings suggest that the nature and quality of control that parents exert in interactions with their children (e.g., aversive and harsh vs. supportive and guiding) may be relevant for identifying parent-child contexts in which maltreatment is more likely to occur. Moreover, such harsh and aversive control may interact with parents’ histories of adversity in a way that could increase risk for subsequent maltreatment.

A second important dimension of parenting relevant to child maltreatment is what Baumrind (1994) describes as "responsiveness." This positive parental behavior involves attentiveness to child needs and a degree of warmth or affection in relating to one's child. Meta-analytic findings indicate that positive and attuned parenting behaviors are also important in the context of child abuse and neglect, as parents without child welfare involvement showed more positive and involved parental behavior relative to parents with prior histories of child maltreatment (Wilson et al., 2008). Jaffee and colleagues (2013) assessed maternal warmth in a large-scale longitudinal study on maternal and twin environmental risk. They found that greater maternal warmth, as captured through maternal speech during an individual interview task, was associated with a reduced risk for intergenerational maltreatment continuity. Others have also found that greater autonomy support of child directed actions was displayed in parents with no history of child maltreatment perpetration, relative to parents in the maltreatment group (Skowron et al., 2011). Extending from these findings, I suggest that higher levels of supportive parenting— characterized by appropriate limit setting and warm guidance—and greater knowledge of children's developmental needs, are both factors that could be relevant in whether and how a parent demonstrates responsivity to their child's needs. Further, I propose that these parenting factors might buffer the risk for maltreatment continuity.

Indeed, educating parents about typical child development and realistic expectations for children are often core components in parent training interventions (e.g., The Incredible Years, Webster-Stratton, 2005; Parent-Child Interaction Therapy, Eyberg, 1988; Circle of Security, Marvin et al., 2002). These education components commonly occur early in treatment to set the stage for lessons on the developmentally appropriate

parenting strategies that will follow (e.g., child directed interaction teach session in PCIT, Eyberg et al., 2011). Guidance about what a parent might expect of their child at each developmental stage could affect parenting in a number of important ways, including through reducing parenting stress, improving a parent's sense of competence, and perhaps most importantly, by permitting parents to tailor their own behavior and expectations for their child. Although many parenting programs that involve increasing parental knowledge of child development have been shown to prevent future instances of child maltreatment (see Chen & Chan, 2016 for a meta-analysis), those studies have not specifically examined the role that parent knowledge of appropriate developmental expectations for children might play in buffering the risk for maltreatment occurrence.

To my knowledge, no prior studies have specifically examined the moderating role of parenting behaviors or developmental expectations for children on child maltreatment continuity. Findings from the current study may therefore help to explain the inconsistent link between early adversity and maltreatment continuity. Further, the present study provides an opportunity to contribute to the existing literature by identifying protective factors in the parenting context that may be particularly relevant for dual system-involved women, a population for whom the parenting experience is poorly understood.

Specific Aims

This study explored parenting as a mitigating factor on the intergenerational transmission of child maltreatment. Capitalizing on the availability of longitudinal data, I first explored the relationship between a novel measure of ACEs and subsequent occurrence of child maltreatment. Parenting behaviors—including harsh and ineffective

parenting and more positive parenting, including supportive parenting such as guidance and limit setting— were next examined as moderators of the relationship between early adversity and the continuity of CM in adulthood. Additionally, developmentally appropriate expectations for children were examined as a third moderator. This study further assessed whether these three dimensions of parenting served as a buffer in the intergenerational cycle of CM. Understanding how cumulative early adversity, such as high ACEs, interacts with positive parenting in early adulthood to reduce maltreatment continuity has the potential to more effectively inform efforts to enhance the strength and resilience of women who have endured multiple forms of adversity and to reduce the occurrence of child maltreatment for their children. The specific aims and hypotheses of this study are as follows:

Specific Aim 1: Test the direct relationship between ACEs and intergenerational child maltreatment continuity.

Hypothesis 1: Greater cumulative early adversity will predict a higher likelihood of child maltreatment continuity.

Specific Aim 2: Test whether positive parenting strategies mitigate the effects of early adversity on child maltreatment continuity.

Hypothesis 2: I hypothesize that greater positive parenting characterized by warm guidance and appropriate limit setting will buffer the negative effects of ACE exposure on intergenerational child maltreatment continuity. I predict the association between ACE exposure and the likelihood of continuing intergenerational CM will be smaller for women with higher levels of positive parenting (relative to women with lower levels of positive parenting).

Specific Aim 3: Test whether harsh parenting moderates the effects of early adversity on child maltreatment continuity.

Hypothesis 3: I hypothesize that harsh parenting will exacerbate the effects of ACEs on intergenerational child maltreatment continuity. I predict the association between ACE exposure and the likelihood of continuing intergenerational CM will be stronger for women with higher levels of harsh parenting (relative to women with lower levels of harsh parenting).

Specific Aim 4: Test whether greater knowledge of developmentally appropriate expectations for children buffers the effects of ACEs on child maltreatment continuity.

Hypothesis 4: I hypothesize that greater knowledge of developmentally appropriate expectations for children will buffer the negative effects of ACE exposure on intergenerational child maltreatment continuity. I predict the association between ACE exposure and the likelihood of continuing intergenerational CM will be smaller for women with more developmentally appropriate child expectations (relative to women with less developmentally appropriate expectations).

CHAPTER III

METHODS

Sample

The data for this dissertation were drawn from two consecutively run randomized control trials of Treatment Foster Care Oregon (TFCO; *ns* = 37 and 44) and out-of-home treatment as usual (TAU; *ns* = 44 and 41) for adolescent girls involved with juvenile justice (See Appendix B for CONSORT flow diagram). Original trials were supported and funded through the Oregon Youth Authority and by Grants R01 DA024672 (P.I., Leslie Leve, Ph.D.), R01 DA015208 (P.I., Patricia Chamberlain, Ph.D.), from the National Institute on Drug Abuse, and by Grant R01 MH054257 (P.I., Patricia Chamberlain, Ph.D.), from the National Institute of Mental Health. The original studies were designed to assess the efficacy of TFCO in reducing delinquency and substance use problems for girls with significant juvenile delinquency; additional study details are documented elsewhere (Chamberlain, 2003; Chamberlain et al., 2007). Participants were referred by juvenile court judges. Inclusion criteria included having, at minimum, one criminal referral in the past year, having been removed from their caregivers and placed into mandatory out-of-home care in the past year, and being aged 13 to 17 years. Exclusion criteria included being pregnant at the time of study referral. No group differences were found for pre-baseline delinquency or demographic characteristics (see Table S2. in Appendix C). Data were collected between 1997 and 2013.

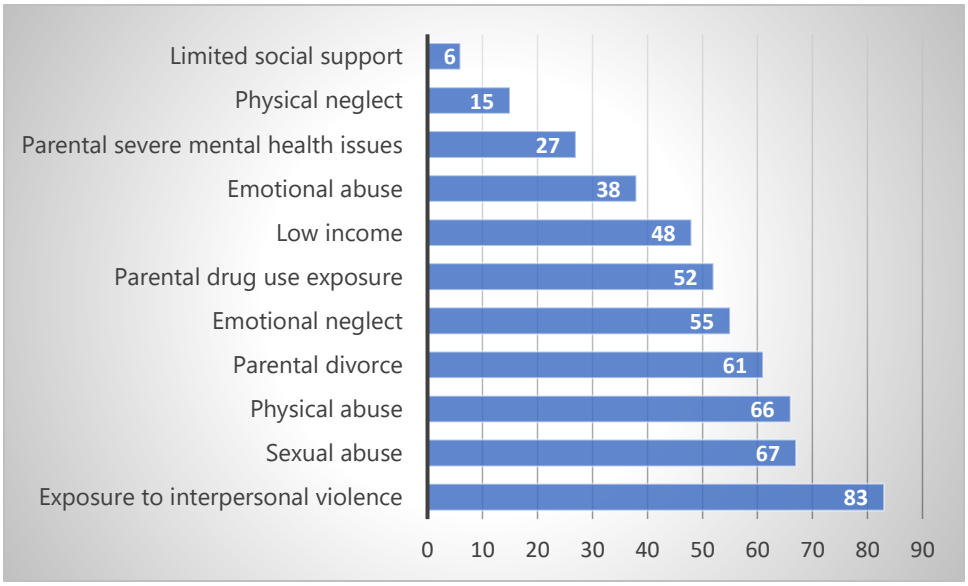
Although participants were recruited to the study due to involvement in juvenile justice, the subsample of participants included in this study were those who had also experienced childhood maltreatment (*n* = 147, 88.6%). To determine history of childhood

maltreatment, official child welfare records were used or caseworker report of child welfare records collected at the baseline assessment, in the case when official child welfare records were unavailable. Participants were considered to have a history of childhood maltreatment if official child welfare records documented any type of abuse or neglect and/or if caseworkers endorsed any one or multiple of the following indicators: (1) documented physical abuse; (2) documented physical abuse in the immediate family; (3) documented sexual abuse; (4) severe family violence; (5) siblings placed into out-of-home care.

Demographically, participants were from a range of racial and ethnic backgrounds including 66% White, 12.2% Latina, 2% African American/Black, 0.7% Native America/Alaska Aleut, 0.7% Asian, 17.7% multiracial, and 0.7% unknown or not reported. The mean age of participants at enrollment into the study was 15.29 years (*SD* = 1.19; range 12.54 - 17.80). Prior to enrollment in the study and out-of-home placement, 47.6% of participants resided in homes with an average annual income at or below $10,000. Additionally, 61.9% of participants resided in single-parent households. Participants experienced, on average, 6.7 ACEs (*SD* = 2.24) prior to enrollment into the study. The most commonly endorsed ACEs were exposure to interpersonal violence, sexual abuse, physical abuse, parental divorce, emotional neglect, and exposure to parental drug use. Participants endorsed experiencing these ACEs at rates of 50% or greater. See Figure 1 for a full depiction of rates of ACE exposure in the sample.

Figure 1

Percentage of the Study Sample Exposed to Each Adverse Childhood Experience



Procedure

All procedures used in this study were approved and monitored by the institution's Office for the Protection of Human Subjects. Written informed consent was obtained from either the caseworker or legal guardian and assent was obtained from participants at the beginning of their first study visit. Participants were enrolled into the study during adolescence and assessed longitudinally for approximately 10 years through the transition to emerging adulthood. At baseline, participants completed a 2-hour in-person assessment, and in-person follow-up assessments were conducted at 6, 12, 18, 24, 30, and 36 months post-baseline. Participants were then assessed through telephone interviews every six months from 7 to 9.5 years post-baseline, on average. During that timeframe, participants also completed one in-person young adult assessment (8.36 years post-baseline, *SD* = 2.47). Demographic and control variables were drawn from the baseline assessment. Outcome variables were drawn from one of two timepoints: (1) the young adult in-person visit, occurring between 7 – 9.5 years post-baseline (M_{age} = 23.59, *SD* = 2.62); and, (2) the end of the study, approximately 10 years post-baseline. See

Appendix D for a visual depiction of the assessment schedule and relevant measures included in each dissertation study.

Intervention

Participants who were randomized to the intervention arm received Treatment Foster Care Oregon, formerly known as Multidimensional Treatment Foster Care (MTFC; Chamberlain, 2003). Participants were placed into foster homes with highly trained state-certified foster parents. Although the intervention was individualized for each participant, standardized components included foster parent use of daily behavioral modification strategies to support participants' positive behaviors and to reduce problem behaviors. Participants were provided with individual and family-of-origin therapy, school behavior was monitored by teachers, and psychiatric consultation was also provided. Foster parents received weekly training and supervision to ensure fidelity of intervention components. Foster parents also monitored participants' engagement with individual and family therapy services. Further information on the intervention design and fidelity monitoring can be found elsewhere (Chamberlain, 2003; Chamberlain, Leve, & DeGarmo, 2007).

Treatment as Usual

The comparison condition was treatment as usual, which was out-of-home placement into 1 of 35 community group care residential settings. While in these out-of-home placements, participants received weekly mental health services; the group care programs practiced either behavioral modalities (38.5%) or eclectic modalities (61.5%). Group care settings had, on average, 13 youths in residence (range 2- 83) and anywhere from 1- 85 employees (Median = 9).

Measures

Adverse Childhood Experiences Revised

A 12-item adverse childhood experiences (ACE) revised composite score was created using four items from youth self-report; seven items from caseworker report; and one coded item from official maltreatment records. All items were measured at baseline. Items were selected based on the original ACE measure (Felitti et al., 1998). Two items were added to the ACE composite following recommendations from recent work by Finkelhor and colleagues (2015) who found that their revised ACE inventory, which included additional ACEs (e.g., low socioeconomic status, peer / social isolation), demonstrated greater predictive validity of mental and physical health outcomes relative to the original ACE measure. In the current study, ACE items reflected the following domains: parental divorce, parental substance use problems, parental mental health problems, parental legal involvement, domestic violence exposure, physical abuse, emotional neglect, physical neglect, emotional abuse, sexual abuse, economic instability, peer / social isolation. All items were coded 0 (*no*) and 1 (*yes*) for the presence or absence of each risk factor. Items were summed to create a risk index ranging from 0 – 12, with higher scores reflecting greater ACEs. Additional details on the wording and scoring of items can be found in Appendix A. Because the ACE questionnaire is a risk index, it is not expected that items would be correlated with one another (e.g., parental divorce and physical neglect) nor would it be expected that a common underlying factor would explain the different trauma experiences (Streiner, 2003); therefore no internal consistency estimates are provided here. However, it is important to note that the ACEs

measure has demonstrated strong predictive validity for indices of physical and mental health (Felitti et al., 1998; Finkelhor et al., 2015).

Harsh and Positive Parenting Behavior

Parenting behaviors were assessed using the KIDVID Analog Parenting Task (DeGarmo & Forgatch, 2004; DeGarmo, Reid, & Knutson, 2006), which is a video-based analog measure of parenting. Analog parenting measures used to assess a parent's typical behavioral response by asking parents to describe how they would respond to a given (video) scenario should they find (have found) themselves in a similar situation with their own child. Because parents watch a scenario unfold and are asked to approximate their behavioral responses, this analog measure is thought to capture the dynamic interpersonal processes of parenting (DeGarmo et al., 2006; Russa & Rodriguez, 2010).

In the KIDVID, parents watched three video clips showing a variety of neutral to aversive child behaviors that could require parental involvement, redirection, or discipline. Throughout each video clip the scene was paused several times, and parents were asked open-ended questions about how they would typically respond; their answers were subsequently coded using previously developed 28 content codes (DeGarmo et al., 2006). For the purposes of this study, we computed the frequency of two parenting behaviors that have been shown to be theoretically and empirically associated with child abuse and neglect and important for children's social-emotional functioning (Baumrind, 1994). Positive parenting was a sum of all positive discipline parenting behaviors including limit setting behaviors (e.g., giving a time out, providing a choice) and supportive guidance from parents (e.g., giving a command, discussing options, providing appropriate praise for compliance). Harsh parenting was a sum of all harsh discipline

parenting behaviors (e.g., spanking, slapping, yelling). In the current study, the overall kappa was .72.

Developmental Expectations for Children

Participant knowledge of developmental expectations for children was measured through the Parent Opinion Questionnaire Total Score (POQ; Twentyman & Plotkin, 1981), which was collected at the young adult in-person assessment. The POQ is a 92-item self-report instrument designed to assess whether participants agree or disagree with the appropriateness of expecting various child behaviors across the spectrum of infancy to adolescence (Azar & Rohrbeck, 1986). Participants rate items with 1= (*agree*) or 2 = (*disagree*). Items are dichotomously recoded (0 , 1) so that higher scores on the POQ reflect more unrealistic or inappropriate expectations of child behavior. Example items related to parental discipline include "If a child is misbehaving, it's appropriate for a parent to physically punish the child with a board or stick" and "It's not a good idea to take away a privilege because it can be bad for children." An example item related to supervision of children includes "Usually, a 2-year-old can sit and play quietly alone in a room for several hours." Last, example items related to developmentally appropriate expectations include "A 1-year-old can usually feed him or herself without spilling food" and "Most of the time a 4-year-old can choose the right clothing for the weather and then get him or herself off to school." Higher scores on the POQ, indicative of more unrealistic and inappropriate expectations of children, have been shown to correlate with greater usage of harsh punishment and disciplinary practices, more negative child attributions, and greater parental stress (Barnes & Azar, 1990; Haskett et al., 2006). Cronbach's alpha for the POQ Total Score in this sample was acceptable ($\alpha = .88$).

Child Maltreatment Continuity

To assess maltreatment continuity, a multi-method approach was selected given the different strengths and limitations known to the measurement of child maltreatment (Baldwin et al., 2019; Leve et al., 2015; Widom et al., 2015) and due to the minimal correspondence found between measures of self-report and official child welfare records in a prior study involving the current sample (Leve et al., 2015) and documented elsewhere (Widom et al., 2015). Thus, in the present study I chose to use participant self-report of contact with child welfare as a measure used to capture levels of maltreatment that may have not been identified by official surveillance methods (i.e., child welfare agencies; Straus, 1979; Straus et al., 1998) and second, I used official child welfare records to identify substantiated maltreatment of participant's children.

Self-Reported Child Welfare Involvement. At each of the six phone assessments during young adulthood, participants were asked to self-report their own contact with child welfare for suspected abuse or neglect of any of their children. Participants were asked separately about child welfare contact for each of their children. Those who endorsed child welfare contact for at least one child at any of the 6 assessment waves were assigned a score of 1; those without a self-reported history of child welfare contact were assigned a score of 0.

Official Child Welfare System Records. For the purposes of assessing intergenerational childhood maltreatment continuity, a dichotomous variable was derived from administrative child welfare records. Official maltreatment records were obtained from the Department of Human Services, Children, Adults and Families Division (DHS) at the conclusion of the final young adult assessment (M = 10.01 years post-baseline, SD

= 2.96). DHS extracted participant records from their National Child Abuse and Neglect Data System (NCANDS) database wherein only cases with dispositions (i.e., findings) were recorded. These records were then used to identify participants who had perpetrated child maltreatment on their offspring *or* participants who had children who had experienced child maltreatment, even if not perpetrated by study participants (as distinguished from child welfare records on participants childhood experiences of maltreatment). Detailed records regarding the type of maltreatment and number of maltreatment reports were available within the NCANDS file. Participants who had an official child welfare record with one or more substantiated maltreatment incidents for any child of any type were assigned a score of 1, which indicated that maltreatment continuity was present; those without any substantiated maltreatment records were assigned a score of 0, which represented maltreatment discontinuity.

Covariates

Age at Follow-Up. Age in years was recorded at the young adult in-person follow-up assessment. This variable was considered due to the potential confounding effect of age on maltreatment continuity and was included as a covariate in all main analyses due to its associations with ACEs and official report of maltreatment continuity in this sample.

Educational Attainment. To consider for the potential confounding effect of educational attainment on child maltreatment continuity, participant years of education was explored through associations with key study variables. Educational attainment was measured at the young adult in-person visit. Participants self-reported the last grade that they completed in school, and whether or not they had completed a specific level of

education (i.e., GED, High School Diploma, some college, A.A., B.A., B.S., graduate degree).

Intervention Condition. To control for any intervention effects on maltreatment continuity, a dichotomous intervention condition variable was considered in main study models (0 = TAU; 1 = TFCO).

Demographics

Parents or caregivers completed a brief demographic questionnaire to assess participant age and participant race/ethnic background. Parents also self-reported a variety of family-of-origin characteristics including: parent age, parent sex, parent highest completed grade level, household income, race/ethnic background, number of persons residing in the home and household structure (i.e., single or dual-parent status). Demographic variables were used to describe the sample characteristics.

Analysis Plan

Preliminary Analyses

All variables were explored for outliers and deviations from normality using plots and frequency distributions. In the case of non-normal variable distributions, a log transformation was applied. Bivariate correlation matrices and measures of central tendency for all study variables and covariates were examined. Data were screened to ensure all assumptions of the following statistical tests were met prior to analysis. For continuous variables, outlier analysis was conducted using a threshold of ±3 *SD* above the mean of the variable distribution. In the case of the detection of outliers that met this criterion, values were Winsorized to the upper or lower fence values. Additionally,

sensitivity analyses were conducted to compare model estimates from logistic regression models containing the non-transformed and transformed versions of variables.

Main Analyses

This study tested the relationship between ACEs and intergenerational child maltreatment continuity (Aim 1). This study also evaluated the hypothesized moderating roles of both negative and positive parenting behaviors (Aim 2 and Aim 3) and developmentally appropriate child expectations (Aim 4) in the relationship between ACEs and intergenerational maltreatment continuity. A series of multiple logistic regression analyses were used to test these aims. Within moderation models, the independent variables were standardized to improve interpretability. For each moderator variable, two models were specified using the dichotomous measures of official report of maltreatment continuity and self-report of maltreatment continuity as outcomes. Model coefficients were exponentiated to adjusted odds ratios (AORs) to aid in interpretability of effect sizes and 95% confidence intervals were presented to assess the magnitude of effect sizes. For all models, sensitivity analyses were conducted comparing the results of the complete case analyses to results from multiple imputation analyses. All data analyses were conducted using R and RStudio (R Core Team, 2019; RStudio Team, 2019).

To assess model specification and fit of logistic regression models, the DHARMa package (Hartig, 2019) for R was used. Residual Q-Q and residual versus fitted values plots were inspected using a simulation approach that was developed for use in logistic regression modelling (Hartig, 2019). Kolmogorov–Smirnov tests were then used to assess for the non-normality of residuals. Model goodness-of-fit was assessed using model explained deviance (D^2) and deviance tests, which are likelihood ratio chi-square tests

that compare reductions in residual deviance in the fitted model as compared with the null model (i.e., model with no predictors; see Gelman & Hill, 2006). The area under the receiver operating characteristic curve (AUC) was used as a classification metric for logistic regression analyses. AUC values of .5 indicate that that the model with included predictors discriminates the two outcome levels no better than by chance and a value of 1 indicates that the model perfectly discriminates between the two outcome levels.

CHAPTER IV

RESULTS

Preliminary Analyses

Descriptive statistics for key study variables are shown in Table 1. Pearson's bivariate correlation coefficients among key study variables are shown in Table 2. Participant age was positively associated with ACE scores, $r(147) = .19$, 95% CI [.02, .35] such that older participants experienced higher ACEs. Participant age was also positively correlated with self-report of maltreatment continuity, $r(147) = .20$, 95% CI [.03, .35] with older participants having greater self-reported maltreatment continuity. The parenting variables supportive parenting and harsh parenting (and the log-transformed harsh parenting variable) were negatively correlated as expected, $r(74) = -.26$, 95% CI [-.46, -.03]. Participants who endorsed higher levels of supportive, positive parenting endorsed lower levels of harsh parenting. Intervention condition showed a negative correlation with DE, $r(137) = -.18$, 95% CI [-.34, -.01]. Participants who received the TFCO intervention showed lower POQ scores indicative of more realistic or appropriate developmental expectations for children. Given these correlations, age was entered as a covariate in all subsequent analyses and group randomization condition was entered as a covariate in DE analyses.

Inspection of the bivariate correlation between official and self-reported CWS involvement showed the two measures were moderately associated, $r(147) = .52$, 95% CI [0.39, 0.63]. In the sample, 71 participants (48.3%) had documented official CWS involvement whereas 57 participants (38.8%) reported involvement with CWS. Additional analyses comparing the match of participant self-report of CWS involvement with official CWS involvement showed that 18 participants (12%) had documented CWS

involvement but did not self-report any involvement with CWS. Further, 13 participants (9%) self-reported CWS involvement but had no documented involvement with CWS.

Table 1

Means, Standard Deviations, and Ranges of Study Variables (*n* = 147)

Variable	*M* / *n* (%)	*SD*	Range
Intervention Condition			
0 = TAU	76 (51.7%)	-	-
1 = TFCO	71 (48.3%)	-	-
Years of Education	11.98	1.85	8 - 16
Participant age at follow-up	23.59	2.62	19.10 – 31.02
ACEs	6.70	2.24	1 – 12
Supportive parenting	7.37	3.08	1 – 15
Harsh parenting	0.97	1.07	0 – 5
Log-transformed harsh parenting	0.24	0.24	0 – 0.78
DE	9.64	7.18	0 – 42
Log-transformed DE	2.16	0.63	0 – 3.47
Official records CWS contact			
0 = no	90 (61.2%)	-	-
1 = yes	57 (38.8%)	-	-
Self-reported CWS contact			
0 = no	101 (68.7%)	-	-
1 = yes	46 (31.3%)	-	-

Note. M and SD are used to represent mean and standard deviation, respectively. ACEs = Adverse Childhood Experiences. DE = Developmental Expectation for Children as measured through the Parent Opinion Questionnaire. CWS = Child Welfare Services. TAU = random assignment to treatment as usual. TFCO = random assignment to Treatment Foster Care Oregon.

Table 2

Bivariate Correlations with 95% Confidence Intervals Among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Intervention condition	-									
2. Education	.12 [-.05, .28]	-								
3. Participant age	.06 [-.11, .22]	.11 [-.06, .27]	-							
4. ACEs	-.01 [-.17, .15]	-.00 [-.17, .16]	.19* [.02, .35]	-						
5. Supportive parenting	-.07 [-.29, .17]	.19 [-.04, .41]	-.08 [-.31, .15]	-.05 [-.28, .18]	-					
6. Harsh parenting	-.05 [-.28, .18]	-.13 [-.35, .10]	.02 [-.21, .24]	.11 [-.12, .33]	-.26* [-.46, -.03]	-				
7. Log harsh parenting	-.02 [-.24, .21]	-.10 [-.32, .14]	.05 [-.18, .27]	.19 [-.04, .40]	-.26* [-.46, -.03]	.96** [.94, .98]	-			
8. DE	-.18* [-.34, -.01]	-.12 [-.28, .05]	-.00 [-.17, .17]	.15 [-.02, .31]	-.16 [-.38, .07]	.03 [-.20, .26]	.06 [-.17, .28]	-		
9. Log DE	-.23** [-.39, -.06]	-.13 [-.30, .04]	.02 [-.15, .19]	.12 [-.05, .28]	-.08 [-.31, .15]	.06 [-.17, .28]	.06 [-.17, .29]	.90** [.86, .93]	-	
10. Official records MC	-.09 [-.25, .07]	-.06 [-.23, .11]	-.06 [-.23, .11]	.07 [-.09, .23]	.23* [.00, .44]	-.18 [-.39, .05]	-.17 [-.39, .06]	.13 [-.04, .29]	.21* [.04, .36]	-
11. Self-report MC	-.07 [-.23, .09]	.05 [-.12, .22]	.20* [.03, .35]	.15 [-.01, .30]	.22 [-.01, .43]	-.18 [-.39, .05]	-.15 [-.36, .08]	.03 [-.14, .20]	.08 [-.09, .25]	.52** [.39, .63]

Note. ACEs = Adverse Childhood Experiences. Log = natural log transformed variable. DE = Developmental Expectation for Children as measured through the Parent Opinion Questionnaire. MC = maltreatment continuity. Intervention Condition is coded 0 = TAU, treatment as usual; 1 = TFCO, Treatment Foster Care Oregon. * indicates $p < .05$. ** indicates $p < .01$.

All variables were assessed for univariate normality through the visualization of frequency distributions and by examining skewness and kurtosis values. All variables except for two met conditions for univariate normality with values of skew and kurtosis that fell within the ranges of ± 1 and ± 2, respectively. Harsh parenting was found to be positively skewed (skewness = 1.29, *SE* = 0.28). To correct for positive skew, a log transformation was applied (skewness = 0.33, *SE* = 0.28). DE also showed evidence of non-normality through high skewness and kurtosis values (skewness = 1.76, *SE* = 0.21; kurtosis = 3.78, *SE* 0.42) and two values were found to exceed the a priori specified threshold of ± 3 *SD* above the mean of DE. Therefore, the DE variable was Winsorized and a log transformation was applied (skewness = 0.25, *SE* = .21; kurtosis = .39, *SE* = .42). As mentioned previously, sensitivity analyses were conducted to determine whether the Winsorization and transformation of variables substantively changed model results. In all sensitivity analyses, the obtained parameter estimates using non-transformed data were comparable with models that including transformed data with no substantive differences in the magnitude or direction of effects. Assumptions for all binary logistic regression models were examined and met, including linearity between the predictor variables and the logit of the two maltreatment continuity outcome variables, multicollinearity among predictor variables, and multivariate outliers using an inspection of any values that fell ± 3 *SD* above or below the mean standardized residuals. No multivariate outliers were identified.

Missingness Analyses

No participants were missing data on ACEs or either of the two MC outcomes (i.e., self-report or official report). Each of the moderator variables had missing data. In

the original study design, only those participants who were either a parent of a 12-month or older child or who had ever been a parent (e.g., step-parent, biological parent) at the young-adult assessment were invited to complete the KidVid analog video task (n = 94) from which the supportive and harsh parenting variables were drawn. Of the 94 eligible participants, 75 participants completed the KidVid task resulting in a 21% rate of missingness based on the original study design and participant eligibility. Approximately 8% (n = 13) of participants were missing data on the moderator of developmental expectations for children.

To assess missing data mechanisms, Little's missing completely at random (MCAR) test was conducted. Little's MCAR test was run on all data except for the KidVid data scores with the rationale that these data were not missing at random by study design, which, as previously described, caused some participants to be ineligible to complete the KidVid analog task at the time of data collection. Results from Little's MCAR showed that data met the assumption for MCAR, χ^2 (431) = 618.06, $p < .001$. Data were also explored for patterns of missingness using t-tests and χ^2 tests with each of the moderator variables and key participant demographics. Identified reasons for missingness were due to participants not having completed the in-person young adult assessment and participant age. Participants in the missing DE group were older relative to participants who had no missing DE data. Thus, participant age was covaried in all analyses.

Due to data meeting the assumption of MCAR and to assess the robustness of estimates obtained from complete case analysis, multiple imputation was employed. Using all available data, I created 20 imputed datasets using predictive mean matching

(PMM). Imputation was carried out using the R package *mice* (Version 3.3.0; van Buuren & Groothuis-Oudshoorn, 2018). As a sensitivity analysis, pooled model estimates across imputed datasets are presented alongside each complete case analysis in the tables that follow.

Model Specification and Fit

All final models showed normality of residuals through inspection of Q-Q plots and nonsignificant Kolmogorov–Smirnov tests. Further, no patterning of model residuals was observed in standardized residual vs. predicted values plots. Additional model fit indices, including deviance tests, D^2, and model AUCs are presented alongside results in the tables that follow.

Main Study Analyses

Aim 1. The first aim of this dissertation was to assess whether ACEs as measured through participant self-report and caseworker report at participant entry to the study (i.e., adolescence) would predict MC. Two multiple logistic regression models were used to assess associations between ACEs and MC when controlling for participant age (Table 3). In the first model, official record of MC were regressed on ACEs and age. Although the model showed significantly reduced deviance over the null model, $\chi^2 = 7.88(2)$, $p < .05$ and adequate discriminatory power among MC outcomes (AUC = .64), there was no evidence that ACEs significantly predicted MC. Further, in a second model wherein self-reported MC was regressed on ACEs and participant age, there was no evidence that ACEs significantly predicted MC. Additionally, the second model did not display significantly reduced deviance relative to the null model, $\chi^2 = 2.01(2)$, $p = .31$ and the AUC indicated poor discriminatory power of the MC outcome levels (AUC = .59). Taken

together, findings did not support the hypothesis that participant ACEs would be associated with an increase in the odds of displaying MC in adulthood. No sensitivity analyses were conducted with multiple imputation as complete case data were available for all variables.

Table 3

Results of Multiple Logistic Regression Analyses of the Association Between Adverse Childhood Experiences and Maltreatment Continuity (n = 147)

	Child Maltreatment Continuity Official Records				Child Maltreatment Continuity (Self-Report)			
Variable	*B*	*SE B*	A*OR*	95% CI for A*OR*	*B*	*SE B*	A*OR*	95% CI for A*OR*
Intercept	-4.57	1.70	0.01	[0.01, 0.27]	0.27	1.70	1.31	[0.05, 39.21]
Age	0.14	0.08	1.15	[0.97, 1.35]	-0.07	0.07	0.93	[0.80, 1.07]
ACEs	0.14	0.07	1.14	[1.00, 1.32]	0.10	0.09	1.11	[0.94, 1.31]
D^2	0.04				0.05			
Deviance test (χ^2)	7.88 (2), $p < .05$				2.01 (2), p = ns			
AUC	0.64				0.59			

Note. ACEs = adverse childhood experiences. AOR = adjusted odds ratio. CI = 95% confidence interval. D^2 = explained deviance (calculated as 1 − ratio of full and null model deviances). AUC = area under receiver operating characteristic curve.

Aim 2. To test the second hypothesis that supportive, positive parenting strategies would mitigate the effects of early adversity on MC, two multiple logistic regression models were specified (see Table 4). Model 1 included official record of MC regressed on participant age, supportive parenting, ACEs, and the interaction between supportive parenting and ACEs. As shown through a deviance test, the final model significantly reduced deviance compared to the null model, $\chi^2 = 9.47$ (4), $p < .05$. However, the AUC

(0.67) indicated that the model displayed poor discrimination among the two levels of MC. Model 2 included self-reported maltreatment continuity regressed on participant age, supportive parenting ACEs, and the interaction between supportive parenting and ACEs. The final model did not significantly reduced deviance compared to the null model, χ^2 = 6.52 (4), p = .16, and the AUC (0.66) showed that the model poorly discriminated among participants who did and did not display MC. In contrast to study hypotheses, these results did not support the hypothesis that supportive parenting would buffer the risk of ACEs on official or self-reported MC. Additionally, examination of the individual predictor variables in both models provided no evidence that participant age, ACEs, or supportive parenting significantly predicted MC.

Sensitivity analyses were conducted to compare the robustness of complete case results and the pooled results from 20 multiple imputed datasets. Pooled results from corresponding models using multiply imputed data are presented alongside complete case results in Table 4. No substantive differences were observed.

Aim 3. The third aim of this dissertation was to test the moderating role of harsh parenting on the relationship between ACEs and MC (see Table 5). Two multiple logistic regression models were run. In the first model, official record of MC was regressed on participant age, harsh parenting, ACEs, and the interaction between ACEs and harsh parenting. Deviance tests showed that the full model did not significantly reduce deviance in comparison to the null model, χ^2 = 4.09 (4), p = .39. Results from Model 2, in which self-report of MC was entered as the dependent variable, were analogous to results from Model 1. The full model did not significantly reduce deviance in comparison to the null model, χ^2 = 5.64(4), p = .23. AUCs from the two models ranged from 0.63 –

0.65, showing a poor ability to discriminate among MC outcome levels. In both models, no predictor variables were significantly associated with MC; therefore, main effects were not interpreted.

Sensitivity analyses using 20 multiply imputed datasets were used to compare complete case estimates with the imputed data estimates. See Table 5 for full complete case results and imputed data results. No substantive differences were observed. In sum, harsh parenting did not emerge as a significant moderator of the relationship between ACEs and MC.

Aim 4: The results of multiple logistic regression models testing whether greater knowledge of developmental expectations for children moderated the relationship between ACEs and MC are presented in Table 6. In separate models, the maltreatment continuity variables (i.e., official record and participant self-report) were regressed on participant age, intervention condition, ACE scores, DE scores, and the interaction between ACEs and DE.

Model 1, wherein official report of MC was entered as a dependent variable, showed significantly reduced deviance when compared with the null model, $\chi^2 = 16.13(4)$, $p < .01$. The AUC of .70 indicated the model showed acceptable discrimination among MC outcome levels. Results showed that this model explained 10% of the deviance above the null model. The interaction between ACEs and DE was statistically significant, A*OR* = 0.61, 95% CI [0.42, 0.84]. Participant age also emerged as a significant predictor of MC, A*OR* = 1.16, 95% CI [1.01, 1.35] such that each one-unit increase in age was associated with a 16% increase in the odds of MC. Although ACEs

emerged a significant predictor of MC in this model, due to the significant interaction between ACEs and DE, this main effect was not interpreted.

Table 4

Results of Multiple Logistic Regression Analyses Testing the Moderating Role of Supportive Parenting on the Association Between Adverse Childhood Experiences and Maltreatment Continuity (n = 74)

	Child Maltreatment Continuity (Official Records)				Child Maltreatment Continuity (Self-Report)			
Variable	*B*	*SE B*	A*OR*	95% CI for A*OR*	*B*	*SE B*	A*OR*	95% CI for A*OR*
Intercept	-1.56	2.53	0.21	[0.01, 29.43]	-0.09	0.24	0.92	[0.56, 1.48]
Age	0.07	0.11	1.08	[0.88, 1.33]	-0.12	0.10	0.89	[0.72, 1.09]
ACEs	0.15	0.11	1.16	[0.94, 1.46]	0.13	0.10	1.19	[0.96, 1.51]
Supportive Parenting	0.13	0.09	1.14	[0.96, 1.37]	0.17	0.09	0.16	[0.01, 1.53]
ACEs × Supportive Parenting	0.07	0.04	1.07	[0.99, 1.18]	-0.01	0.04	1.71	[0.61, 5.35]
D^2	0.09				0.06			
Deviance test (χ^2)	9.47 (4), $p < .05$				6.52 (4), p = ns			
AUC	0.68				0.66			
Pooled Estimates from 20 Multiply Imputed Datasets								
	Child Maltreatment Continuity (Official Records)				Child Maltreatment Continuity (Self-Report)			
Variable	*B*	*SE B*	A*OR*	95% CI for A*OR*	*B*	*SE B*	A*OR*	95% CI for A*OR*

Intercept	-3.16	1.60	0.04	[0.01, 0.69]	0.94	1.71	2.57	[0.08, 78.77]
Age	0.11	0.07	1.12	[0.98, 1.08]	-0.07	0.07	0.93	[0.81, 1.07]
ACEs	0.12	0.08	1.12	[0.95, 1.32]	0.09	0.09	1.09	[0.92, 1.30]
Supportive Parenting	0.03	0.08	1.03	[0.86, 1.24]	0.04	0.07	1.04	[0.87, 1.23]
ACEs × Supportive Parenting	0.02	0.03	1.02	[0.97, 1.08]	0.01	0.03	1.01	[0.94, 1.06]

Note. ACEs = adverse childhood experiences. AOR = adjusted odds ratio. CI = 95% confidence interval. D^2 = explained deviance (calculated as 1 − ratio of full and null model deviances). AUC = area under receiver operating characteristic curve.

Table 5

Results of Multiple Logistic Regression Analyses Testing the Moderating Role of Harsh Parenting on the Association Between Adverse Childhood Experiences and Maltreatment Continuity (n = 74)

	Child Maltreatment Continuity (Official Records)				Child Maltreatment Continuity (Self-Report)			
Variable	*B*	*SE B*	A*OR*	95% CI for A*OR*	*B*	*SE B*	A*OR*	95% CI for A*OR*
Intercept	0.19	0.25	1.21	[0.74, 2.00]	-0.10	0.26	0.90	[0.54, 1.48]
Age	0.02	0.10	1.02	[0.84, 1.25]	-0.12	1.18	0.88	[0.72, 1.07]
ACEs	0.20	0.11	1.22	[0.99, 1.53]	0.18	0.11	1.19	[0.96, 1.51]
Harsh log	-1.78	1.17	0.17	[0.02, 1.60]	-1.84	1.18	0.16	[0.01, 1.53]
ACEs × Harsh	0.09	0.52	1.10	[0.39, 3.19]	0.54	0.55	1.71	[0.61, 5.35]
D^2	0.04				0.06			
Deviance test (χ^2)	4.09 (4), p = ns				5.64 (4), p = ns			
AUC	0.63				0.65			

Pooled Estimates from 20 Multiply Imputed Datasets

	Child Maltreatment Continuity (Official Records)				Child Maltreatment Continuity (Self-Report)			
Variable	*B*	*SE B*	A*OR*	95% CI for A*OR*	*B*	*SE B*	A*OR*	95% CI for A*OR*
Intercept	-1.56	2.53	0.21	[0.01, 29.43]	-0.09	0.24	0.92	[0.56, 1.48]
Age	0.07	0.11	1.08	[0.88, 1.33]	-0.12	0.10	0.89	[0.72, 1.09]

ACEs	0.15	0.11	1.16	[0.94, 1.46]	0.13	0.10	1.19	[0.96, 1.51]
Harsh log	0.13	0.09	1.14	[0.96, 1.37]	0.17	0.09	0.16	[0.01, 1.53]
ACEs × Harsh	0.07	0.04	1.07	[0.99, 1.18]	-0.01	0.04	1.71	[0.61, 5.35]

Note. ACEs = adverse childhood experiences. AOR = adjusted odds ratio. CI = 95% confidence interval. D^2 = explained deviance (calculated as 1 − ratio of full and null model deviances). AUC = area under receiver operating characteristic curve.

To probe the significant interaction between DE and ACEs, two procedures were used. First, simple slopes analyses indicated that under conditions of greater appropriate DE (i.e., 1 *SD* below the mean; DE is scored so that lower scores indicated fewer inappropriate developmental expectations for children) higher participant ACEs were significantly associated with a greater probability of official record MC, *b* = 0.40, 95% CI [0.13, 0.67]. Likewise, under conditions of mean levels of DE (again, DE is scored so that lower scores indicate fewer inappropriate developmental expectations for children), higher participant ACEs were significantly associated with a greater likelihood of MC, *b* = 0.23, 95% CI [0.04, 0.42]; however, the simple slope for one *SD* above the mean was not significantly different from zero, indicating that there was evidence of a relationship between ACEs and maltreatment continuity for participants with the most inappropriate DE, *b* = -0.08, 95% CI [-0.34, 0.17]. Figure 3 provides a graphical representation of the simple slopes analysis. The vertical line represents the sample's mean ACE score (*M* = 6.7, *SD* = 2.24). The y-axis represents the probability of official record of maltreatment continuity. As depicted in Figure 2, greater ACEs were associated with a greater probability for MC under conditions of low and mean scores of DE (i.e., fewer inappropriate DE); however, there was no association between ACEs and MC for participants with high levels of inappropriate and unrealistic DE.

Second, the Johnson-Neyman technique was used to assess the regions of significance for the significant interaction that was observed between DE and ACE scores. As depicted in Figure 3, and complementary to the simple slopes presented in Figure 2, the relationship between ACEs and MC was positive and significant for those participants with the lowest scores on DE, falling below 9.16. For participants with DE scores greater than 28.07, the relationship between ACEs and MC was significant and inverse, such that greater ACEs was associated with a lower probability of MC. These results contrast with study hypotheses. Findings suggest that lower DE (e.g., fewer inappropriate DE for children) did not have a buffering effect on the relationship between participant ACEs and MC.

Figure 2

Simple Slopes Plot for Moderation of Adverse Childhood Experiences (ACEs) and Maltreatment Continuity by Inappropriate Developmental Expectations for Children

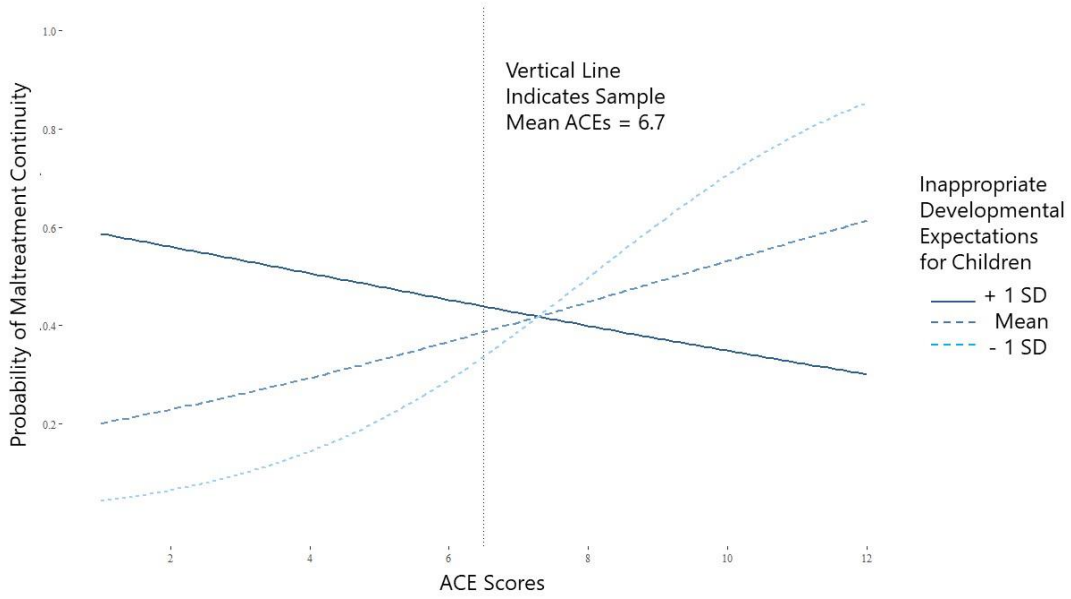
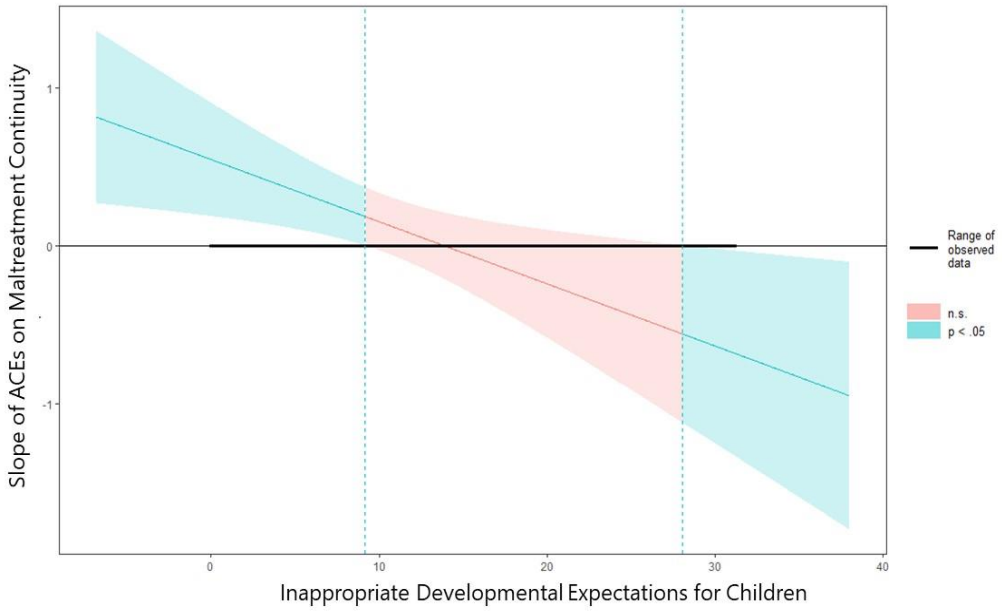


Figure 3

Johnson-Neyman Region of Significance Plot for Moderation of Adverse Childhood Experiences (ACEs) and Maltreatment Continuity by Inappropriate Developmental Expectations for Children



A sensitivity analysis was run using 20 multiply imputed datasets. Pooled results from the 20 MI datasets are presented alongside complete case results in Table 6. Although the interaction between DE and ACEs remained significant, the AOR of the interaction term was slightly attenuated in the pooled results relative to the complete case results, A*OR* = 0.74, 95% CI [0.56, 0.98]. Additionally, participant age no longer emerged as a significant predictor of MC, A*OR* = 1.12, 95% CI [0.98, 1.28].

Model 2 tested the moderating role of DE on the relationship between participant ACEs and self-reported MC (see Table 6). Deviance tests showed that the full model did not significantly reduce deviance when compared with the null model, indicating poor model fit, $\chi^2 = 10.41$ (5), $p = .06$. The AUC (0.69) indicated that the model showed

slightly worse discrimination among the self-reported MC outcome levels relative to the model with official record MC as the outcome. DE emerged as a significant predictor of self-reported MC, A*OR* = 2.13, 95% CI [1.15, 3.95]. Each one-unit increase in DE was associated with a 2.1-fold increase in the odds of MC. The sensitivity analysis using 20 imputed datasets showed that DE was not a significant predictor of MC. No other substantive differences between pooled results on imputed data and complete case results were observed. Thus, while DE did emerge as a significant predictor of self-reported MC, due to the poor model fit shown in the complete case analysis and the discrepancy between the imputed and complete case analyses, results should be interpreted with caution.

Table 6

Results of Multiple Logistic Regression Analyses Testing the Moderating Role of Developmental Expectations for Children on the Association Between Adverse Childhood Experiences and Maltreatment Continuity (n = 134).

	Child Maltreatment Continuity (Official Records)				Child Maltreatment Continuity (Self-Report)			
Variable	*B*	*SE B*	A*OR*	95% CI for A*OR*	*B*	*SE B*	A*OR*	95% CI for A*OR*
Intercept	-4.03	1.76	0.02	[0.01, 0.53]	0.58	1.78	1.79	[0.05, 62.54]
Group	-0.23	0.39	0.80	[0.37, 1.71]	-0.37	0.39	0.69	[0.32, 1.50]
Age	0.15	0.07	**1.16**	**[1.01, 1.35]**	-0.05	0.08	0.95	[0.81, 1.10]
ACEs	0.21	0.10	**1.23**	**[1.02, 1.50]**	0.13	0.09	1.14	[0.95, 1.38]
DE	0.34	0.32	1.41	[0.76, 2.67]	0.76	0.32	**2.13**	**[1.15, 3.95]**
ACEs × DE	-0.50	0.18	**0.61**	**[0.42, 0.84]**	-0.23	0.16	0.79	[0.57, 1.08]
D^2	0.10				0.06			
Deviance test (χ^2)	16.13(5), p < .01.				10.41 (5), *p* < ns			
AUC	0.70				0.69			

Pooled Estimates from 20 Multiply Imputed Datasets

	Child Maltreatment Continuity (Official Records)				Child Maltreatment Continuity (Self-Report)			
Variable	*B*	*SE B*	A*OR*	95% CI for A*OR*	*B*	*SE B*	A*OR*	95% CI for A*OR*

Intercept	-3.14	1.62	0.04	[0.01, 1.08]	0.91	2.1	2.48	[0.03, 204.81]
Group	-0.29	0.38	0.75	[0.36, 1.57]	-0.27	0.38	0.76	[0.36, 1.62]
Age	0.11	0.07	1.12	[0.98, 1.28]	-0.07	0.09	0.93	[0.77, 1.12]
ACEs	0.17	0.10	1.18	[0.71, 1.43]	0.11	0.09	1.11	[0.92, 1.34]
DE	0.29	0.32	10.14	[1.26, 81.32]	0.67	0.09	1.99	[0.92, 4.32]
ACEs × DE	-0.30	0.14	**0.74**	**[0.56, 0.98]**	-0.18	0.15	0.84	[0.62, 1.12]
D^2	0.09				0.06			
Deviance test (χ^2)	9.47 (4), $p < .05$				6.52 (4), p = ns			
AUC	0.68				0.66			

Note. ACEs = adverse childhood experiences. AOR = adjusted odds ratio. CI = 95% confidence interval. *D*! = explained deviance (calculated as 1 − ratio of full and null model deviances). AUC = area under receiver operating characteristic curve. Bolded values indicate statistical significance (95% confidence interval for adjusted odds ratios excluding one).

CHAPTER V

DISCUSSION

Drawing from an existing longitudinal dataset, this study examined the direct association between participant ACEs and maltreatment continuity among a sample of women with dual-system involvement in juvenile justice and child welfare. This study also examined the moderating role of parenting behaviors and parental developmental expectations for children on the association between ACEs and intergenerational child maltreatment continuity. Results provided no evidence that participant ACEs were associated with maltreatment continuity. Contrary to study hypotheses, there was no evidence that harsh parenting nor positive, or supportive parenting, moderated the association between ACEs and child maltreatment continuity. In contrast, parental developmental expectations significantly moderated the association between ACEs and official report of maltreatment continuity, though in the opposite direction as was hypothesized. Given the paucity of literature on rates of child maltreatment continuity and parenting in this unique dual system-involved population, this dissertation study presents valuable preliminary evidence about maltreatment continuity among women with dual system involvement.

Rates of Maltreatment Continuity for Dual System-Involved Women

The overarching goal of this study was to examine child maltreatment continuity, including the correlates and potential moderators of intergenerational maltreatment. Results from descriptive analyses showed that rates of maltreatment continuity were high in this sample of dual system-involved individuals, with approximately half (48.3%) of the participants having documented maltreatment continuity as measured through official child welfare records. Furthermore, these numbers may be conservative estimates given

that 36% of participants were not yet parents at the time maltreatment data were collected. When compared to prior studies, the rate of maltreatment continuity observed in this study was elevated (e.g., 48.3% in the current study as compared to 30% in Kaufman & Zigler, 1987; 36.8% in Bartlett et al., 2017). One notable exception is a study on adolescent mothers and their offspring, in which rates of intergenerational maltreatment continuity are among the highest cited in the empirical literature to date (i.e., 54.3% in Valentino et al., 2012). Similarities between the Valentino et al. sample (2012) and the current sample include high rates of multitype abuse exposure (43.1% and 75.3% respectively) and the presence of adolescent pregnancy and parenting. It could be that these two risk factors, multitype maltreatment and adolescent parenting, together with the marked high levels of adversity exposure, contributed to the elevated rates of maltreatment continuity observed in this sample of dual system-involved women. Future research should investigate whether adolescent parenting and multitype child maltreatment influence maltreatment continuity in additive, interacting, or divergent ways.

Interestingly, when using self-report measures of maltreatment continuity, fewer participants in the current sample reported contact with child welfare due to maltreatment of their offspring (38%) relative to the percent of the sample that had official report of MC (48.3%). Furthermore, the two measures of maltreatment continuity demonstrated only a modest association (r = .52), which is consistent with results obtained by Widom and colleagues (2015). The lower rates of self-reported maltreatment continuity relative to official report and modest correlations between measures may be due to self-report or retrospective reporting biases, which are two proposed reasons that meta-analyses on the

topic have documented wide variability in rates of maltreatment continuity (Thornberry et al., 2012; Madigan et al., 2019). Furthermore, researchers have suggested that one of the most serious limitations in the intergenerational maltreatment literature is the inconsistent and varied measurement of maltreatment continuity (Pears & Capaldi, 2001; Widom & Wilson, 2015). A multi-method measurement approach is one way to address this limitation by increasing the ability of researchers to capture a wider range of families across the spectrum of risk for maltreatment. For example, 30% of the sample in the current study had both indicators of maltreatment continuity. In comparison, when only the official reports of maltreatment were used, nearly 50% of families were identified as displaying maltreatment continuity. Additionally, self-report of maltreatment continuity in the current study identified 9% of sample who would have otherwise gone undetected through official reports. Taken together, these findings demonstrate that different populations with varying level of risk may be identified depending on the function of the measure being used. Therefore, caution should be used when applying findings from any single study of maltreatment continuity and when comparing findings across primary studies in which different measurement approaches are used.

Overall, these findings warrant further attention as they indicate that even among a sample of women marked by histories of serious risk and adversity, the majority of women did not demonstrate maltreatment continuity. These data support the argument that while having exposure to CM constitutes a significant risk for intergenerational maltreatment continuity, it is in no way deterministic (Kaufman & Zigler, 1987). Therefore, it is imperative that researchers continue to examine the predictors and correlates of maltreatment continuity to more clearly identify the conditions under which

the cycle of maltreatment is not passed from one generation to the next. In the sections that follow, I highlight how this dissertation sought to identify the risk and protective factors that contributed to reduced child maltreatment continuity for dual system-involved individuals.

ACEs and Maltreatment Continuity

The first specific aim of this study was to examine the longitudinal association between participant ACEs, collected in adolescence, and child maltreatment continuity, assessed in adulthood (i.e., approximately 10 years post baseline). Contrary to my expectation, results from bivariate correlations and logistic regression analyses provided no evidence that participant ACEs were directly associated with a greater likelihood of maltreatment continuity. Drawing largely from the cumulative risk literature, several explanations for this finding are proposed.

A possible interpretation for this null finding is that cumulative adversity measures, such as ACEs, do not capture the severity, duration, or timing of adverse experiences. Specifically, the ACE measure indexes only the presence of absence of any of the following types of maltreatment, among other types of adversity: emotional abuse, emotional neglect, physical abuse, physical neglect, and sexual abuse. The recommendation that researchers consider the developmental timing of maltreatment experiences and the chronicity and severity of those experiences is not a novel idea (Herzberger, 1990; Manly et al., 1994); however, a limited number of researchers have endeavored to take this approach, likely due to the challenges inherent in accessing official child welfare records, and the added expense and time required to code data in this meaningful way (Lee et al., 2015; Pears & Capaldi, 2001; Madigan et al., 2019).

When data are obtained, ambiguous and divergent definitions of maltreatment between state or county-level jurisdictions make data synthesis even more challenging (Goerge & Lee, 2013; Green et al., 2015).

Despite these challenges, a small handful of studies have examined intergenerational maltreatment continuity and its associations to these more nuanced measures of CM experiences (Pears & Capaldi, 2001; Thornberry et al., 2013; Zuravin et al., 1996). Using data drawn from the longitudinal Rochester Youth Development Study, Thornberry and colleagues (2013) found that greater chronicity, severity, and later developmental timing of maltreatment experiences predicted elevated risk for maltreatment continuity. Maltreatment in childhood alone did not increase risk for maltreatment continuity; however, maltreatment that began in childhood and persisted throughout adolescence significantly predicted greater risk for the maltreatment of participant's offspring by the time participants reached their early thirties. Thus, it is possible that more robust cumulative risk measures, which take into account the chronicity and developmental timing of maltreatment, demonstrate stronger associations with maltreatment continuity because they index the true cumulative (i.e., increasing or chronic) effect of CM experiences across development.

Another possibility for the null findings between ACEs and maltreatment continuity in this study, is that these associations do not truly exist in the population. It is also possible that ACEs are indirectly associated with maltreatment continuity through more proximal risks, including the negative developmental sequalae that have been shown to follow maltreatment experiences (McLaughlin & Sheridan, 2016). Although examining ACEs experienced in adulthood was outside the scope of this study, it is

plausible that women in the current study experienced ongoing, repeated, or more severe ACEs in the late adolescence or young adult years more proximal to the maltreatment continuity data collection, which may have been associated with maltreatment continuity. Findings from Wekerle and colleagues (2007) corroborate this proposition in a sample of child welfare-involved adults. They found that an index of cumulative risk, in which participants retrospectively reported on risk factors (e.g., substance use, criminal activities, mental or physical health issues) from the six months preceding the collection of official child welfare records, most strongly predicted substantiated child welfare involvement above and beyond participants reports of experiencing CM alone (Wekerle et al., 2007). Taken together, these findings suggest two possibilities for next-step studies. First, child welfare researchers should work to develop more nuanced measures of cumulative adversity, including ACEs experienced in different developmental phases (early childhood, adolescence, adulthood) and chronicity and severity ratings of ACEs. Second, and perhaps with greater implications for prevention and intervention, researchers should further investigate the mechanisms that account for the adverse effects of child maltreatment on intergenerational maltreatment continuity.

An interesting side finding was that the women in the current sample experienced, on average, 6.7 ACEs, with approximately 96% of women having experienced 3 or more ACEs, a striking statistic given that the seminal epidemiological ACE study conducted by Kaiser Permanent and the Centers for Disease Control showed that this level of childhood adversity has a strong graded relationship with risk factors underlying many leading causes of death for U.S. adults (Felitti et al., 1998). This stands in contrast to recent estimates on the prevalence of ACEs in U.S. youths, which show that 10% of youths

experience 3 or more ACEs (Sacks & Murphey, 2018). Although ACE exposure in this sample is elevated compared with national estimates, the rate of ACE exposure mirrors those found in demographically similar samples. For example, Baglivio and Epps (2016) found in a sample of adolescents and young adults with juvenile justice histories that women were at elevated risk for experiencing high ACEs, as defined as 6 or greater ACEs, relative to men (Baglivio & Epps, 2016). In the current sample, the prevalence rates of specific ACE exposure ranged from a low of 6% for limited social support to a high of 89% for exposure to interpersonal violence. This also corroborates findings from Baglivio & Epps (2016) who found that the most commonly endorsed ACE in their large sample of juvenile and young adults with legal system involvement (n = 64, 329) was exposure to family violence (82%). These descriptive findings provide valuable information for practitioners and policymakers who seek to embed trauma informed practices into systems and programs to support dual system-involved individual by providing insight into the adversity experiences that may commonly co-occur with systems involvement.

Parenting Behavior as a Moderator between ACEs and Maltreatment Continuity

In the second and third aims of this study, I theorized that parenting characterized by greater positive discipline would buffer the association between ACEs and maltreatment continuity. I predicted that participants who endorsed parenting behaviors reflective of supportive, warm, and consistent discipline would have minimal or attenuated associations between the number of ACEs they experienced and their subsequent risk for maltreatment continuity. Conversely, I hypothesized in Aim 3 that harsh parenting behaviors would exacerbate the association between ACEs and risk for

maltreatment continuity, such that parents who endorsed parenting characterized by greater harsh, power-assertive, or controlling discipline strategies would have a stronger relationship between their ACE score and a greater likelihood for maltreatment continuity. Contrary to my hypotheses, there was no evidence that positive discipline practices or harsh discipline parenting behaviors moderated the association between ACEs and maltreatment continuity.

Although no prior study, to my knowledge, has examined positive or negative parenting discipline strategies as moderators of the association between ACEs and maltreatment continuity, meta-analytic research has documented direct associations between parenting and maltreatment perpetration (Wilson et al., 2008) as well as direct linkages between parental history of maltreatment predicting subsequent parenting (Savage et al., 2019). Generally, harsh parenting strategies are more strongly associated with subsequent maltreatment perpetration relative to positive or supportive parenting behaviors (Wilson et al., 2008) and similarly, CM is often most strongly predictive of subsequent harsh, controlling parenting (Savage et al., 2019). However, in the current study, no direct observations were observed between either childhood adversity, including maltreatment exposure, and parenting or between parenting and maltreatment continuity.

These findings are less surprising when considering the key differences between the current study and many of the primary studies included in each meta-analysis. First, the age of children in both meta-analyses ranged from 0 - 6 (Savage et al., 2019) or 0 – 11 years (Wilson et al., 2008) whereas in the current study, participants theoretically could have been parenting a child ages 0 – 18. It could be that the parent discipline

strategies measured in the current study through the KidVid analog measure are less pertinent and therefore less protective as participants' children aged and developed greater autonomy. Second, in many cases the findings from meta-analyses were drawn from cross-sectional studies. This contrasts with the current study wherein participant ACEs were assessed, on average, 8 years prior to the assessment of the parenting moderators, and 10 years prior to the collection of maltreatment continuity data. It is possible that the length of time between assessment points contributed to the null findings in this study. Finally, the majority of studies in which parents' experiences of child maltreatment are found to be associated with parenting behaviors have done so through parent's retrospective reports of CM (Savage et al., 2019). Findings from a recent meta-analysis by Baldwin and colleagues in which prospective and retrospective reports of child maltreatment were compared, suggested that the two measures identify different groups of individuals and therefore should not be used interchangeably. Thus, divergent findings in the current study could be attributed to the use of more objective measures of childhood adversity used in the current study (e.g., caseworker report, official child welfare records), the potentially different underlying study populations, and that the risk and protective pathways to maltreatment continuity differ based on how individuals are first identified as having experienced CM (Baldwin et al., 2019).

It is possible that other unmeasured parenting factors may be more salient for maltreatment continuity among dual system-involved individuals who are parenting. For example, mothers who have been imprisoned may also experience heightened caregiving challenges due to limited or irregular parenting time throughout or following incarceration (Poehlmann, 2005). Additionally, parenting stress has been shown to be

heighted for parents who were formerly incarcerated (Brown & Bloom, 2009). Furthermore, such stress is often compounded by the various challenges parents face when seeking to access community-based parenting support (Houck & Loper, 2002). Studies that assess these factors when examining parenting behaviors and maltreatment continuity in samples of individuals with prior incarceration, including the recency and length of time for which parents were incarcerated, may be able to make stronger inferences that their results are not confounded by parenting behavior that is largely attributable to the downstream effects of incarceration. Although study hypotheses were not supported, the modest sample size used in this analysis and the fact that this study is the first, to my knowledge, to examine parenting as a moderator of the relationship between ACEs and maltreatment continuity, necessitates additional research to interrogate these hypotheses in samples of dual system-involved individuals.

Parental Developmental Expectations for Children Moderated the Association Between ACEs and Maltreatment Continuity

The final aim of this study was to test the hypothesis that parental developmental expectations of children would moderate the relationship between ACEs and maltreatment continuity. Although developmental expectations for children did emerge as a significant moderator, findings were counterintuitive, showing that greater realistic developmental expectations for children strengthened the relationship between ACEs and maltreatment continuity, such that participants with higher ACEs had a greater likelihood of maltreatment continuity. This finding was in contrast to study hypotheses that a parent's greater knowledge of appropriate and realist developmental child expectations would mitigate, not exacerbate the association between ACEs and maltreatment

continuity. Further exploration of the significant interaction showed that only under conditions of low and mean levels of unrealistic and inappropriate developmental expectations was the relationship between ACEs and maltreatment continuity significant and positive.

Although it is possible that greater appropriate developmental expectations for children serves as a condition under which participants with higher ACEs are at elevated risk for maltreatment continuity, there are several other potential explanations for this counterintuitive finding. First, participants who were more likely to display maltreatment continuity may have received a greater number of child welfare mandated mental health or community-based services throughout the course of this longitudinal study, thereby gaining knowledge about appropriate developmental expectations for children. A recent scoping review on services delivered to families involved with child welfare documented that interventions to modify parenting are the most commonly delivered service when families first come into contact with child welfare (Landers et al., 2018). Future studies might consider measuring participants' level of involvement with child welfare delivered services, including the type and extent of involvement (e.g., parenting classes, family therapy with the child present, parent education about child development) to explore this potential confound. This avenue is particularly important, as parenting competence, including knowledge about expectations for children's appropriate behaviors, has been found to predict positive outcomes for children who have experienced early adversity, including child abuse and neglect (ACYF, 2013; Shonkoff & Phillips, 2000).

A further complication for interpreting study findings regarding developmental expectations is that the Parent Opinion Questionnaire (POQ) was originally designed to

assess parental expectations of child behavior among samples of child welfare-involved parents; scores on the POQ have been shown to discriminate among mothers with and without child maltreatment histories (Azar & Rohrbeck, 1986). Since its original development, the POQ has been recommended for use in assessing parenting competence (Budd, 2001). Thus, the POQ could be thought more of as a screening tool, that is, a measure to screen for unrealistic and unsafe beliefs about child development that could put children at risk for maltreatment, rather than an instrument that assesses parents' abilities to identify safe, realistic, or developmentally appropriate child expectations. Indeed, the POQ items are worded as *unrealistically high* expectations of children (e.g., "A 7 year old is old enough to set his or her own curfew and meal times" and "A 2 year old child can be expected to toilet train him or herself with little help from parents."). I propose that a parent's ability to indicate that a child expectation *is developmentally inappropriate*, does not imply that the parent can instead identify a more developmentally appropriate child expectation. Thus, the finding that higher ACEs were associated with a greater risk for maltreatment continuity, only when participants endorsed fewer inappropriate developmental expectations for children, could be due to those parents experiencing challenges in identifying realistic and safe developmental expectations for children as well. Given that this study is one of the first to examine developmental expectations as a protective factor in reducing risk for maltreatment, these findings should not be over-interpreted. Future research should further examine the potential role that appropriate developmental expectations might play in buffering risk for maltreatment continuity by using measures that assess a parent's understanding of the types of behaviors children *should* display. One such measure is the widely used Knowledge of

Infant Development Inventory (KIDI, MacPhee, 2002). Future studies could be further strengthened by matching these indices of parental knowledge of development to the age and developmental stage of participants' children.

These counterintuitive findings also raise several questions, which future studies should address. First, does a parent's knowledge of developmental expectations for their children show actual linkages with their parenting behaviors? Multi-method studies in which observational parent-child data are collected in combination with parent self-report would aid researchers in addressing this question. Second, would similar findings emerge if we further examined how these associations varied based on perpetration of maltreatment continuity (i.e., was the parent or some other adult the perpetrator of maltreatment)? Due to the sample size of the current study, further subgroup analyses of these data are likely underpowered and would not yield meaningful results; however, more highly powered studies might consider examining the unique effects of each type of maltreatment continuity (see Madigan et al., 2019). Finally, are developmental expectations for children more central in preventing maltreatment for parents of young children because young children may be placed at greater risk if caregivers have limited knowledge about child needs and abilities? Because a majority of children who enter child welfare, including those children who are placed into foster care placements, are children under seven years of age (DHHS, 2019), studies that further investigate protective factors in the parent-child relationship that contribute to maltreatment discontinuity are critical.

Limitations and Future Directions

In the paragraphs that follow, several fundamental study limitations are outlined, which provide a context for the interpretation of study results. Study strengths as well as recommendations for future studies are noted.

Sample Characteristics. Several limitations exist in the current study due to sample characteristics. Although racial and ethnic minorities are slightly overrepresented in this study relative to the population in the pacific northwest region of the United States from which participants were drawn (U.S. Census Bureau, 2019), White participants are overrepresented in the current study relative to the national U.S. juvenile justice system racial demographic proportions for females (68% versus 46% White; 32% vs. 54% Non-White; Sickmund et al., 2020). One implication of this is that study findings may not be generalizable to Non-White participants. This is particularly problematic because Black and Non-White youths are overrepresented in the juvenile justice and child welfare systems (Child Welfare Information Gateway, 2016; Rovner, 2016), which makes their representation in empirical studies critical for understanding and addressing the existing systemic inequities these populations face. Additionally, because the original study was designed to test the effectiveness of TFCO for adolescent females, males were excluded; therefore, findings are not generalizable to males with dual-system involvement. Despite these sample limitations, 93% retention was achieved in this 10-year longitudinal study, which strengthens the inferences that can be made from study findings. Finally, this unique sample of dual system-involved women permitted us to explore research hypotheses in the context of an understudied and vulnerable population.

Sample Size. Another limitation of this study was the modest sample size, which may have limited statistical power in logistic regression analyses. The sample size was

further limited due to study design features including some measures that were only administered to the smaller percentage of the sample who were parents. Limitations of small sample size may have impacted the reliability of study estimates. The wide CIs surrounding the developmental expectations moderation effect suggest that the magnitude of the association between developmental expectations and maltreatment continuity could not be estimated precisely, likely due to sample size, and thus, caution should be used when interpreting these findings. It is important to note that conducting research with dual system-involved individuals is challenging. Dual system-involved youth can be difficult to recruit, and the ethical concerns of conducting research with this vulnerable population can make gaining approval from Institutional Review Boards even more challenging. Because of these inherent challenges, this sample and the retention of the sample across several periods of development are even more noteworthy and provide valuable information to the field about the adversity and parenting experiences of women with dual-system involvement.

Lack of Causal Inference. The data in this study are drawn from a randomized controlled trial, a strength of the original study design. However, the results presented should not be considered causal in nature as intervention effects were not explored in the current study's aims. Additional preliminary analyses were conducted to determine if an instrumental variable approach was tenable in order to estimate causal effects; however, due to minimal associations between the intervention condition variable and the moderators of interest, this approach was not pursued further. Because a casual design was not achieved in this study, omitted variable bias poses an even greater threat to the internal validity of study findings. As noted throughout the preceding sections, these

omitted variables can be categorized into those that might confound the parenting moderators (e.g., parenting stress, parenting time, age of child) and those that might confound the maltreatment continuity outcomes (e.g., services received to reduce of prevent maltreatment continuity throughout the course of the study). A number of leading child welfare researchers have highlighted the lack of causal research designs within the field. They have further pointed out that little progress has been made in understanding the causes of intergenerational maltreatment (Daro et al., 2015; Widom et al. 2015). Thus, future studies should consider innovative ways to isolate the causal determinants of maltreatment continuity. In their chapter on causal inference for child maltreatment prevention, Lanier and colleagues (2015) outline several quasi-experimental methodologies useful for isolating casual effects in the absence of randomized designs. These research designs, including propensity score matching, instrumental variable methods, and regression discontinuity designs, may allow researchers to meet the challenge of making progress toward identifying the causal determinants of maltreatment continuity (Lanier et al., 2015).

Measurement. The measurement approaches employed in this study constitute both a study limitation and a study strength. First, it should be noted that the parenting moderator variables were collected through self-report, which has limitations including social desirability and response bias. Even so, the KidVid analog measure is particularly novel as the measure permitted parents to report on their own behaviors "in real time" while watching several video clips of child misbehavior. This is a particularly useful measurement approach for research with families involved with either child welfare or the legal system, as such analog measures approximate interactive parent-child tasks for

parents who do not currently have their children in custody (DeGarmo et al., 2006). To measure ACEs in this study, a revised 12-item measure of ACEs was constructed using participant self-report, caseworker report, and official child welfare records. Specifically, the revised ACE measure in the current study expanded the original ACE measure by including indicators of participant social isolation and participant experience of low socioeconomic status, both of which are widely recognized as indicators of early adversity. Future research should continue to develop robust measurement approaches for disentangling the effects of the chronicity, severity, and developmental timing of ACEs on proximal and distal outcomes, in order to better guide the targets of and timing of preventive interventions for reducing maltreatment. Additionally, at the end of the longitudinal follow-up study, participants' average age was 28 years. Thus, the risk period for potential maltreatment continuity had not yet passed. For example, it is likely that participants would bear additional children. Moreover, participants' current children were also likely to remain at developmental ages that are vulnerable to maltreatment. Despite these limitations, the inclusion of multi-method measurement of maltreatment continuity and the prospective, longitudinal design are strengths of this study as the maltreatment continuity literature is often limited by retrospective and self-report measures (Madigan et al., 2019).

Conclusion

In conclusion, this study demonstrates that although participants experienced elevated ACEs in childhood and serious developmental risk as evidenced through their dual-system involvement in adolescence, many were successful at discontinuing the cycle of intergenerational maltreatment. Though hypotheses that positive parenting would

buffer the risk for maltreatment continuity were not supported, findings contribute to the sparse literature on parenting and child maltreatment continuity for women who have experienced dual-system involvement, an area with limited research. Due to the largely null findings of this study, one central question that remains is: What are the positive and nurturing factors that contribute to *discontinuity* in the cycle of intergenerational child maltreatment? Although these factors quite likely reside at each level of ecology (Bronfenbrenner, 1979) including within the parent-child relationship, within the community context, and more distally within larger social and political systems, this study examined the environment most proximal to maltreatment: the parenting context (Sith et al., 2009). However, in the face of the many complexities and challenges inherent to conducting research in the domain of child abuse prevention, collaborative and interdisciplinary teams are needed to deepen our understanding of the interrelated and multidetermined risk and protective processes in order to promote optimal outcomes for children and families affected by child maltreatment.

APPENDIX A

ADVERSE CHILDHOOD EXPERINCES REVISED COMPOSITE MEASURE

Table S1			
Adverse Childhood Experiences Revised Composite			
ACE Item	**(Form or Instrument) Question(s)**	**Respondent**	**Coding**
1. Child Emotional Abuse	Official Child Welfare Report of Child Emotional Abuse	Official Child Welfare Reports	0 = no, 1 = yes
2. Child Physical Abuse	(Referral Form) Is there any documented physical abuse of TC?	Caseworker Report	0 = no, 1 = yes
3. Child sexual abuse	(Referral Form) Is there any documented sexual abuse of TC?	Caseworker Report	0 = no, 1 = yes
4. Emotional Neglect	(Assessing Environments; Berger et al., 1988) 95. I never felt that my parents really loved me. 138. I felt rejected by my parents.	Participant	0 = no, 1 = yes (if answered yes on any one of the two questions)
5. Child Neglect	Official Child Welfare Report of Child Neglect	Official Child Welfare Reports	0 = no, 1 = yes
6. Parent / Caregiver Divorce	(Referral Form) Parents divorced during this child's lifetime	Caseworker Report	0 = no, 1 = yes

7. Interpersonal Family Violence	(Referral Form) Family violence -- weapons used or arrested for or victim of (e.g., murder, shot); exclude sexual abuse	Caseworker Report	0 = no, 1 = yes
8. Parent / Caregiver Substance Use Problem	(Referral Form) Does this youth's bio mom/dad/step/adopted parents have a history of drug or alcohol abuse?	Caseworker Report	0 = no, 1 = yes (if answered yes to any one of the three included questions)
9. Parent / Caregiver Mental Illness	(Referral Form) Bio/Adopted Dad/Mom hospitalized for mental illness	Caseworker Report	0 = no, 1 = yes (if answered yes to any one of the two included questions)
10. Parent / Caregiver Incarceration	(Referral Form) Have any of this youth's mom/dad/step/adopted parents ever been convicted of a crime?	Caseworker Report	0 = no, 1 = yes (if answered yes to any one of the three included questions)
11.Social Isolation / Low Social Support	Social Support Questionnaire (Sherbourne & Stewart, 1991)	Participant	0 = scores on Functional Social Support Index at ≤ 40; 1 = scores on FSSI ≥ 41
12. Current family income below $10,000	(Referral Form) Current family income below $10,000	Caseworker Report	0 = no, 1 = yes

APPENDIX B

Figure S1

CONSORT diagram for parent study. Analyzed sample numbers represent intention to treat analysis for all participants who met criteria for inclusion in this dissertation study.

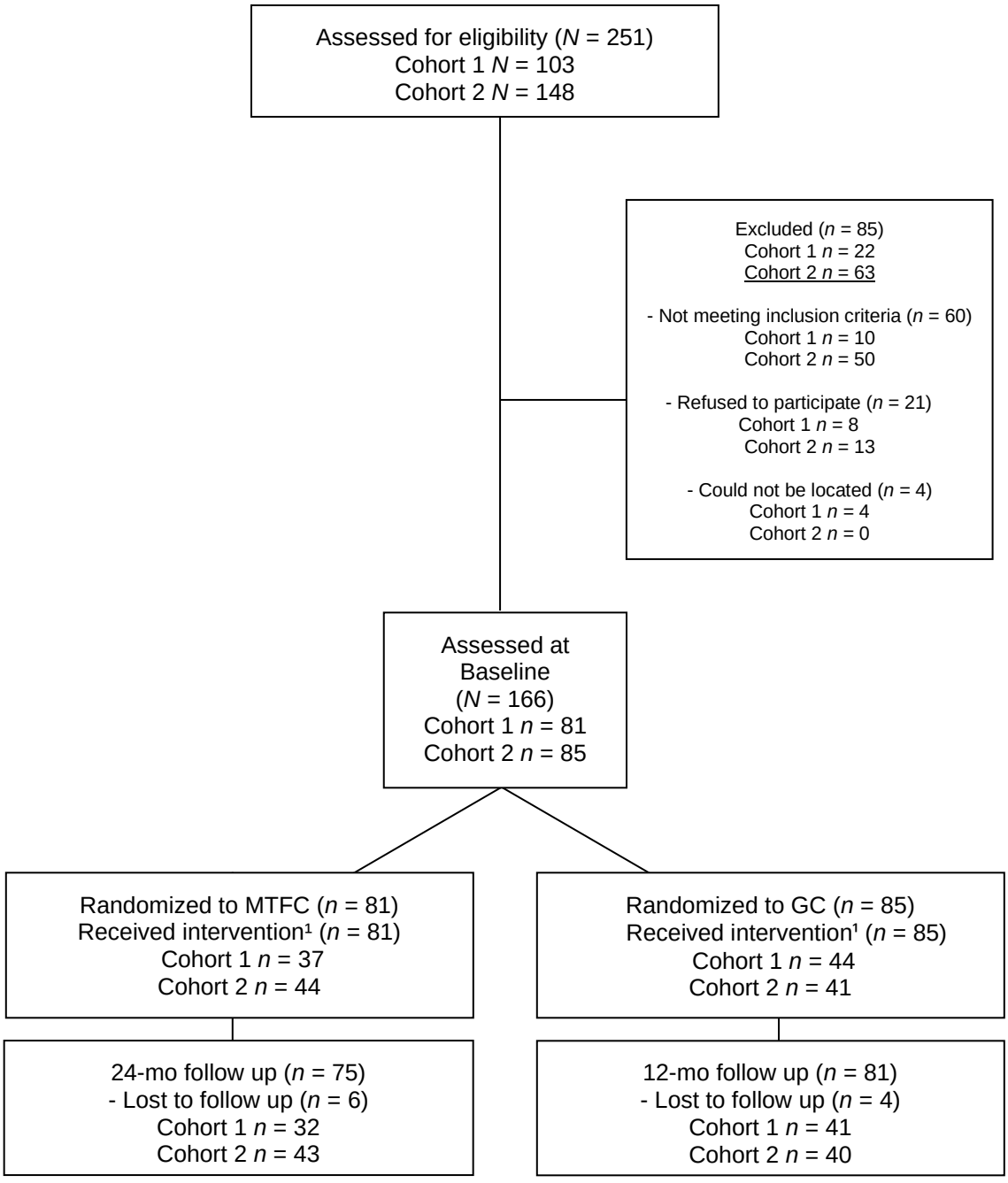
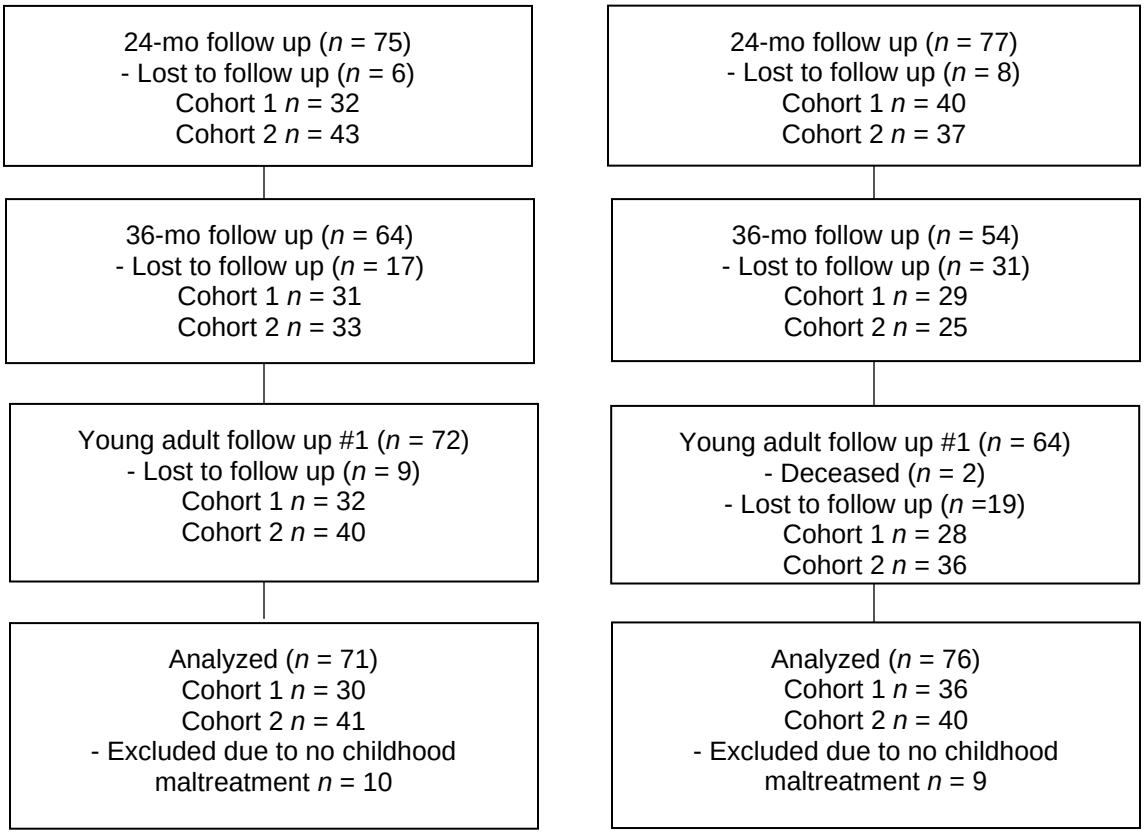


Figure S1, continued



APPENDIX C

BASELINE EQUIVALENCE FOR INTERVENTION GROUPS

Table S2

Comparison Across Groups on Baseline Characteristics (n = 147)

	Treatment as Usual: Group Care (*n* = 76)	Treatment Foster Care Oregon (*n* = 71)
Baseline Characteristics		
Ethnicity		
Caucasian	61.8%	70.4%
Black	2.7%	1.4%
Native American	0%	1.4%
Hispanic	14.5%	9.9%
Asian	1.3%	0%
Mixed race	19.7%	16.9%
Age at baseline	15.3	15.3
Single parent family currently	63.2%	60.6%
Documented physical abuse in family	38.2%	32.4%
Documented sexual abuse of girl	61.8%	71.8%
Girl chronic truancy	78.9%	78.9%
Family income less than $10,000	46.1%	49.3%
At least 1 parent convicted of a crime	78%	80%
Average # of prior placements	2.2	2.2
Deviant peer affiliation (1-5 scale)	2.9	3.0
Alcohol use (0-6 scale)	3.2	2.8
Marijuana use (0 to 6 scale)	3.2	3.0
Other illicit drug use (0 to 6 scale)	2.6	2.4
Average # of lifetime arrests	12.1	12.7

Note. X^2 test of significance and *t*-tests were used to compare randomization group differences.

APPENDIX D

ASSESSMENT SCHEDULE AND MEASURES USED

Table S3

Assessment Schedule and Measures Used

Variables	Baseline	6-m	12-m	18-m	24-m	30-m	36-m	84 – 114 m	End of Study
Childhood Maltreatment: Caseworker Report	■								
Demographics	■								
Adverse Childhood Experiences	■								
KidVid Parenting Task								■	
POQ								■	
Self-Reported Child Welfare Maltreatment Continuity[a]								■	
Official Child Welfare Records									■

Note. Shading indicates when data were collected. *POQ* = Parent Opinion Questionnaire. *m* = months post-baseline.

[a] Participants self-reported contact with child welfare at each of six waves between 84-114 months post-baseline.

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