Childhood Abuse History among Adolescent Mothers and Their Children's Adjustment in Elementary School: Examining Indirect Effects

by

Alexis Dawson

B.A., University of Washington, 2016

Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts

in the
Department of Psychology
Faculty of Arts and Social Sciences

SIMON FRASER UNIVERSITY

Fall 2021

Declaration of Committee

Name:	**Alexis Dawson**
Degree:	**Master of Arts (Psychology)**
Title:	**Childhood Abuse History among Adolescent Mothers and Their Children's Adjustment in Elementary School: Examining Indirect Effects**
Committee:	**Chair: Gordon Rose** Senior Lecturer, Psychology **Robert McMahon** Supervisor Professor, Psychology **Marlene Moretti** Committee Member Professor, Psychology **Natalie Goulter** Committee Member University Research Associate, Psychology Monica Oxford Examiner Professor, Family and Child Nursing University of Washington

Ethics Statement

The author, whose name appears on the title page of this work, has obtained, for the research described in this work, either:

a. human research ethics approval from the Simon Fraser University Office of Research Ethics

or

b. advance approval of the animal care protocol from the University Animal Care Committee of Simon Fraser University

or has conducted the research

c. as a co-investigator, collaborator, or research assistant in a research project approved in advance.

A copy of the approval letter has been filed with the Theses Office of the University Library at the time of submission of this thesis or project.

The original application for approval and letter of approval are filed with the relevant offices. Inquiries may be directed to those authorities.

Simon Fraser University Library
Burnaby, British Columbia, Canada

Update Spring 2016

Abstract

Existing research is limited regarding intergenerational effects of adolescent mothers' abuse histories on their children and the pathways by which transmission of risk occurs. The current study examined whether a history of childhood abuse in adolescent mothers is related to offspring adjustment in elementary school. The investigation included a community sample of 115 adolescent mother-child dyads recruited to be part of a longitudinal evaluation of parenting. Mothers reported their abuse history; attachment security was measured using the Strange Situation; child externalizing behaviour was reported by mothers when the children were age 4.5; child adjustment was reported by teachers; academic achievement was assessed using standardized assessments when the children were in grade 3. Path analyses were conducted to: (a) evaluate the direct effects between maternal history of abuse and child adjustment in elementary school; and (b) evaluate the indirect effects of attachment security and child preschool externalizing behaviour on child adjustment. Maternal childhood abuse predicted child internalizing problems and social competence in Grade 3. Mother-infant attachment mediated the relationship between maternal childhood abuse and child externalizing problems as well as social competence. Implications for interventions supporting parents with trauma histories and their children are highlighted.

Keywords: trauma; parenting; attachment; child behaviour; developmental psychopathology; child adjustment

Acknowledgements

I would like to thank my senior supervisor, Dr. Robert McMahon, for your ongoing support and guidance throughout this process. You have been an amazing mentor and role model. I would also like to thank Drs. Marlene Moretti and Natalie Goulter for your valuable input and mentorship. Lastly, I could have not done this without the love and support of my incredible family. You truly inspire me each and every day!

Table of Contents

Declaration of Committee ii
Ethics Statement iii
Abstract iv
Acknowledgements v
Table of Contents vi
List of Tables viii
List of Figures ix

Chapter 1. Introduction 1
1.1. Effects of Maternal Childhood Maltreatment 2
1.1.1. Maternal Psychopathology 2
1.1.2. Parenting and Parent-Child Interaction 2
1.1.3. Intergenerational Effects 3
1.2. Adolescent Mothers 5
1.2.1. Experience of Adolescent Mothers 6
1.2.2. Children of Adolescent Mothers 6
1.2.3. Maternal Childhood Maltreatment among Adolescent Mothers 7
1.2.4. Effects of Maternal Childhood Maltreatment among Adolescent Mothers 8
1.3. Attachment 9
1.3.1. Attachment Theory 9
1.3.2. Secure Mother-Infant Attachment and Child Adjustment 10
1.3.3. Maternal Childhood Maltreatment and Attachment 11
1.3.4. Adolescent Mothers and Mother-Infant Attachment 11
1.4. Adjustment in Elementary School 12
1.4.1. Defining Elementary School Adjustment 12
1.4.2. Outcomes of Maladjustment in Elementary School. 13
1.5. Justification for the Current Study 13
1.6. Purpose of the Current Study 14

Chapter 2. Methodology 16
2.1. Participants 16
2.2. Procedures 16
2.3. Measures 16
2.3.1. Child and Family Demographics/Covariates 16
2.3.2. Maternal Abuse History 17
2.3.3. Mother-Infant Attachment 17
2.3.4. Preschool Externalizing Behaviour 18
2.3.5. Child Psychopathology: Internalizing and Externalizing Behaviour 18
2.3.6. Child Social Competence 19
2.3.7. Child Academic Achievement 19

2.4. Analytic Plan 19
2.4.1. Model 1. Direct Effects of Maternal Child Abuse History and Child Outcomes 20
2.4.2. Model 2. Indirect Effect of Mother-Infant Secure Attachment (1 year) 20
2.4.3. Model 3. Indirect Effect of Child Externalizing Behaviour (4.5 years) 21
2.4.4. Model 4. Indirect Effect of Mother-Infant Secure Attachment (1 year) and Child Externalizing Behaviour (4.5 years) 21

Chapter 3. Results 22
3.1. Descriptive statistics 22
3.2. Primary Analyses 23
3.2.1. Model 1: Direct Effects 23
3.2.2. Model 2: Indirect Effect of Mother-infant Attachment 24
3.2.3. Model 3: Indirect Effect of Child Externalizing Problems at age 4.5 24
3.2.4. Model 4: Sequential Mediation Evaluating the Indirect Effects of Attachment and Child Externalizing Behaviour at age 4.5 25

Chapter 4. Discussion 26
4.1. Maternal Childhood Abuse and Child Grade 3 Outcomes 27
4.2. Indirect Effects of Attachment Security 28
4.3. Indirect Effect of Child Externalizing Behaviour 30
4.4. Indirect Effect of Mother-Infant Attachment and Child Externalizing Behaviour 31
4.5. Strengths and Limitations 31
4.6. Clinical Implications 32
4.7. Future Directions 33

Chapter 5. Conclusion 34

References 35

Appendix. Tables and Figures 50

List of Tables

Table 1. Descriptive Statistics and Correlations among Study Variables 50

Table 2 (Model 1, Direct Effects) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History and Covariates Predicting Internalizing Problems, Externalizing Problems, Social Competence and Academic Achievement in Grade 3 51

Table 3. (Model 2) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History, Attachment and Covariates Predicting Internalizing Problems, Externalizing Problems, Social Competence and Academic Achievement in Grade 3; Maternal Childhood Abuse History and Covariates Predicting Attachment 52

Table 4. (Model 2) Bootstrap Tests of Mother-Infant Attachment as a Mediator between Maternal Childhood Abuse and Grade 3 Outcomes 53

Table 5. (Model 3) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History, Child Externalizing Problems at Age 4.5 and Covariates Predicting Grade 3 Outcomes; Maternal Childhood Abuse History and Covariates Predicting Externalizing Problems at Age 4.5 54

Table 6. (Model 3) Bootstrap Tests of Externalizing Problems at Age 4.5 as a Mediator between Maternal Childhood Abuse and Grade 3 Outcomes .. 55

Table 7. (Model 4) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History, Mother-Infant Attachment, Child Externalizing Problems at Age 4.5 and Covariates Predicting Grade 3 Outcomes 56

Table 8. (Model 4) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History and Covariates Predicting Mother-Infant Attachment and Child Externalizing Problems at Age 4.5 57

Table 9. (Model 4) Bootstrap Tests of Mother-Infant Attachment and Externalizing Problems at age 4.5 as Mediators between Maternal Childhood Abuse and Grade 3 Outcomes 58

List of Figures

Figure 1. Path Model 1: Maternal childhood abuse history predicting internalizing problems, externalizing problems, social competence, and academic achievement. Covariates included in analyses but omitted from figure. . 59

Figure 2. Path Model 2: Maternal childhood abuse history predicting internalizing problems, externalizing problems, social competence, and academic achievement, with mother-infant attachment as mediator. Covariates included in analyses but omitted from figure. 60

Figure 3. Path Model 3: Maternal childhood abuse history predicting internalizing problems, externalizing problems, social competence, and academic achievement; with child externalizing problems at age 4.5 as a mediator. Covariates included in analyses but omitted from figure. 61

Figure 4. Path 4 Model: Maternal childhood abuse history predicting internalizing problems, externalizing problems, social competence, and academic achievement, with mother-infant attachment and child externalizing problems at 4.5 as sequential mediators. Covariates included in analyses but omitted from figure. 62

Chapter 1.

Introduction

Childhood maltreatment is a potent form of early life trauma constituting a significant public health concern. Defined as abuse and/or neglect of a child under the age of 18 years, childhood maltreatment can result in multiple dire consequences for victims such as challenges in interpersonal functioning (Kim et al., 2009), neurobiological deficits (Teicher et al., 2003), and heightened psychopathology (Kim & Cichetti, 2010). Abuse and neglect during childhood are salient risk factors for a number of adverse mental health outcomes across the life-course, including posttraumatic stress disorder (PTSD), internalizing problems (Dierkhising et al., 2019), emotion dysregulation (Gruhn & Compas, 2020), and antisocial behaviour (Busso et al., 2017). According to the Administration for Children and Families, at least 678,000 children in the United States (U.S.) were maltreated in 2018 (United States Department of Health and Human Services [USDHHS], 2020). Of those children, 60.8% of the victims were neglected, 10.7% were physically abused only, 7% were sexually abused only, and 5.9% of victims experienced other types of maltreatment (2.3% psychological maltreatment, 0.8% medical neglect, 0.1% sexual trafficking, 2.7% other) (USDHHS, 2020). The Administration for Children and Families (ACF) estimates that 15.5% of maltreated children experience multi-type maltreatment, with the most frequent co-occurrence being physical abuse and neglect (USDHHS, 2020). Unfortunately, these statistics likely underestimate maltreatment pervasiveness, given that many cases of neglect and abuse are never reported, investigated, or founded due to resistance towards disclosure or lack of evidence (National Research Council, 2014). When comparing rates based on gender, girls experience slightly higher childhood maltreatment rates than boys (USDHHS, 2020). U.S. community samples of pregnant and postpartum women have cited childhood maltreatment rates ranging from 11 to 35% (Gilbert, 2015). As such, there is a need to evaluate mothers' experience of abuse histories, given the prevalence and long-term consequences of childhood maltreatment.

1.1. Effects of Maternal Childhood Maltreatment

1.1.1. Maternal Psychopathology

Although women with histories of childhood maltreatment are found to be at risk for a myriad of deleterious outcomes such as substance abuse disorders (Meng & D'Arcy, 2016), eating disorders (Kendler et al., 2000), and depression (Rohde et al., 2008), risk for psychopathology may be heightened upon entering motherhood. Meta-analytic findings by Choi and Sikkema (2016) showed that childhood maltreatment predicted perinatal mood and anxiety disorders above and beyond other psychiatric, sociodemographic, and psychosocial factors. Childhood physical abuse, in particular, predicted maternal postpartum depression, even after controlling for socioeconomic status and a history of depression (Dennis & Vigod, 2013). Various studies have also identified childhood sexual abuse as a salient risk factor for PTSD in the transition to motherhood (Leve-Wiesel, 2009, 2010). Among mothers with a history of childhood maltreatment, maternal psychopathology increases risk for a host of parenting and parent-child interaction difficulties. Specifically, maternal postpartum depression is a mechanism by which maternal childhood physical abuse confers risk for less responsive parenting behaviour (Madigan et al., 2015). Maternal depression has also been shown to mediate the relationship between maternal childhood sexual abuse and parenting outcomes of punitive discipline and negative parenting perceptions (Schuetze & Eiden, 2005). Although maternal psychopathology has been established as a mediator in the relation between maternal abuse histories and parenting behaviours, less research has examined the relation between maternal childhood maltreatment and various aspects of parent-child interaction.

1.1.2. Parenting and Parent-Child Interaction

Given 92% of maltreatment is perpetrated by one or both parents (USDHHS, ACF, 2020), maternal childhood maltreatment histories may in turn challenge a mother's perspective of what it means to assume a parental role. In general, maternal history of childhood abuse among adult mothers has been associated with subsequent maternal maladaptive parenting behaviour, especially within the first 2 years of the child's life

(Vaillaincourt et al., 2017). For instance, Lyons-Ruth and Block (1996) found that a history of physical abuse was associated with increased maternal hostile-intrusive behaviour towards the infant, whereas a history of sexual abuse was specifically associated with decreased maternal involvement and more restricted maternal affect. Mothers with childhood sexual trauma are at increased risk of displaying poorer functioning across other parenting domains, including harsh intrusiveness (Zvara et al., 2015), disciplinary practices (DiLillo et al., 2003), and permissiveness (Ruscio, 2001). One of the paths by which maternal exposure to childhood maltreatment may impact offspring adjustment is through mechanisms of problematic parent-child interaction. This is exemplified by Fuchs and colleagues' (2015) longitudinal study demonstrating that mothers with histories of sexual and physical abuse were less emotionally available to their infants compared to mothers with no abuse histories. A history of childhood abuse may impair a mother's ability to form secure emotional connections with her infant (Bowlby, 1982; Main & Solomon, 1990; Pajulo et al., 2012), and increase risk for insecure mother-infant attachment patterns (Berthelot et al., 2015).

1.1.3. Intergenerational Effects

Maternal Childhood Maltreatment and Offspring Psychopathology. Several studies of maternal childhood abuse and neglect have recently examined how maternal childhood maltreatment may confer intergenerational risk for offspring behaviour problems and psychopathology. An association has been identified between maternal history of childhood maltreatment and mental health problems in children, including internalizing and externalizing problems (Alto et al., 2021; Rijlaarsdam et al., 2014) as well as total behaviour problems (Bodeker et al., 2019; Bosquet et al., 2018). Maternal history of childhood *abuse* specifically is associated with offspring externalizing behaviour (Myhre et al., 2014), self-regulation difficulties (Delker et al., 2014), and disruptive behaviour disorders (Miranda et al., 2011). With regard to specific types of childhood abuse, a reported history of childhood *sexual abuse* among mothers has been associated with child conduct problems (Zvara et al., 2017), suicide attempts, PTSD, earlier onset of depression, and impulsivity (Brodksey et al., 2008). Maternal childhood *physical abuse* has been shown to be related to total behaviour problems (Thompson, 2007) and aggression in offspring (Brodksy et al., 2008). It is important to note that maternal exposure to multiple forms of childhood victimization has significant

implications in terms of child maladjustment. Collishaw (2007) identified a dose–response relationship demonstrating that the occurrence of multiple types of maternal abuse was associated with more severe offspring problems than maternal exposure to just one type of abuse alone.

Child Adjustment. Most studies evaluating the association between maternal childhood maltreatment and offspring mental health problems evaluated child psychopathology using parent report of broadband internalizing and externalizing symptom classifications (Alto et al., 2021; Cooke et al., 2019; Myhre et al., 2014; Pereira et al., 2018; Rijlaarsdam et a., 2014) or an indicator of total behaviour problems (Bödeker et al., 2018; Bosquet et al., 2018; Roberts et al., 2004). A much smaller body of research has evaluated how maternal childhood abuse histories may impact offspring psychopathology and other forms of adjustment within the school setting (e.g., behaviour, social competence). Of the research that has been conducted, findings are limited and mixed. A recent study by Zvara and Burchinal (2021) found that a maternal history of childhood sexual abuse was related to higher levels of teacher reports of behaviour problems (peer problems, conduct problems, aggressive/oppositional behaviour) and poorer academic skills in the classroom setting. Similarly, a study of children enrolled in a Head Start program identified an association between maternal childhood abuse and teacher-reported child social competence and conduct problems in school (Webster-Stratton & Hammond, 1998).

These studies illustrate the need for research to evaluate *how* maternal childhood abuse operates as a risk factor for elementary school adjustment. Doi et al. (2020) recently demonstrated that a higher number of maternal adverse childhood experiences (ACES) was associated with lower self-rated academic performance in adolescent offspring. In particular, adolescents born to mothers who experienced parental loss were more likely to report lower self-rated academic performance. In contrast, adolescent children of mothers who experienced childhood maltreatment showed no such association. Limitations of this study are that the researchers specifically chose not to incorporate maternal childhood sexual abuse history in their indicator of maltreatment, and they only examined self-report measures of academic performance.

Morrel et al. (2003) and Koverola et al. (2005) examined data from the Longitudinal Studies of Child Abuse and Neglect to evaluate the relation between maternal abuse and child adjustment (cognitive and academic functioning, teacher report of adaptive functioning, teacher report of internalizing and externalizing behaviour, social competence). Koverola and colleagues reported that a maternal history of victimization was not associated with teacher reports of internalizing, externalizing, or adaptive behaviour, as measured by the Teacher's Report Form (Achenbach, 1991). Similarly, Morrel and colleagues found that maternal victimization history was not related to teachers' ratings of children's behaviour or standardized assessments of cognitive development. However, both studies combined maternal childhood abuse with abuse during adulthood, thereby failing to distinguish the specific intergenerational effects of maternal *childhood* victimization on child adjustment. Given the limited research to date and the presence of mixed findings, further examination of the relationship between maternal childhood abuse and child functioning within critical contexts such as the school setting is warranted.

1.2. Adolescent Mothers

Given the high rates of maternal childhood maltreatment among adolescent mothers, it is critical to examine the impact of such intergenerational trauma on adolescent mothers and their families. Rates of adolescent pregnancy and motherhood in the U.S. have decreased substantially since their peak in the early 1990's (Centers for Disease Control & Prevention, 2018). Despite such decline, the percentage of adolescent pregnancies in the U.S. is still the highest among industrialized nations (Sedgh et al., 2015) and continues to pose considerable challenges. The rate of adolescent pregnancy in the U.S. is 17.4 births per 1,000 females ages 15-19, which is 2 to 4 times the rate of adolescent pregnancy in other industrialized nations such as Canada and the United Kingdom (Sedgh et al., 2015). With respect to adolescents involved in child welfare services, girls in foster care are more likely to become pregnant as an adolescent compared to their peers (Dworsky & Courtney, 2005). Research suggests that abused or neglected children are more likely to engage in sexual risk-taking behaviour as they reach adolescence, including earlier initiation of sexual activity and a higher number of sexual partners. Although recent research has suggested that both child sexual and physical abuse confer unique risk for sexual risk-taking behaviour,

adolescent pregnancy, and becoming a young mother (Madigan et al., 2014; Noll et al., 2019), sexual abuse remains the strongest predictor of adolescent motherhood (Noll et al., 2019).

1.2.1. Experience of Adolescent Mothers

Adolescent mothers face a myriad of challenges. While many adolescent mothers experience socioeconomic disadvantage and academic difficulties that predate their pregnancy (Penman-Aguilar et al., 2013), they often face additional economic hardships, limited occupational opportunities, and low educational attainment after giving birth (Boden & Fergusson, 2008). Pregnancy and adolescent parenting are significant contributors to high school dropout among females; approximately 50% of adolescent mothers graduate from high school (Perper et al., 2010) versus 85% of non-parenting adolescents (McFarland et al., 2020). Simultaneously adapting to the new role of parenting while navigating the developmental tasks and transitions of adolescence entails a range of complex challenges for an adolescent mother. Compared to older mothers, adolescent mothers display more punitive and insensitive behaviour towards their children (Jaffee, 2001). Concerning mental health, the rate of postpartum depression in adolescent mothers is 61% versus 38% in the general adult mother population (Clare & Yeh, 2012; Yozwiak, 2010) and approximately 30% of adolescent mothers report clinically significant levels of parenting stress (Larson, 2004). In addition, many adolescent mothers often are reared, and continue to live, in challenging social contexts that involve exposure to multiple forms of trauma and maltreatment. An adolescent mother's potential for perpetrating child abuse is significantly higher than that of adult mothers (Stevens-Simmons et al., 2001), especially when having been a victim of childhood abuse themselves (DePaul & Domenech, 2000).

1.2.2. Children of Adolescent Mothers

Children of adolescent mothers are at increased risk for challenges in behavioural, cognitive, and socioemotional domains. Such risk appears to stem from the consequences of adolescent mothers' socioeconomic background prior to giving birth and having a child at an early age. Children of adolescent mothers perform more poorly on cognitive tests and academic achievement measures than do children of older

mothers. Oral language skills tend to be less developed, especially in the context of multiple risk factors (Oxford & Spieker, 2006). Children of adolescent mothers are also at elevated risk to exhibit oppositional behaviour and conduct problems at various stages of child and adolescent development (Jenkins et al., 2006; Levine et al., 2001; Wakschlag et al., 2000).

Such disparities in the well-being of children born to adolescent and adult mothers continue to widen over the lifespan. Offspring of adolescent mothers are at heightened risk for a variety of other adverse long-term outcomes including early school dropout (Jaffee et al., 2001), increased health challenges (Jutte et al., 2010), and becoming an adolescent parent themselves (Hoffman & Maynard 2008). However, it is also important to acknowledge the variability in developmental trajectories and associated protective factors among children born to adolescent mothers. A study by Rhule et al. (2006) identified a number of significant protective factors in relation to positive child adjustment, including lower levels of adolescent mother depressive symptoms and higher levels of positive parenting. Such information has implications for supporting child well-being in the context of adolescent mother-child dyads.

1.2.3. Maternal Childhood Maltreatment among Adolescent Mothers

Pregnant and parenting adolescents experience exceptionally high rates of childhood abuse, compared to mothers in the general population. It is estimated that between 43 to 66% percent of adolescent mothers report a history of childhood abuse versus 11 to 33% in adult mother community samples (Gilbert, 2015; Noll et al., 2009; Putnam et al., 2013). More specifically, some studies suggest that 45% of adolescent mothers experience childhood sexual abuse (Noll et al., 2009) and various studies have documented rates of physical abuse ranging from 11.3 % (Crugnola et al., 2019) to 45% (Bartlett & Easterbrooks, 2012; Stargel & Easterbrooks, 2020). Bartlett et al. (2017) documented multi-type maltreatment to be 55% among adolescent mothers enrolled in a home-visiting program for first-time mothers.

1.2.4. Effects of Maternal Childhood Maltreatment among Adolescent Mothers

Maternal Psychopathology. The disproportionately high rate of childhood abuse among adolescent mothers is associated with adverse outcomes that continue to cascade throughout the lifespan (Bailey et al. 2007; Bartlett & Easterbrooks, 2012; Madigan et al., 2014). In adolescent motherhood specifically, both physical and sexual abuse predict postpartum depression and are documented risk factors for complex trauma symptoms as well as unresolved attachment status (Bailey et al., 2007; Gilson, 2008).

Parenting and Parent-Child Behaviour*.* The high prevalence of childhood maltreatment among adolescent mothers warrants attention as such experiences confer substantial risk for disrupted caregiving. Adolescent mothers who have been abused tend to spend more time in negative mutual emotion regulation when interacting with offspring (Crugnola et al., 2019). Driscoll and Easterbrooks (2007) found that adolescent mothers with a history of childhood physical abuse in particular adopt intrusive styles of mother-child interaction more frequently than do non-abused adolescent mothers. Adolescent mothers with unresolved attachment and histories of abuse (operationalized as physical, sexual, and/or emotional) are at risk of displaying frightened or disoriented behaviour when interacting with their children (Madigan et al., 2006). Of particular relevance is research conducted on the current sample demonstrating that adolescent mothers with a history of experiencing *both* sexual and physical abuse (multi-type abuse) are at heightened risk of displaying hostility towards their children (Pasalich et al., 2016). Childhood maltreatment history among adolescent mothers is shown to be a significant risk for the perpetration of abuse and neglect of their own offspring (Putnam-Horstein et al., 2015).

Child Outcomes. Despite the high prevalence of maternal childhood abuse among adolescent mothers, very few studies to date have examined the impact of maternal childhood abuse on offspring adjustment among adolescent mother populations. Pasalich and colleagues (2016) identified a relationship between maternal childhood abuse (sexual and physical) and maternal report of offspring externalizing behaviour, through mediating mechanisms of hostile parenting and insecure mother-infant attachment. Yoon et al. (2019) also identified a pathway between adolescent

mothers' childhood ACES and maternal report of offspring externalizing behaviour at age 9, by mechanisms of maternal discipline and grandparent involvement. It is important to note that other forms of offspring adjustment (e.g., internalizing behaviour, social competence) and within specific developmental contexts (e.g. school), have yet to be examined in this particular population of adolescent mother-child dyads. As the elementary school period is a critical period for affective, behavioural, and cognitive development, it is imperative to evaluate the relation between maternal abuse history and child maladaptive outcomes over and above externalizing behaviour. Given the high proportion of adolescent mothers that experience abuse during childhood, the intergenerational effects on various forms of offspring adjustment and the pathways by which this occurs warrant further investigation.

1.3. Attachment

1.3.1. Attachment Theory

Given the central role of attachment in child well-being, it is important to evaluate mother-infant attachment as a potential pathway by which maternal childhood abuse may be related to child adjustment. Deficits in mother-infant interaction are one pathway by which the effects of maternal childhood abuse may confer risk for poor adjustment among maltreated mothers' offspring. Early research by Bowlby (1969/82) and Ainsworth (1978) provides the foundation for understanding the development and significance of mother-infant attachment. Attachment delineates the emotional bond between a child and the primary caregiver, which is imperative during circumstances involving fear and distress. When infants develop a secure attachment to caregivers, anxiety and fear decrease and the child is able to explore their surroundings with increased confidence (Bowlby, 1969/82). Children are predisposed to become attached to primary caregivers typically during the first year of life (Bowlby, 1969/82). The primary caregiver is considered a safe haven and enables the infant or child to feel safe and supported, thereby promoting exploratory behaviour and emotion regulation. According to Bowlby (1988), early attachment patterns guide the formation of internal working models. Such mental representations of the caregiver-child relationship are thought to guide thoughts, feelings, and behaviour during times of distress, and over time tend to

generalize to different relationships and domains within a child's environment (Bretherton & Munholland, 2008).

Ainsworth's (1978) research on mother-infant attachment as assessed with the Strange Situation procedure was seminal in further refining Bowlby's attachment theory by classifying variation in mother-infant attachment patterns. The Strange Situation is a 25-min procedure that exposes infants to a series of structured separations and reunions with their mothers. Based on these activities, Ainsworth described three different attachment patterns among infants: attachment security, attachment avoidance, and attachment ambivalence or resistance. Infants who display attachment security use their mothers as a secure base from which to explore their surroundings and are comforted upon reunion with their mother. In infants with attachment insecurity, the ability to self-regulate and cope with stress decreases, thereby increasing risk for maladaptive behaviour on both the part of mother and child. Infants with attachment avoidance rarely cry in separation from the caregiver and upon reunion avoid the mother, potentially ignoring the caregiver altogether. Infants with attachment ambivalence tend to show signs of anxiety in the caregiver's presence, are intensely distressed by separation, and upon reunion are ambivalent with the mother (seeking contact but also prone to resisting contact or interaction). Main and Solomon (1990) additionally identified a fourth category: disorganized attachment. In this classification, the infant responds to the caregiver in an unpredictable and inconsistent manner and the mother is viewed both as the source of and solution to the infant's distress.

1.3.2. Secure Mother-Infant Attachment and Child Adjustment

Studies of attachment security have repeatedly documented the seminal role that the mother-infant relationships plays in various domains of positive child adjustment and development (Erickson et al., 1985; Schore, 2001). Research emphasizes the contribution of attachment security towards a child's ability to regulate emotions (Volling, 2001), manage behaviour (Fearon et al., 2010), be socially competent (Groh et al., 2014), and develop cognitive abilities (Ding et al., 2014). Various meta-analyses have supported the significant association between early attachment and internalizing/externalizing symptomology in children (Fearon et al., 2010; Madigan et al., 2013). In particular, Vando et al. (2008) found mother-infant insecure attachment to be

directly related to externalizing behaviour in children of adolescent mothers at age 5-6 years old. Additionally, a study by Munson and colleagues (2001) with the same sample found that both avoidant and disorganized attachment styles in infants born to adolescent mothers were associated with higher levels of externalizing problems at 9 years of age. Recent findings, though limited, suggest a relationship between early attachment patterns and attention-deficit/hyperactivity disorder (ADHD) during childhood (Storebo et al., 2016). With regard to social competence, early attachment patterns are associated with a child's subsequent ability to appropriately socialize with others in childhood (Groh et al., 2014). Additionally, numerous longitudinal studies have evaluated an association between mother-infant attachment security in relation to academic skills and adaptation in the classroom (Aviezer et al., 2002; Bohlin et al., 2000; West et al., 2013). Attachment security is associated with better academic performance (Granot & Mayless, 2001) as well as enhanced cognitive skills and executive functions (Bernier et al., 2012). Attachment security may therefore serve as a proximal protective factor, buffering the effects of distal risk related to maternal childhood abuse.

1.3.3. Maternal Childhood Maltreatment and Attachment

Several studies have demonstrated the association between maternal histories of abuse and patterns of offspring attachment insecurity. Kwako and colleagues (2010) reported that children of childhood sexual trauma survivors were more likely to exhibit attachment insecurity than children of non-abused mothers. Furthermore, Berthelot et al. (2015) found that 83% of infants of abused and neglected mothers were classified as insecure, and a significant percentage (44%) displayed disorganized attachment.

1.3.4. Adolescent Mothers and Mother-Infant Attachment

Generally, children of adolescent mothers have higher rates of attachment insecurity in comparison to children of adult mothers. In a study by Lounds et al. (2005), consisting of 78 adolescent mother-child dyads, only 31% of the children exhibited attachment security at age 12 months. Similarly, Spieker and Bensley (1994) identified attachment insecurity in a sample of adolescent mothers to be just over 50%. The rate of infant attachment insecurity in the general population is approximately 35% (Prior & Glaser, 2006).

Childhood Maltreatment and Attachment in Adolescent Mothers. Pasalich and colleagues (2016) reported that, compared to adolescent mothers with no abuse history, adolescent mothers with a history of sexual and physical abuse were more likely to have an infant with attachment insecurity. Additionally, Milan et al. (2004) demonstrated a positive association between maternal childhood physical abuse history and heightened difficulties in the mother–infant relationship in an adolescent mother sample.

1.4. Adjustment in Elementary School

There is a substantial research base outlining the relationship between other maternal risk factors (e.g., a history of maternal depression) and child school adjustment (Wright et al., 2000). Evaluating child adjustment within contexts outside the family (e.g., school) may lead to a more in-depth understanding of a child's developmental risk and severity of negative outcomes in relation to maternal childhood trauma. It is notable that few studies with adult mothers have examined the relationship between maternal psychosocial risk factors such as childhood abuse histories and offspring adjustment in contexts other than the home.

1.4.1. Defining Elementary School Adjustment

Successfully adapting to the school environment is a critical task during childhood and adolescence. In the past, school *adjustment* was traditionally defined as academic achievement. However, more recently the construct has expanded to incorporate emotion regulation, appropriate behaviour, relationships with peers, and competency for positive interactions in the classroom (Buyse et al., 2009; Wentzel, 2003). School adjustment broadly is considered to include emotional, behavioural, social, and academic domains that impact a student's ability to successfully adapt to the classroom environment. For the purposes of the current study, adjustment in elementary school will include the following domains: academic performance, social competence, and psychopathology.

1.4.2. Outcomes of Maladjustment in Elementary School

School *maladjustment i*s manifested through behaviours that tend to prevent the child from properly adapting to their environment. Such problematic behaviours may be manifested as aggression, oppositional behaviour, withdrawal, anxiety, poor academic performance, or a limited ability to maintain positive relationships with teachers and peers. Early-starting child behaviour problems and early academic problems are two of the strongest predictors of conduct disorder in adolescence (e.g., Dodge et al., 2008). Early school maladjustment also predicts ADHD, other externalizing symptomology, and tobacco use in high school (Racz et al., 2013). Maladjustment in elementary school has been linked to later violent experiences at school (Card & Hodges, 2008). Furthermore, internalizing symptoms in elementary school, as reported by teachers, are associated with poor academic achievement and school adaptation (Pederson et al., 2019). A reciprocal relationship has also been identified, as other forms of school maladjustment (e.g., academic achievement, poor relations with peers) can be both proximal and distal risk factors for depression (Bornstein et al., 2010; Cole et al., 1996). For instance, Herman and colleagues (2008) demonstrated that low social competence in first grade was associated with depression in middle childhood. Cole (1991) suggested that failures in multiple domains of school adjustment can have cumulative detrimental effects on child depression. Cascade models of psychopathology also demonstrate that child and adolescent academic failure is implicated in the presence of depression later on in emerging adulthood (McCarty et al., 2008). In summary, it is essential to examine the understudied relationship between certain maternal psychosocial risk factors such as childhood abuse and offspring adjustment during elementary school, a critical period for affective, behavioural, and cognitive development.

1.5. Justification for the Current Study

Despite the high rate of childhood abuse histories among adolescent mothers, little evidence is available surrounding the intergenerational effects of maternal childhood abuse on child adjustment. The intergenerational effects of maternal childhood abuse are critical to evaluate, given that adolescent mothers report much higher rates of childhood abuse; are more likely to demonstrate deficits in parenting; and have children that are more likely to experience behavioural, socioemotional, and academic

challenges. To date, the only documented child outcomes of maternal childhood abuse among adolescent mothers are externalizing behaviour difficulties, as reported by maternal caregivers (Pasalich et al., 2016; Yoon et al., 2019). Expanding the evidence base surrounding *if* and *how* maternal childhood abuse histories may be related to various forms of offspring psychopathology and adjustment (among adolescent mother-child dyads) is crucial to informing efforts regarding how to appropriately intervene and disrupt cycles of violence within high-risk populations. Recent research by Zvara and Burchinal (2021) found a relationship between maternal childhood sexual trauma and children's socioemotional adjustment and academic skills within a classroom setting, including teacher reports of conduct problems and social competence, and standardized assessments of expressive language. However, no studies of adolescent mothers have examined the subsequent impact of maternal childhood abuse upon similar critical child developmental contexts, such as the school setting, or child outcomes beyond that of externalizing behaviour. As the mother-child relationship is known to have a significant impact on a child's behaviour and development across multiple domains, infant attachment may be an important mechanism by which maternal childhood abuse confers risk for child adjustment in elementary school. Furthermore, given the well-documented relationships between maternal childhood abuse and early conduct problems in relation to later child adjustment, early onset conduct problems in preschool may be a key pathway by which maternal childhood abuse confers risk for adjustment challenges.

1.6. Purpose of the Current Study

The current study aimed to address many of the gaps in the existing empirical literature surrounding the intergenerational effects of childhood abuse among adolescent mothers and their children as well as the pathways through which this may occur. The study employed a longitudinal design with a sample of community-based adolescent mother-child dyads who were recruited to be part of a study on early parenting.

The first goal was to evaluate whether there was a *direct* association between maternal childhood abuse histories among adolescent mothers and various child adjustment outcomes in elementary school. It was hypothesized that maternal childhood abuse would be associated with teacher reports of child internalizing symptoms, externalizing symptoms, and social competence, as well as standardized assessments of academic achievement in grade 3 (model 1). As previously mentioned, the only

studies to date that have examined the relationship between maternal childhood abuse and child outcomes among adolescent mothers and their children focused on maternal reports of externalizing behaviour (Pasalich et al., 2016; Yoon et al., 2019). The current study provided a more in-depth understanding of the potential range of intergenerational effects that might be associated with maternal childhood abuse. Furthermore, no studies to date have determined whether effects occur in a school-based context. The second goal was to evaluate whether infant attachment security and early onset externalizing symptoms *mediated* the hypothesized relationship between maternal childhood abuse and various grade 3 outcomes. It was hypothesized that mother-infant attachment security and child early onset externalizing symptoms at age 4.5 years would independently mediate the relationship between maternal childhood abuse and offspring outcomes in grade 3 (models 2 and 3, respectively). Lastly, it was hypothesized that mother-infant attachment security and child externalizing behaviour would *sequentially mediate* the relationship between maternal childhood abuse history and child outcomes in grade 3 (model 4).

Chapter 2.

Methodology

2.1. Participants

Study participants came from a community-based sample of 115 adolescent mother-child dyads from the Early Parenting Project, which was a longitudinal investigation of the adjustment and development of adolescent mothers and their children. Participants were recruited through local high schools, public health clinics, and social service programs for young single mothers. Recruitment of adolescent mothers took place in the Greater Seattle/Puget Sound area when the infants were 12 months old; participating mothers' ages at time of study child's birth ranged from 14.5-19.5 years old.

2.2. Procedures

After initial assessment in infancy (age 12 months), two age cohorts, separated by 1 year, were assessed subsequently at five data collection time-points. Children in the younger cohort were assessed in preschool when they were 3.5 and 4.5 years old, and during the summers following grades 1 through 3. Children in the older cohort were assessed in preschool when they were 4.5 and 5.5 years old, and during the summers following grades 1 through 3. The present study uses maternal retrospective reports; observational data collected at infant age 12 months; maternal report of child preschool psychopathology (age 4.5 years); and teacher-report measures of psychopathology and social competence, as well as standardized assessments of academic achievement, completed when the children were in grade 3.

2.3. Measures

2.3.1. Child and Family Demographics/Covariates

Variables were included as covariates if they had strong theoretical grounding or empirical support for their inclusion. Covariates included child gender (1=girls), child age

at attachment assessment, race (1=white) and welfare status (dichotomous: "*Currently receiving public assistance?").* Demographic information was collected from families at the first research assessment. Additionally, maternal depression was assessed at 12 months postpartum via the Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is a 27-item self-report measure assessing the severity of depression in children and adolescents. Scores on the CDI range from 0-54 and the measure has appropriate psychometric properties.

2.3.2. Maternal Abuse History

Maternal abuse history was assessed during a semi-structured at-home interview 1 year after the study child was born. Mothers reported whether they had ever experienced physical abuse and, if appropriate, the identity of the perpetrator. Mothers were asked about any history of experienced sexual abuse and if applicable, the identity of the perpetrator, the number of occasions the abuse occurred, and how the abuse was terminated. Chronicity of maternal abuse history was recorded for mothers reporting a history of childhood sexual trauma. For the purposes of the present study, maternal childhood abuse history was coded as a continuous variable reflecting whether the mother experienced no abuse (0); a single type of abuse; either physical or sexual abuse only (1); or multi-type maltreatment (i.e., mothers who experienced both sexual and physical abuse) (2). Defining childhood abuse as the *number of subtypes* experienced rather than a dichotomous variable (yes/no) or severity of abuse is considered a valid method of conceptualizing exposure to such events (Cecil et al., 2017). Previous research indicates that retrospective reporting indicating presence versus absence of different types of abuse (e.g., sexual, physical, multi-type maltreatment) provides a more reliable estimate than having survivors attempting to recall the total number of number of incidents or duration of abuse (Henry et al., 1994).

2.3.3. Mother-Infant Attachment

Infant attachment was assessed at 1-year postpartum using the Strange Situation Procedure (Ainsworth et al., 1978). The videotaped assessments included a series of interactions where the mother repeatedly left the room and returned, and the behaviour of the child was observed. The videotaped interactions were double coded by two trained coders and interrater reliability was 82%. The videotaped interactions

between participating mothers and their children were coded as secure, avoidant, ambivalent, disorganized and/or unclassifiable attachment status. The current study evaluates a continuous variable of attachment security as a mediator. This decision was made on the basis of research suggesting that differences in attachment patterns are primarily continuous (Fraley & Spieker, 2003). Utilizing procedures proposed by Bretherton et al. (1990), attachment security scores ranged from 1-5 (5= more security, 1=less security).

2.3.4. Preschool Externalizing Behaviour

Externalizing problems at 4.5 years were assessed via mothers' reports on the Child Behavior Checklist (CBCL; Achenbach, 1991a). The CBCL is a standardized and normed instrument that has demonstrated high reliability (internal consistency = $\alpha > .85$; test-retest reliability = $r > .85$) and validity (Achenach, 1991a). *T*-scores from the Externalizing broadband scale ($M = 50$, $SD = 10$) were used to represent externalizing problems. The Externalizing scale is comprised of items from the aggressive behaviour and delinquency/rule-breaking narrow-band syndrome scales. Individual items are rated on a scale of 0 (not true) to 2 (very true or often true).

2.3.5. Child Psychopathology: Internalizing and Externalizing Behaviour

Child internalizing and externalizing symptomology in grade 3 was assessed using the Teacher's Report Form (TRF; Achenbach, 1991b), a widely used teacher-report measure for assessing child emotional and behavioural health in a school setting. The TRF has high internal consistency ($\alpha > .85$), test-retest reliability ($r > .85$), and validity. The Externalizing scale is comprised of items from the aggressive behaviour and delinquency/rule-breaking narrow-band syndrome scales. The Internalizing scale includes items from the anxious/depressed, somatic complaints and withdrawn narrow-band syndrome scales. The Externalizing and Internalizing broadband *T* scores were used ($M = 50$, $SD = 10$).

2.3.6. Child Social Competence

Child social competence in grade 3 was reported by teachers using the Walker-McConnell Scale of Social Competence and School Adjustment (WM; Walker & McConnell, 1988). Ratings are distributed across three subscales, two of which were used to assess child social competence: Teacher-Preferred Social Behavior, which assesses social behaviours preferred by teachers (e.g., empathy, sensitivity, cooperation, self-control) and Peer-Preferred Social Behavior, which assesses social behaviours highly valued by peers (e.g., compromises when appropriate, plays games skillfully, makes friends easily). Scaled scores (M = 10, SD = 3) on these two subscales were averaged to form an overall social competence score. The WM demonstrates high internal consistency for the total scale and subscales (α = .95 to .97), as well as adequate test-retest reliability (r =.80 to .91) and discriminant validity (Walker & McConnell, 1988).

2.3.7. Child Academic Achievement

Child academic performance in grade 3 was measured using the Woodcock-Johnson Tests of Achievement-Revised (WJ-R, Woodcock & Mather, 1989). The WJ-R is a widely used, normed instrument that assesses children's cognitive ability and academic achievement. It demonstrates adequate reliability and both concurrent and discriminant validity (Woodcock & Mather, 1989). The Letter-Word Identification and Calculation subtests were administered to children to assess basic reading and mathematics skills, respectively. The Letter-Word Identification subtest measures early reading/decoding skills by requiring children to identify and recognize printed letters and words. The Calculation subtest evaluates mathematical calculation performance. The grade standard scores of these two subtests were averaged to create an overall measure of academic achievement.

2.4. Analytic Plan

Descriptive statistics were calculated using SPSS version 27 (IBM, 2020); all other analyses were conducted in Mplus version 8.1 (Muthén & Muthén, 2018). All models were estimated using full-information maximum likelihood (FIML), which allows

participants with at least one outcome measure available to be included in analyses (Little & Rubin, 2019).

2.4.1. Model 1. Direct Effects of Maternal Child Abuse History and Child Outcomes

In order to examine the associations between maternal child abuse histories and offspring outcomes during elementary school, a series of linear regressions were conducted through a path analytic approach. All four child outcomes (i.e., internalizing behaviour, externalizing behaviour, academic achievement, social competence) at grade 3 were regressed onto maternal childhood abuse history. Path analysis is a widely used multivariate technique to construct conceptual models and is the preferred method for assessing longitudinal data with several outcome variables. Although causation cannot be inferred by implementing this statistical technique, path analysis is able to portray possible linkages between observable constructs. By including all four child outcomes in a single model, the covariance between the outcomes was accounted for, and thus, the unique correlates of each child outcome were captured. Model fit criteria included chi-square (χ^2) value, Root Mean Square Error of Approximation (RMSEA), and Comparative Fit Index (CFI). Models with non-significant χ^2 values, RMSEAs less than .06, and CFIs greater than .90 indicated adequate fit (Hu & Bentler, 1999). Regression coefficients, *p*-values and confidence intervals (CI) were used to indicate significant direct paths.

2.4.2. Model 2. Indirect Effect of Mother-Infant Secure Attachment (1 year)

To test whether mother-infant attachment security mediated the association between maternal childhood abuse histories and child outcomes, mother-infant attachment security was added to Model 1 as a mediator. Mediation models were conducted using the product of coefficients method with bootstrapping 5,000 times to obtain 95% confidence intervals of the mediated effect (MacKinnon et al., 2002). Indirect effects were considered significant if the confidence intervals did not include a zero value. The product of coefficients approach with bootstrapped confidence intervals is recommended for testing indirect effects (Fairchild & MacKinnon, 2014), and such

resampling methods for testing the mediated effect have been shown to increase statistical power.

2.4.3. Model 3. Indirect Effect of Child Externalizing Behaviour (4.5 years)

To test whether child externalizing behaviour mediated the association between maternal child abuse histories and child outcomes, child externalizing behaviour at age 4.5 was added to the model 1 as a mediator. Again, the product of coefficients method with bootstrapping was used to determine whether there was a significant indirect effect.

2.4.4. Model 4. Indirect Effect of Mother-Infant Secure Attachment (1 year) and Child Externalizing Behaviour (4.5 years)

Finally, to test whether mother-infant attachment security (age 1) and child externalizing behaviour (age 4.5) mediated the association between maternal child abuse histories and child outcomes within the same model, both mother-infant attachment security and child externalizing behaviour were added as sequential mediators. The product of coefficients method with bootstrapping was used to determine whether there was a significant indirect effect. All path analyses were fit with covariates (conditional).

Chapter 3.

Results

3.1. Descriptive statistics

Means and standard deviations of main study variables and correlations are presented in Table 1. Skewness and kurtosis were examined and all scores fell within the generally accepted guidelines of two standard deviations. Forty-six mothers (41%) reported a history of child sexual and/or physical abuse. In particular, 29 mothers (26%) reported exposure to either sexual or physical abuse and 17 mothers (15%) reported exposure to both child sexual and physical abuse. Although a continuous measure of attachment security was employed (M = 3.12, SD = 1.42), categorical representations (i.e., secure versus insecure) of attachment were also evaluated while generating descriptive statistics. 50% of the child participants at the time of the infant assessment were classified as having secure attachment. The mean age of infants at the attachment assessment was 424.16 days (SD = 75).

Maternal childhood abuse was not significantly correlated with attachment security or child externalizing behaviour at age 4.5. Maternal childhood abuse was significantly positively correlated with teacher report of internalizing problems ($r = 0.22$, $p < 0.05$) and significantly negatively correlated with social competence ($r = -0.23$, $p < 0.05$) in grade 3, but not correlated with academic achievement or teacher report of externalizing behaviour.

Attachment security was not correlated with externalizing behaviour at age 4.5 but was significantly negatively correlated with teacher report of externalizing problems ($r = -0.28$, $p < 0.01$) and significantly positively correlated with teacher report of social competence ($r = 0.30$, $p < 0.01$) in grade 3. Maternal report of externalizing behaviour at age 4.5 was significantly associated with academic achievement ($r = 0.29$, $p < 0.01$), but not with teacher report of externalizing behaviour, internalizing behaviour, or social competence in grade 3.

Correlations among the outcome measures were as follows: Teacher report of internalizing behaviour was significantly negatively correlated with teacher report of

social competence (r = - 0.58, p < 0.01) and significantly positively correlated with teacher report of externalizing behaviour (r = 0.41, p < 0.01) in grade 3. Teacher report of externalizing behaviour was significantly negatively correlated with social competence (r = - 0.48, p < 0.01). Academic achievement was not correlated with any of the other outcome variables.

In terms of covariates, welfare status was significantly positively associated with maternal childhood abuse history (r = 0.20, p < 0.05) and significantly positively associated with attachment security (r = 0.24, p < 0.01).

3.2. Primary Analyses

As noted above, the current study included four models. All path analyses were fit with covariates (conditional). The models were “just identified” (meaning the number of observed parameters was equal to the number of estimated parameters with degrees of freedom = 0) and thus, model fit could not be assessed. This has previously been encountered in similar studies (including studies using the present sample; e.g., Pasalich et al., 2016) and it does not interfere with the models or the ability to interpret results.

3.2.1. Model 1: Direct Effects

Table 2 shows the coefficients for maternal abuse history predicting teacher report of internalizing behaviour, externalizing behaviour, social competence, and academic achievement in grade 3, and Figure 1 shows the (conditional) path model with significant effects. Maternal exposure to more subtypes of abuse was significantly associated with higher levels of child internalizing symptoms (β = .26, *B(SE)* = 3.75(1.43), p = 0.01) and lower levels of social competence (β = -.34, *B(SE)* = -1.16(0.36), p = 0.001), but not externalizing problems or academic achievement. With regard to covariates, race (0=non-white, 1=white) was significantly negatively associated with externalizing problems (β = -.24, *B(SE)* = -6.76(3.17), p = .03) and significantly positively associated with social competence (β = .26, *B(SE)* = 1.73(.67), p = .008).

3.2.2. Model 2: Indirect Effect of Mother-infant Attachment

Table 3 shows the coefficients for maternal childhood abuse history predicting teacher report of internalizing behaviour, externalizing behaviour, social competence, and academic achievement in grade 3, and Table 4 shows the coefficients and CI for the indirect effects through mother-infant attachment security. Figure 2 shows the (conditional) path model with significant effects. In model 2, maternal childhood abuse was still significantly directly associated with child internalizing problems (β = .25, *B(SE)* = 3.56(1.49), *p* = .02) and significantly negatively associated with social competence (β = -.29, *B(SE)* = -1.11(.37), *p* = .007). Maternal childhood abuse was significantly negatively associated with mother-infant attachment (β = -.17, *B(SE)* = -.33(.16), *p* = .04). Mother infant attachment was significantly negatively associated with child externalizing problems (β = -.26, *B(SE)* = -1.94(.76), *p* = .01) and significantly positively associated with social competence (β = .24, *B(SE)* = .43(.19), *p* = .03). With regard to covariates, welfare status was significantly positively associated with attachment security (β = .27, *B(SE)* = .80(.26), *p* = .002). Path analyses indicated that mother-infant attachment significantly accounted for the indirect effects of maternal childhood abuse history on externalizing problems (*B(SE)* = .63(.41), 95% CI [.03; 1.36]) and social competence (*B(SE*) = -.14(.10), 95% CI [-.34; -.01]).

3.2.3. Model 3: Indirect Effect of Child Externalizing Problems at age 4.5

Table 5 shows the coefficients for maternal childhood abuse history predicting teacher report of internalizing behaviour, externalizing behaviour, social competence, and academic achievement in grade 3, and Table 6 shows the coefficients and CI for the indirect effects through child externalizing problems at age 4.5. Figure 3 shows the (conditional) path model with significant effects. In model 3, maternal childhood abuse was still directly associated with child internalizing problems (β = .25, *B(SE)*= 3.46(1.47), *p* = 0.01) and social competence (β =-.33, *B(SE*) = -1.13(.38), *p* = .001). Maternal childhood abuse was not associated with child externalizing problems at age 4.5 (β = .14, *B(SE)* = 1.51(.96), *p* = .11). Child externalizing behaviour at age 4.5 was associated with academic achievement in Grade 3 (β =.30, *B(SE)* = .73(.27), *p* =. 003). With regard to covariates, gender (1=girls) was significantly associated with child externalizing problems at age 4.5 (β = .22, *B(SE)* = 3.44 (1.53), *p* = .02). Indirect effects indicated that

child externalizing problems at age 4.5 did not significantly account for the indirect effects of maternal childhood abuse history on grade 3 outcomes.

3.2.4. Model 4: Sequential Mediation Evaluating the Indirect Effects of Attachment and Child Externalizing Behaviour at age 4.5

Table 7 shows the coefficients for maternal childhood abuse history predicting teacher report of internalizing behaviour, externalizing behaviour, social competence, and academic achievement in grade 3, and Tables 8 and 9 show the coefficients and CI for the indirect effects through mother-infant attachment security and child externalizing problems at age 4.5, respectively. Figure 4 shows the (conditional) path mode with significant effects. In model 4, maternal childhood abuse was still directly associated with child internalizing problems (β = .23, *B(SE)* = 3.3(1.5), *p* = .03) and social competence (β = -.29, *B(SE)* = -.98(.38), *p* = .006). However, maternal childhood abuse was no longer associated with mother-infant attachment (β = -.17, *B(SE)* = -.32(-.16), *p* = .05). Child externalizing behaviour at age 4.5 was associated with academic achievement in grade 3 (β = .31, *B(SE)* = .75(.28), *p* = .003). Path analyses indicated that mother-infant attachment and child externalizing problems at age 4.5 as sequential mediators did not significantly account for the indirect effects of maternal childhood abuse history on grade 3 outcomes.

Chapter 4.

Discussion

Existing research suggests that children of mothers who have experienced child maltreatment themselves are more likely to experience a variety of adverse mental health and socioemotional outcomes; however, little is known surrounding the impact of maternal childhood abuse on children of adolescent mothers. Furthermore, there is very limited research on the impact on children within a school-based context. The current study aimed to address many of the gaps in the existing empirical literature surrounding the intergenerational effects of childhood abuse among adolescent mothers and their children during elementary school, as well as the pathways by which this may occur. As existing literature has focused primarily on child externalizing behaviour, the present study notably extends such findings by also examining a variety of other critical outcomes (internalizing problems, social competence, academic achievement).

As hypothesized, adolescent mothers' abuse histories were directly associated with child internalizing problems and social competence in grade 3. Notably, the significant association between maternal childhood abuse and child internalizing problems and lower social competence remained consistent across all four models. However, no direct associations were found between maternal childhood abuse and child academic achievement or teacher report of child externalizing behaviour in Grade 3. Findings also indicated that maternal childhood abuse history had an indirect effect on teacher report of social competence and externalizing problems through mother-infant attachment security. Exposure to more subtypes of abuse was associated with less attachment security. While less secure attachment predicted higher levels of externalizing problems in grade 3, it predicted lower levels of social competence. In terms of indirect effects, mother-infant attachment security significantly mediated the relationship between adolescent mothers' abuse histories and child externalizing problems, as well the association between adolescent mothers' abuse histories and child social competence. Contrary to hypotheses, externalizing behaviour at 4.5 (as reported by mothers) did not mediate the relationship between maternal childhood abuse history and child outcomes. There was also no sequential mediation between attachment security and externalizing behaviour at age 4.5. Overall, these results illustrate the

intergenerational effects of adolescent mothers' exposure to childhood abuse on offspring mental health (internalizing, externalizing) and social competence within a school-based context, and the significant role that mother-infant attachment security plays in explaining this association.

4.1. Maternal Childhood Abuse and Child Grade 3 Outcomes

As hypothesized, maternal childhood abuse predicted teacher ratings of child internalizing problems within a school-based setting in grade 3. Similarly, previous studies have identified a relationship between maternal early life maltreatment and child total behaviour problems (internalizing and externalizing) as rated by teachers (Bodeker et al., 2019). Whereas recent research has identified an association between maternal childhood maltreatment and child internalizing problems (Choi et al., 2018; Shih et al., 2021) in adult mother samples, the current study is the first to find an association among adolescent mother-child dyads. Given the high-risk nature of this population, there are likely several different pathways of risk that may lead to child mood and anxiety disorders within a classroom setting. Implications for future research will be detailed below.

Contrary to predictions, maternal childhood abuse was not directly related to child externalizing behaviour in the classroom setting. While some researchers have identified a direct association between maternal childhood maltreatment and externalizing behaviour (Alto et al., 2021), others have only found an indirect effect on externalizing problems through various parenting and parent-child interaction mechanisms (Pasalich et al., 2016; Rijlaarsdam et al., 2014; Yoon et al., 2019). Given the extensive amount of research delineating the relationship between maladaptive parenting and conduct problems (Hoeve et al., 2009), indirect pathways may serve as a more appropriate model of how maternal childhood abuse transmits risk for child rule-breaking and aggressive behaviour within a school-based context.

Very few studies have examined the impact of maternal childhood trauma on child social competence within a school-based setting (Webster-Stratton & Hammond, 1998; Zvara & Burchinal, 2021) and none (to our knowledge) have evaluated this within adolescent mother-child dyads. As hypothesized, an association was identified between

maternal childhood abuse and child social competence within the classroom. This is congruent with a recent study by Zvara and Burchinal (2021) that found children of mothers with histories of childhood trauma displayed less social competence. Specifically, children whose mothers reported childhood sexual abuse were reported by their teachers to show more aggressive behaviour and to have challenges with peer relationships. Generally, children from families with high rates of violence display more conflict and problems in peer interactions (McCloskey & Stuewig, 2001). Given that positive peer relationships at school can serve as a buffer against some of the deleterious effects of family adversity and victimization (Criss et al., 2002), it is critical to further understand how to promote social competence in children from high-risk families with trauma histories.

In the current study, maternal childhood abuse was not associated with child academic achievement. Exposure to various forms of family violence, such as child maltreatment and exposure to intimate personal violence (IPV) have been found to be associated with poorer reading ability (Coohey et al., 2011) and language difficulties (Graham-Bermann et al., 2010). However, very few studies have evaluated the association between maternal histories of childhood abuse and offspring academic achievement. Given the limited number of studies that have explored the intergenerational impact of maternal childhood trauma on offspring academic performance (and their mixed findings; Doi et al., 2020; Zvara & Burchinal, 2021), this is an area that warrants further investigation.

4.2. Indirect Effects of Attachment Security

Research continues to document the critical role parent-child interaction plays in the relation between maternal childhood abuse and child adjustment. The investigation of mother-infant attachment security as a mediator yielded several important findings. In the current study, mother-infant attachment at age 1 year mediated the relationship between maternal childhood abuse and teacher report of child externalizing behaviour in grade 3. Studies comprised of samples of adolescent mothers have found maternal childhood abuse to be indirectly related to maternal report of offspring externalizing problems through various parenting mechanisms such as mother-infant attachment, hostile parenting, physical discipline, and parenting stress (Pasalich et al., 2016; Yoon et al., 2019). Importantly, the current study adds to the literature by demonstrating that

child externalizing behaviour problems are elevated within the school setting as well. Children with ‘early onset’ conduct problems are at high risk for academic failure, school dropout, and delinquency (Bevilacqua et al., 2018). Given that attachment insecurity is one relational pathway by which maternal childhood abuse leads to elevated child externalizing behaviour within a school context, supporting mother-child relationships will be critical in preventing future behaviour problems.

Importantly, this study is the first to illustrate that mother-infant attachment security mediates the relationship between maternal childhood abuse and child social competence in the school setting, among both general *and* adolescent mother samples. The emotional bond with a parent plays a critical role in encouraging child prosocial behaviour. Prior research suggests that developing an insecure attachment in early childhood, regardless of subtype, is associated with lower social competence (Groh et al., 2014). The current study highlights how attachment security fosters a foundational basis for children to develop prosocial behaviour and positive relationships with peers within the school setting.

Contrary to hypotheses, mother-infant attachment security did not mediate the relationship between maternal childhood abuse and teacher-rated child internalizing problems. Further research is needed to determine *how* maternal childhood abuse increases risk for child internalizing symptomology among adolescent mother-child dyads. Among adolescent mother-child dyads, research has found chronic maltreatment and maternal psychopathology (depression, anxiety) to mediate the relationship between maternal childhood trauma and child internalizing symptoms (Russotti et al., 2021; Shih et al., 2021). Alternatively, findings by Cook et al. (2019) suggest that maternal ACEs may be associated with children's internalizing problems indirectly via *maternal* attachment avoidance and attachment anxiety. As parental trauma exposure perpetuates risk for both maternal (Choi et al., 2019; Humphreys et al., 2020) and child (Alto et al., 2021) mood and anxiety disorders among families with abuse histories, it is still unclear how this type of psychological distress is transmitted in adolescent mother-child dyads.

Despite prior research identifying a significant association between attachment and academic performance, the current study did not find mother-infant attachment security to mediate the relationship between maternal childhood abuse and child

academic performance in grade 3. Previous research indicates that secure children tend to demonstrate higher levels of academic achievement (Kerns et al., 2000; Moss & St-Laurent, 2001). Mother-infant attachment also influences other factors that are critical to success within the classroom, such as a child's sense of autonomy and cognitive development (West et al., 2013). It is notable that several of the studies evaluating the association of attachment with academic performance chose to evaluate more proximal indicators of attachment during preschool or early childhood (Granot & Mayseless, 2001). As no direct association was found between mother-infant attachment security and academic achievement in grade 3, perhaps this relationship is more adequately explained indirectly through various important factors (parenting behaviour, maltreatment, child psychopathology) that link early attachment and later child adjustment within a school setting.

4.3. Indirect Effect of Child Externalizing Behaviour

Contrary to hypotheses, child externalizing behaviour at age 4.5 did not mediate the relationship between maternal childhood abuse and any of the grade 3 outcomes. This was unexpected given that early onset conduct problems are a precursor for a myriad of various mental health and behavioural difficulties later on in childhood, especially within a school-based setting (Shaw et al., 2005). Given that no direct association was identified between maternal abuse history and child externalizing problems at age 4.5, it is important to consider the various maternal and parenting-based variables that may play in role in this pathway. A similar study by Sauvé et al. (2021) did not find the direct relationship between parental childhood trauma on externalizing behaviours to be significant. However, their results showed a significant interaction effect, whereby maternal hostile/helpless states of mind significantly moderated the association between parental childhood trauma and externalizing problems. Given the extensive research delineating the relationship between maladaptive parenting or maternal mental health variables and child behaviour problems in toddlerhood (Hoeve et al., 2009), it is important to consider variables such as maternal psychopathology and parent-child interaction that may explain how maternal childhood abuse transmits risk for child conduct problems.

4.4. Indirect Effect of Mother-Infant Attachment and Child Externalizing Behaviour

Mother-infant attachment security and child externalizing behaviour did not sequentially mediate the relationship between maternal childhood abuse history and child outcomes in grade 3. This was not surprising given that child externalizing behaviour at age 4.5 was not associated with mother-infant attachment and most of the grade 3 outcome variables (child externalizing behaviour at age 4.5 *was* significantly associated with academic achievement). While the current study chose to focus on the potential association between mother-infant attachment security and externalizing problems during toddlerhood, it is important to consider other salient factors that may link early attachment patterns to later child adjustment. As attachment to caregivers contributes to the development of child emotion regulation capacities (Cassidy, 1994; Zimber-Gembeck et al., 2017), future research focused on such pathways within the context of maternal childhood trauma is warranted.

4.5. Strengths and Limitations

The current study has several strengths. The investigation employed a longitudinal design, which is especially relevant in the context of examining intergenerational effects. Importantly, we were able to examine intergenerational risk processes within high-risk families, where such processes are especially salient. The multi-informant, multi-method design of this study is also a notable strength. Various types of measurement were used, including retrospective reporting, maternal report of child behaviour, teacher report of child behaviour and adjustment, observed parent-child interaction, and standardized assessments of academic achievement. Notably, the current study utilized the gold standard observational measure of mother-infant attachment, the Strange Situation Procedure. Given that maternal psychopathology influences mother-child attachment, especially in early childhood (Barnes & Theule, 2019), it is important to highlight that maternal depression was accounted for at the time of the Strange Situation Procedure observational task. Regarding the measurement of abuse history, the decision to classify exposure to number of different subtypes of abuse versus chronicity or severity of abuse is consistent with methodology applied in similar recent studies and is supported in the literature (Cecil et al., 2017). Lastly, the current

study was unique in that it evaluated all outcomes within a school-based setting. The present investigation also examined multiple outcomes (internalizing, externalizing, social competence, academic achievement), compared to other research that only examined child externalizing behaviour. In addition to documenting an association between maternal childhood abuse and child externalizing problems within a school-based setting, this study is the first to find a significant relationship between maternal childhood abuse and child internalizing problems as well as social competence (among adolescent mother-child dyads). The current study also adds to the literature by identifying mother-infant attachment security as a mediator in the relationship between maternal childhood abuse and child social competence in grade 3.

Despite these strengths, there were also some limitations. While many other researchers have used a similar semi-structured interview to gather information regarding exposure to abuse among adolescent mothers (e.g., Bailey et al., 2007), more psychometrically sound measures of exposure to maltreatment, such as the Childhood Trauma Questionnaire (Bernstein et al., 2003), are now available for use in future research. Additionally, our measure of abuse history only asked about experiences of sexual and physical abuse but did not ask about neglect or emotional/psychological abuse. Given the high prevalence of multi-type maltreatment among adolescent mothers, capturing various types of maltreatment experiences in future research will be critical. Regarding other limitations, the small sample size of the current study should also be noted. Although other relevant studies have been able to recruit larger numbers of adolescent mothers, this was often done using a Child Protective Services (CPS) records database (Putnam-Hornstein et al., 2015). The current study was community-based and recruited participants from multiple settings (clinics, schools, community centres).

4.6. Clinical Implications

These findings have several important clinical implications for high-risk mothers with abuse histories and their children. This study demonstrates the critical need to comprehensively screen adolescent mothers for histories of trauma and abuse. As employing regular trauma screening across a variety of contexts would provide earlier opportunities to introduce preventative interventions, the early detection and treatment of childhood trauma is critical for targeting preventive programs to these families.

The findings suggest several avenues for prevention and intervention. The current study provides evidence that mother-infant attachment security explains, in part, the association between maternal childhood abuse and increased child psychopathology and maladjustment during elementary school. Evidence that attachment security mediates effects of childhood adversity on offspring is of particular interest to clinicians. In particular, various services focused on strengthening the mother–infant emotional bond may be important intervention goals for preventing problems related to mental health and socioemotional development in these families. For instance, *Attachment and Biobehavioral Catch-up* (ABC*)* is an attachment-based treatment approach designed to help caregivers provide nurturing and sensitive care to their infants and toddlers (Dozier et al., 2006; Grube & Liming, 2018). Through coaching sessions, ABC helps caregivers reinterpret child behaviour and provide a predictable parenting environment. It was developed mainly for use with families who have experienced neglect, physical abuse, and domestic violence. Similarly, *Mom Power* is an intervention targeting improvements in maternal mental health, parenting competence, and attachment in mothers with experiences of trauma and psychopathology (Muzik et al., 2015).

4.7. Future Directions

Although the current study adds to the literature in multiple ways, several questions remain surrounding the impact of maternal childhood trauma on youth. The present findings expand our understanding of intergenerational effects among children born to adolescent mothers, as well as the pathways by which this may occur. Although the current study highlights the critical role that attachment plays in the relationship between maternal childhood trauma and child outcomes, further research is needed to identify other mediating mechanisms between maternal childhood abuse and offspring adjustment. Given that the current study highlights the impact of exposure to multiple subtypes of abuse, it is also critical to understand the impact of such experiences on other parenting and parent-child mechanisms. Furthermore, the current study reflects the consequences of such trauma that may be seen within critical developmental contexts, such as the classroom setting. Research examining the association between maternal childhood trauma and child outcomes such as academic achievement and school adjustment is very limited. There may be significant utility in further examining adjustment within a school setting, particularly among high-risk samples.

Chapter 5.

Conclusion

In conclusion, the current study provides new insight into the intergenerational effects of maternal childhood abuse among adolescent mother-child dyads. This study also presents novel findings with regard to child adjustment within a school-based setting, as well as the parent-child relational pathways by which risk is transmitted. Given that maternal childhood abuse is related to various form of child adjustment through mother-child attachment security, these findings have important implications for the utility of family-based interventions in this context. As the impact of maltreatment can be seen across generations, including among high-risk populations such adolescent mothers and their children, further research and intervention development is necessary to prevent negative outcomes.

References

Achenbach, T. M. (1991a). *Manual for the Child Behavior Checklist/4-18 and 1991 Profile*. University of Vermont.

Achenbach, T. M. (1991b). *Manual for the Teacher's Report Form and 1991 Profile*. University of Vermont.

Ainsworth, M. D. (1978). The Bowlby-Ainsworth attachment theory. *The Behavioral and Brain Sciences*, 1(3), 436–438. https://doi.org/10.1017/S0140525X00075828

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (2015). *Patterns of attachment: A psychological study of the Strange Situation*. Psychology Press.

Alto, M. E., Warmingham, J. M., Handley, E. D., Rogosch, F., Cicchetti, D., & Toth, S. L. (2021). Developmental pathways from maternal history of childhood maltreatment and maternal depression to toddler attachment and early childhood behavioral outcomes. *Attachment & Human Development*, 23(3), 328-349. https://doi.org/10.1080/14616734.2020.1734642

Aviezer, O., Resnick, G., Sagi, A., & Gini, M. (2002). School competence in young adolescence: Links to early attachment relationships beyond concurrent self-perceived competence and representations of relationships. *International Journal of Behavioral Development*, 26(5), 397–409. https://doi.org/10.1080/01650250143000328

Bailey, H. N., Moran, G., & Pederson, D. R. (2007). Childhood maltreatment, complex trauma symptoms, and unresolved attachment in an at-risk sample of adolescent mothers. *Attachment & Human Development,* 9(2), 139-161. https://doi.org/10.1080/14616730701349721

Barnes, J., & Theule, J. (2019). Maternal depression and infant attachment security: A meta-analysis. *Infant Mental Health Journal*, 40(6), 817–834. https://doi.org/10.1002/imhj.21812

Bartlett, J. D., & Easterbrooks, M. A. (2012). Links between physical abuse in childhood and child neglect among adolescent mothers. *Children and Youth Services Review*, 34(11), 2164–2169. https://doi.org/10.1016/j.childyouth.2012.07.011

Bartlett, J. D., Kotake, C., Fauth, R., & Easterbrooks, M. A. (2017). Intergenerational transmission of child abuse and neglect: Do maltreatment type, perpetrator, and substantiation status matter? *Child Abuse & Neglect*, 63, 84–94. https://doi.org/10.1016/j.chiabu.2016.11.021

Bevilacqua, L., Hale, D., Barker, E. D., & Viner, R. (2018). Conduct problems trajectories and psychosocial outcomes: a systematic review and meta-analysis. *European Child & Adolescent Psychiatry*, 27(10), 1239-1260. https://doi.org/10.1007/s00787-017-1053-4

Bernier, A., Carlson, S. M., Deschênes, M., & Matte-Gagné, C. (2011). Social factors in the development of early executive functioning: A closer look at the caregiving environment. *Developmental Science*, 15(1), 12–24. https://doi.org/10.1111/j.1467-7687.2011.01093.x

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., Stoke, J., Handlesman, L., Medrano, M., Desmond, D., & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect*, 27(2), 169–190. https://doi.org/10.1016/s0145-2134(02)00541-0

Berthelot, N., Ensink, K., Bernazzani, O., Normandin, L., Luyten, P., & Fonagy, P. (2015). Intergenerational transmission of attachment in abused and neglected mothers: The role of trauma-specific reflective functioning. *Infant Mental Health Journal*, 36(2), 200–212. https://doi.org/10.1002/imhj.21499

Bödeker, K., Fuchs, A., Führer, D., Kluczniok, D., Dittrich, K., Reichl, C., Reck, C., Kaess, M., Attar, C., Neukel, C., Bierbaum., A.L., Zietlow, A., Jaite, C., Lehmkuhl, U., Winter, S.M., Herpertz, S., Brunner, R., Bermpohl, & Resch, F. (2019). Impact of maternal early life maltreatment and maternal history of depression on child psychopathology: Mediating role of maternal sensitivity? *Child Psychiatry & Human Development,* 50(2), 278-290. https://doi.org/10.1007/s10578-018-0839-z

Bohlin, G., Hagekull, B., & Rydell, A. M. (2000). Attachment and social functioning: A longitudinal study from infancy to middle childhood. *Social Development*, 9(1), 24-39. https://doi.org/10.1111/1467-9507.00109

Bornstein, M. H., Hahn, C. S., & Haynes, O. M. (2010). Social competence, externalizing, and internalizing behavioral adjustment from early childhood through early adolescence: Developmental cascades. *Development and Psychopathology*, 22(4), 717-735. https://doi.org/10.1017/S0954579410000416

Bosquet Enlow, M., Englund, M. M., & Egeland, B. (2018). Maternal childhood maltreatment history and child mental health: Mechanisms in intergenerational effects. *Journal of Clinical Child & Adolescent Psychology*, 47(1), 47-62. https://doi.org/10.1080/15374416.2016.1144189

Bowlby, J. (1980). *Attachment and loss*: *Vol. 3*: Loss. Basic Books.

Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry*, 52(4), 664-678.

Bretherton, I., & Munholland, K. A. (2008). Internal working models in attachment relationships: Elaborating a central construct in attachment theory. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 102–127). The Guilford Press.

Bretherton, I., Ridgeway, D., & Cassidy, J. (1990). Assessing internal working models of the attachment relationship: An attachment story completion tasks for 3 year olds. In M. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years* (pp. 273 – 308). Chicago University Press.

Brodsky, B. S., Mann, J. J., Stanley, B., Tin, A., Oquendo, M., Birmaher, B., & Brent, D. (2008). Familial transmission of suicidal behavior: Factors mediating the relationship between childhood abuse and offspring suicide attempts. *Journal of Clinical Psychiatry,* 69(4), 584–596. https://doi.org/10.4088/JCP.v69n0410

Busso, D. S., McLaughlin, K. A., Brueck, S., Peverill, M., Gold, A. L., & Sheridan, M. A. (2017). Child abuse, neural structure, and adolescent psychopathology: A longitudinal study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 56(4), 321-328. https://doi.org/10.1016/j.jaac.2017.01.013

Buyse, E., Verschueren, K., Verachtert, P., & Damme, J. V. (2009). Predicting school adjustment in early elementary school: Impact of teacher-child relationship quality and relational classroom climate. *The Elementary School Journal*, 110(2), 119-141. https://doi.org/10.1086/605768

Card, N. A., & Hodges, E. V. (2008). Peer victimization among school children: Correlations, causes, consequences, and considerations in assessment and intervention. *School Psychology Quarterly*, 23(4), 451-461. https://doi.org/10.1037/a0012769

Carlson, E. A., & Sroufe, L. A. (1995). Contribution of attachment theory to developmental psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology*, *Vol. 1. Theory and methods* (pp. 581–617). Wiley.

Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. *Monographs of the Society for Research in Child Development*, 59(2-3), 228–249. https://doi.org/10.2307/1166148

Cecil, C. A. M., Viding, E., Fearon, P., Glaser, D., & McCrory, E. J. (2017). Disentangling the mental health impact of childhood abuse and neglect. *Child Abuse & Neglect*, 63, 106–119. https://doi.org/10.1016/j.chiabu.2016.11.024

Choi, K. W., & Sikkema, K. J. (2016). Childhood maltreatment and perinatal mood and anxiety disorders: A systematic review. *Trauma, Violence, & Abuse*, 17(5), 427-453. https://doi.org/10.1177/1524838015584369

Clare, C. A., & Yeh, J. (2012). Postpartum depression in special populations: A review. *Obstetrical & Gynecological Survey*, 67(5), 313-323. https://doi.org/10.1097/ogx.0b013e318259cb52

Cole, D. A. (1991). Preliminary support for a competency-based model of depression in children. *Journal of Abnormal Psychology*, 100(2), 181-190.

Cole, D. A., Martin, J. M., Powers, B., & Truglio, R. (1996). Modeling causal relations between academic and social competence and depression: A multitrait-multimethod longitudinal study of children. *Journal of Abnormal Psychology*, 105(2), 258-270.

Collishaw, S., Dunn, J., O'Connor, T. G., Golding, J., & Avon Longitudinal Study of Parents and Children Study Team. (2007). Maternal childhood abuse and offspring adjustment over time. *Development and Psychopathology*, 19(2), 367-383. https://doi.org/10.1017/s0954579407070186

Coohey, C., Renner, L. M., Hua, L., Zhang, Y. J., & Whitney, S. D. (2011). Academic achievement despite child maltreatment: A longitudinal study. *Child Abuse & Neglect*, 35(9), 688–699. https://doi.org/10.1016/j.chiabu.2011.05.009

Cooke, J. E., Racine, N., Plamondon, A., Tough, S., & Madigan, S. (2019). Maternal adverse childhood experiences, attachment style, and mental health: Pathways of transmission to child behavior problems. *Child Abuse & Neglect*, 93, 27-37. https://doi.org/10.1016/j.chiabu.2019.04.011

Criss, M. M., Pettit, G. S., Bates, J. E., Dodge, K. A., & Lapp, A. L. (2002). Family adversity, positive peer relationships, and children's externalizing behavior: A longitudinal perspective on risk and resilience. *Child Development*, 73(4), 1220-1237. https://doi.org/10.1111/1467-8624.00468

Crugnola, C. R., Ierardi, E., Bottini, M., Verganti, C., & Albizzati, A. (2019). Childhood experiences of maltreatment, reflective functioning and attachment in adolescent and young adult mothers: Effects on mother-infant interaction and emotion regulation. *Child Abuse & Neglect*, 93, 277-290. https://doi.org/10.1016/j.chiabu.2019.03.024

De Paul, J., & Domenech, L. (2000). Childhood history of abuse and child abuse potential in adolescent mothers: A longitudinal study. *Child Abuse & Neglect*, 24(5), 701-713. https://doi.org/10.1016/s0145-2134(00)00124-1

Delker, B. C., Noll, L. K., Kim, H. K., & Fisher, P. A. (2014). Maternal abuse history and self-regulation difficulties in preadolescence. *Child Abuse & Neglect*, 38(12), 2033-2043. https://doi.org/10.1016/j.chiabu.2014.10.014

Dennis, C. L., & Vigod, S. (2013). The relationship between postpartum depression, domestic violence, childhood violence, and substance use: Epidemiologic study of a large community sample. *Violence against Women*, 19(4), 503-517. https://doi.org/10.1177/1077801213487057

Dierkhising, C. B., Ford, J. D., Branson, C., Grasso, D. J., & Lee, R. (2019). Developmental timing of polyvictimization: Continuity, change, and association with adverse outcomes in adolescence. *Child Abuse & Neglect*, 87, 40-50. https://doi.org/10.1016/j.chiabu.2018.07.022

DiLillo, D., & Damashek, A. (2003). Parenting characteristics of women reporting a history of childhood sexual abuse. *Child Maltreatment*, 8(4), 319-333. https://doi.org/10.1177/1077559503257104

Ding, Y. H., Xu, X., Wang, Z. Y., Li, H. R., & Wang, W. P. (2014). The relation of infant attachment to attachment and cognitive and behavioural outcomes in early childhood. *Early Human Development*, 90(9), 459-464. https://doi.org/10.1016/j.earlhumdev.2014.06.004

Dodge, K. A., Greenberg, M. T., Malone, P. S., & Conduct Problems Prevention Research Group. (2008). Testing an idealized dynamic cascade model of the development of serious violence in adolescence. *Child Development*, 79(6), 1907-1927. https://doi.org/10.1111/j.1467-8624.2008.01233.x

Doi, S., Fujiwara, T., & Isumi, A. (2020). Association between maternal adverse childhood experiences and child's self-rated academic performance: Results from the K-CHILD study. *Child Abuse & Neglect*. Advance online publication. https://doi.org/10.1016/j.chiabu.2020.104478

Dozier, M., Peloso, E., Lewis, E., Laurenceau, J.-P., & Levine, S. (2008). Effects of an attachment-based intervention on the cortisol production of infants and toddlers in foster care. *Development and Psychopathology*, 20(3), 845–859. https://doi.org/10.1017/s0954579408000400

Driscoll, J. R., & Easterbrooks, M. A. (2007). Young mothers' play with their toddlers: Individual variability as a function of psychosocial factors. *Infant and Child Development: An International Journal of Research and Practice*, 16(6), 649-670. https://doi.org/10.1002/icd.515

Dworsky, A., & Courtney, M. E. (2010). The risk of teenage pregnancy among transitioning foster youth: Implications for extending state care beyond age 18. *Children and Youth Services Review*, 32(10), 1351-1356. https://doi.org/10.1016/j.childyouth.2010.06.002

Erickson, M. F., Sroufe, L. A., & Egeland, B. (1985). The relationship between quality of attachment and behavior problems in preschool in a high-risk sample. *Monographs of the Society for Research in Child Development*, 50(1), 147-166. https://doi.org/10.2307/3333831

Fairchild, A. J., & MacKinnon, D. P. (2014). Using mediation and moderation analyses to enhance prevention research. In Z. Sloboda , H. Petras (Eds), *Defining prevention science* (pp. 537-555). Springer. https://doi.org/10.1007/978-1-4899-7424-2_23

Fearon, R. P., Bakermans-Kranenburg, M. J., Van IJzendoorn, M. H., Lapsley, A. M., & Roisman, G. I. (2010). The significance of insecure attachment and disorganization in the development of children's externalizing behavior: a meta-analytic study. *Child Development*, 81(2), 435-456. https://doi.org/10.1111/j.1467-8624.2009.01405.x

Fergusson, D. M., Boden, J. M., & Horwood, L. J. (2008). Exposure to childhood sexual and physical abuse and adjustment in early adulthood. *Child Abuse & Neglect,* 32(6), 607-619. https://doi.org/10.1016/j.chiabu.2006.12.018

Fraley, R. C., & Spieker, S. J. (2003). Are infant attachment patterns continuously or categorically distributed? A taxometric analysis of strange situation behavior. *Developmental Psychology*, 39(3), 387–404. https://doi.org/10.1037/0012-1649.39.3.387

Fuchs, A., Möhler, E., Resch, F., & Kaess, M. (2015). Impact of a maternal history of childhood abuse on the development of mother–infant interaction during the first year of life. *Child Abuse & Neglect*, 48, 179-189. https://doi.org/10.1016/j.chiabu.2015.05.023

Gilbert, L. K., Breiding, M. J., Merrick, M. T., Thompson, W. W., Ford, D. C., Dhingra, S. S., & Parks, S. E. (2015). Childhood adversity and adult chronic disease. *American Journal of Preventive Medicine*, 48(3), 345-349. https://doi.org/10.1016/j.amepre.2014.09.006

Gilson, K. J., & Lancaster, S. (2008). Childhood sexual abuse in pregnant and parenting adolescents. *Child Abuse & Neglect*, 32(9), 869-877. https://doi.org/10.1016/j.chiabu.2007.11.005

Graham-Bermann, S. A., Howell, K. H., Miller, L. E., Kwek, J., & Lilly, M. M. (2009). Traumatic events and maternal education as predictors of verbal ability for preschool children exposed to intimate partner violence (IPV). *Journal of Family Violence*, 25(4), 383–392. https://doi.org/10.1007/s10896-009-9299-3

Granot, D., & Mayseless, O. (2001). Attachment security and adjustment to school in middle childhood. *International Journal of Behavioral Development*, 25(6), 530–541. https://doi.org/10.1080/01650250042000366

Groh, A. M., Fearon, R. P., Bakermans-Kranenburg, M. J., Van IJzendoorn, M. H., Steele, R. D., & Roisman, G. I. (2014). The significance of attachment security for children's social competence with peers: A meta-analytic study. *Attachment & Human Development*, 16(2), 103-136. https://doi.org/10.1080/14616734.2014.883636

Grube, W. A., & Liming, K. W. (2018). Attachment and Biobehavioral Catch-up: A systematic review. *Infant Mental Health Journal*, 39(6), 656-673. https://doi.org/10.1002/imhj.21745

Gruhn, M. A., & Compas, B. E. (2020). Effects of maltreatment on coping and emotion regulation in childhood and adolescence: A meta-analytic review. *Child Abuse & Neglect.* Advance online publication. https://doi.org/10.1016/j.chiabu.2020.104446

Hamilton, B. E., Martin, J. A., Osterman, M. J. K., Driscoll, A. K., & Rossen, L. M. (2018). Births: Provisional data, 2017 (Vital Statistics Rapid Release Report, 004). Centers for Disease Control and Prevention National Center for Health Statistics, Division of Vital Statistics, https://www.cdc.gov/nchs/data/vsrr/report004.pdf

Hamilton, B. E., Martin, J. A., Osterman, M. J., & Rossen, L. M. (2019). Births: Provisional data, 2018 (Vital Statistics Rapid Release Report 007). Center for Disease Control and Prevention National Center for Health Statistics, Division of Vital Statistics, https://www.cdc.gov/nchs/data/vsrr/vsrr-007-508.pdf

Henry, B., Moffitt, T. E., Caspi, A., Langley, J., & Silva, P. A. (1994). On the" remembrance of things past": a longitudinal evaluation of the retrospective method. *Psychological Assessment*, 6(2), 92. https://doi.org/10.1037/1040-3590.6.2.92

Herman, K. C., Lambert, S. F., Reinke, W. M., & Ialongo, N. S. (2008). Low academic competence in first grade as a risk factor for depressive cognitions and symptoms in middle school. *Journal of Counseling Psychology*, 55(3), 400–410. https://doi.org/10.1037/a0012654

Hoeve, M., Dubas, J. S., Eichelsheim, V. I., van der Laan, P. H., Smeenk, W., & Gerris, J. R. M. (2009). The relationship between parenting and delinquency: A meta-analysis. *Journal of Abnormal Child Psychology*, 37(6), 749–775. https://doi.org/10.1007/s10802-009-9310-8

Hoffman, S. D., & Maynard, R. A. (2008). *Kids having kids: Economic costs & social consequences of teen pregnancy.* The Urban Institute. https://doi.org/10.4324/9780429452635

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. https://doi.org/10.1080/10705519909540118

Humphreys, K. L., LeMoult, J., Wear, J. G., Piersiak, H. A., Lee, A., & Gotlib, I. H. (2020). Child maltreatment and depression: A meta-analysis of studies using the Childhood Trauma Questionnaire. *Child Abuse & Neglect*. Advance online publication. https://doi.org/10.1016/j.chiabu.2020.104361

Jaffee, S., Caspi, A., Moffitt, T. E., Belsky, J. A. Y., & Silva, P. (2001). Why are children born to teen mothers at risk for adverse outcomes in young adulthood? Results from a 20-year longitudinal study. *Development and Psychopathology*, 13(2), 377-397. https://doi.org/10.1017/s0954579401002103

Jenkins, J. M., Shapka, J. D., & Sorenson, A. M. (2006). Teenage mothers' anger over twelve years: Partner conflict, partner transitions and children's anger. *Journal of Child Psychology and Psychiatry*, 47(8), 775-782. https://doi.org/10.1111/j.1469-7610.2005.01593.x

Jutte, D. P., Roos, N. P., Brownell, M. D., Briggs, G., MacWilliam, L., & Roos, L. L. (2010). The ripples of adolescent motherhood: Social, educational, and medical outcomes for children of teen and prior teen mothers. *Academic Pediatrics*, 10(5), 293-301. https://doi.org/10.1016/j.acap.2010.06.008

Kendler, K. S., Bulik, C. M., Silberg, J., Hettema, J. M., Myers, J., & Prescott, C. A. (2000). Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and cotwin control analysis. *Archives of General Psychiatry*, 57(10), 953-959. https://doi.org/10.1001/archpsyc.57.10.953

Kim, J., & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *Journal of Child Psychology and Psychiatry*, 51(6), 706-716. https://doi.org/10.1111/j.1469-7610.2009.02202.x

Kim, J., Talbot, N. L., & Cicchetti, D. (2009). Childhood abuse and current interpersonal conflict: The role of shame. *Child Abuse & Neglect,* 33(6), 362-371. https://doi.org/10.1016/j.chiabu.2008.10.003

Kovacs, M. (1992). *Children's Depression Inventory CDI Manual*. Multi-Health Systems.

Koverola, C., Papas, M. A., Pitts, S., Murtaugh, C., Black, M. M., & Dubowitz, H. (2005). Longitudinal investigation of the relationship among maternal victimization, depressive symptoms, social support, and children's behavior and development. *Journal of Interpersonal Violence*, 20(12), 1523-1546. https://doi.org/10.1177/0886260505280339

Kwako, L. E., Noll, J. G., Putnam, F. W., & Trickett, P. K. (2010). Childhood sexual abuse and attachment: An intergenerational perspective. *Clinical Child Psychology and Psychiatry*, 15(3), 407-422. https://doi.org/10.1177/1359104510367590

Larson, N. C. (2004). Parenting stress among adolescent mothers in the transition to adulthood. *Child and Adolescent Social Work Journal,* 21(5), 457-476. https://doi.org/10.1023/b:casw.0000043359.38426.b4

Lev-Wiesel, R., Chen, R., Daphna-Tekoah, S., & Hod, M. (2009). Past traumatic events: Are they a risk factor for high-risk pregnancy, delivery complications, and postpartum posttraumatic symptoms? *Journal of Women's Health*, 18(1), 119-125. https://doi.org/10.1089/jwh.2008.0774

Levine, J. A., Pollack, H., & Comfort, M. E. (2001). Academic and behavioral outcomes among the children of young mothers. *Journal of Marriage and Family*, 63(2), 355-369. https://doi.org/10.1111/j.1741-3737.2001.00355.x

Little, R. J., & Rubin, D. B. (2019). *Statistical analysis with missing data*. Wiley.

Lounds, J. J., Borkowski, J. G., Whitman, T. L., Maxwell, S. E., & Weed, K. (2005). Adolescent parenting and attachment during infancy and early childhood. *Parenting: Science and Practice*, 5(1), 91-118. https://doi.org/10.1207/s15327922par0501_4

Lyons-Ruth, K., & Block, D. (1996). The disturbed caregiving system: Relations among childhood trauma, maternal caregiving, and infant affect and attachment. *Infant Mental Health Journal*, 17(3), 257-275.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, 58, 593-614.

Madigan, S., Atkinson, L., Laurin, K., & Benoit, D. (2013). Attachment and internalizing behavior in early childhood: A meta-analysis. *Developmental Psychology*, 49(4), 672- https://doi.org/10.1037/a0028793

Madigan, S., Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., Moran, G., Pederson, D. R., & Benoit, D. (2006). Unresolved states of mind, anomalous parental behavior, and disorganized attachment: A review and meta-analysis of a transmission gap. *Attachment & Human Development*, 8(2), 89-111. https://doi.org/10.1080/14616730600774458

Madigan, S., Wade, M., Plamondon, A., & Jenkins, J. (2015). Maternal abuse history, postpartum depression, and parenting: Links with preschooler's internalizing problems. *Infant Mental Health Journal*, 36(2), 146-155. https://doi.org/10.1002/imhj.21496

Madigan, S., Wade, M., Tarabulsy, G., Jenkins, J. M., & Shouldice, M. (2014). Association between abuse history and adolescent pregnancy: A meta-analysis. *Journal of Adolescent Health*, 55(2), 151-159. https://doi.org/10.1016/j.jadohealth.2014.05.002

Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 121–160). University of Chicago Press.

Martin, J. A., Hamilton, B. E., Osterman, M. J. K., Curtin, S. C., & Mathews, T. J. (2017). *Births: Final data for 2015*. https://stacks.cdc.gov/view/cdc/43595

McCarty, C. A., Mason, W. A., Kosterman, R., Hawkins, J. D., Lengua, L. J., & McCauley, E. (2008). Adolescent school failure predicts later depression among girls. *Journal of Adolescent Health*, 43(2), 180-187. https://doi.org/10.1016/j.jadohealth.2008.01.023

McFarland, J., Cui, J., Holmes, J., & Wang, X. (2020). *Trends in high school dropout and completion rates in the United States: 2019*. Compendium Report. National Center for Education Statistics, https://files.eric.ed.gov/fulltext/ED602216.pdf

McCloskey, L.A., & Stuewig, J. (2001). The quality of peer relationships among children exposed to family violence. *Development and Psychopathology*, 13(1), 83–96. https://doi.org/10.1017/s0954579401001067

Meng, X., & D'Arcy, C. (2016). Gender moderates the relationship between childhood abuse and internalizing and substance use disorders later in life: A cross-sectional analysis. *BMC Psychiatry*, 16(1), 401. https://doi.org/10.1186/s12888-016-1071-7

Milan, S., Lewis, J., Ethier, K., Kershaw, T., & Ickovics, J. R. (2004). The impact of physical maltreatment history on the adolescent mother–infant relationship: Mediating and moderating effects during the transition to early parenthood. *Journal of Abnormal Child Psychology*, 32(3), 249-261. https://doi.org/10.1023/b:jacp.0000026139.01671.fd

Miranda, J. K., de la Osa, N., Granero, R., & Ezpeleta, L. (2011). Maternal experiences of childhood abuse and intimate partner violence: Psychopathology and functional impairment in clinical children and adolescents. *Child Abuse & Neglect,* 35(9), 700-711. https://doi.org/10.1016/j.chiabu.2011.05.008

Morrel, T. M., Dubowitz, H., Kerr, M. A., & Black, M. M. (2003). The effect of maternal victimization on children: A cross-informant study. *Journal of Family Violence,* 18(1), 29-41. https://doi.org/10.1023/a:1021401414414

Munson, J. A., McMahon, R. J., & Spieker, S. J. (2001). Structure and variability in the developmental trajectory of children's externalizing problems: Impact of infant attachment, maternal depressive symptomatology, and child sex. *Development and Psychopathology*, 13(2), 277-296. https://doi.org/10.1017/S09547940100205X

Muthén, B. O., & Muthén, L. K. (2018). *Mplus Version 8: User's guide.* Authors.

Muzik, M., Rosenblum, K. L., Alfafara, E. A., Schuster, M. M., Miller, N. M., Waddell, R. M., & Kohler, E. S. (2015). Mom Power: Preliminary outcomes of a group intervention to improve mental health and parenting among high-risk mothers. *Archives of Women's Mental Health*, 18(3), 507–521. https://doi.org/10.1007/s00737-014-0490-z

Myhre, M. C., Dyb, G. A., Wentzel-Larsen, T., Grøgaard, J. B., & Thoresen, S. (2014). Maternal childhood abuse predicts externalizing behaviour in toddlers: A prospective cohort study. *Scandinavian Journal of Public Health*, 42(3), 263-269. https://doi.org/10.1177/1403494813510983

Noll, J. G., Guastaferro, K., Beal, S. J., Schreier, H. M., Barnes, J., Reader, J. M., & Font, S. A. (2019). Is sexual abuse a unique predictor of sexual risk behaviors, pregnancy, and motherhood in adolescence? *Journal of Research on Adolescence*, 29(4), 967-983. https://doi.org/10.1111/jora.12436

Noll, J. G., Shenk, C. E., & Putnam, K. T. (2009). Childhood sexual abuse and adolescent pregnancy: A meta-analytic update. *Journal of Pediatric Psychology,* 34(4), 366-378. https://doi.org/10.1093/jpepsy/jsn098

O'Connor, E., & McCartney, K. (2007). Attachment and cognitive skills: An investigation of mediating mechanisms. *Journal of Applied Developmental Psychology*, 28(5), 458-476. https://doi.org/10.1016/j.appdev.2007.06.007

Oxford, M., & Spieker, S. (2006). Preschool language development among children of adolescent mothers. *Journal of Applied Developmental Psychology*, 27(2), 165-182. https://doi.org/10.1016/j.appdev.2005.12.013

Pajulo, M., Pyykkönen, N., Kalland, M., Sinkkonen, J., Helenius, H., Punamäki, R. L., & Suchman, N. (2012). Substance-abusing mothers in residential treatment with their babies: Importance of pre-and postnatal maternal reflective functioning. *Infant Mental Health Journal*, 33(1), 70-81. https://doi.org/10.1002/imhj.20342

Pasalich, D. S., Cyr, M., Zheng, Y., McMahon, R. J., & Spieker, S. J. (2016). Child abuse history in teen mothers and parent–child risk processes for offspring externalizing problems. *Child Abuse & Neglect*, 56, 89–98. https://doi.org/10.1016/j.chiabu.2016.04.011

Pedersen, M. L., Holen, S., Lydersen, S., Martinsen, K., Neumer, S. P., Adolfsen, F., & Sund, A. M. (2019). School functioning and internalizing problems in young schoolchildren. *BMC Psychology*, 7(1), 1-13. https://doi.org/10.1186/s40359-019-0365-1

Penman-Aguilar, A., Carter, M., Christine Snead, M., & Kourtis, A. P. (2013). Socioeconomic disadvantage as a social determinant of teen childbearing in the U.S. Public Health Reports, 128(SUPPL. 1), 5–22. https://doi.org/10.1177/00333549131282s102.

Pereira, J., Ludmer, J. A., Gonzalez, A., & Atkinson, L. (2018). Mothers' personal and interpersonal function as potential mediators between maternal maltreatment history and child behavior problems. *Child Maltreatment*, 23(2), 147-156. https://doi.org/10.1177/1077559517734937

Perper, K., Peterson, K., & Manlove, J. (2010). *Diploma attainment among teen mothers.*Child Trends. https://www.childtrends.org/wp-content/uploads/2010/01/child_trends-2010_01_22_FS_diplomaattainment.pdf

Prior, V., & Glaser, D. (2007). Understanding attachment and attachment disorders. *Infant Observation*, 10(1), 93–97. https://doi.org/10.1080/13698030701234822

Putnam-Hornstein, E., Cederbaum, J. A., King, B., Cleveland, J., & Needell, B. (2013). A population-based examination of maltreatment history among adolescent mothers in California. *Journal of Adolescent Health*, 53(6), 794-797. https://doi.org/10.1016/j.jadohealth.2013.08.004

Putnam-Hornstein, E., Cederbaum, J. A., King, B., Eastman, A. L., & Trickett, P. K. (2015). A Population-level and longitudinal study of adolescent mothers and intergenerational maltreatment. *American Journal of Epidemiology*, 181(7), 496–503. https://doi.org/10.1093/aje/kwu321

Racz, S. J., King, K. M., Wu, J., Witkiewitz, K., McMahon, R. J., & Conduct Problems Prevention Research Group. (2013). The predictive utility of a brief kindergarten screening measure of child behavior problems. *Journal of Consulting and Clinical Psychology*, 81(4), 588-599. https://doi.org/10.1037/a0032366

Rhule, D. M., McMahon, R. J., Spieker, S. J., & Munson, J. A. (2006). Positive adjustment and associated protective factors in children of adolescent mothers. *Journal of Child and Family Studies*, 15(2), 224-244. https://doi.org/10.1007/s10826-005-9015-8

Rijlaarsdam, J., Stevens, G. W., Jansen, P. W., Ringoot, A. P., Jaddoe, V. W., Hofman, A., Ayer, R., Verhulst, F., Hudziak, J., & Tiemeier, H. (2014). Maternal childhood maltreatment and offspring emotional and behavioral problems: Maternal and paternal mechanisms of risk transmission. *Child Maltreatment*, 19(2), 67-78. https://doi.org/10.1177/1077559514527639

Roberts, R., O'Connor, T., Dunn, J., Golding, J., & ALSPAC Study Team. (2004). The effects of child sexual abuse in later family life: Mental health, parenting and adjustment of offspring. *Child Abuse & Neglect*, 28(5), 525-545. https://doi.org/10.1016/j.chiabu.2003.07.006

Rohde, P., Ichikawa, L., Simon, G. E., Ludman, E. J., Linde, J. A., Jeffery, R. W., & Operskalski, B. H. (2008). Associations of child sexual and physical abuse with obesity and depression in middle-aged women. *Child Abuse & Neglect*, 32(9), 878-887. https://doi.org/10.1016/j.chiabu.2007.11.004

Ruscio, A. M. (2001). Predicting the child-rearing practices of mothers sexually abused in childhood. *Child Abuse & Neglect*, 25(3), 369-387. https://doi.org/10.1016/s0145-2134(00)00252-0

Russotti, J., Warmingham, J. M., Handley, E. D., Rogosch, F. A., & Cicchetti, D. (2021). Child maltreatment: An intergenerational cascades model of risk processes potentiating child psychopathology. *Child Abuse & Neglect*. Advance online publication. https://doi.org/10.1016/j.chiabu.2020.104829

Sauvé, M., Cyr, C., St-Laurent, D., Amédée, L. M., Dubois-Comtois, K., Tarabulsy, G. M., Bernier, A., Moss, E. (2021). Transmission of parental childhood trauma to child behavior problems: Parental hostile/helpless state of mind as a moderator. *Child Abuse & Neglect*. Advance online publication. https://doi.org/10.1016/j.chiabu.2020.104885

Schore, A. N. (2001). Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal,* 22(1-2), 7-66. https://doi.org/10.1002/1097-0355(200101/04)22:1<7::aid-imhj2>3.0.co;2-n

Schuetze, P., & Eiden, R. D. (2005). The relationship between sexual abuse during childhood and parenting outcomes: Modeling direct and indirect pathways. *Child Abuse & Neglect*, 29(6), 645-659. https://doi.org/10.1016/j.chiabu.2004.11.004

Sedgh, G., Finer, L. B., Bankole, A., Eilers, M. A., & Singh, S. (2015). Adolescent pregnancy, birth, and abortion rates across countries: Levels and recent trends. *Journal of Adolescent Health*, 56(2), 223-230. https://doi.org/10.1016/j.jadohealth.2014.09.007

Shaw, D. S., Lacourse, E., & Nagin, D. S. (2005). Developmental trajectories of conduct problems and hyperactivity from ages 2 to 10. *Journal of Child Psychology and Psychiatry*, 46(9), 931–942. https://doi.org/10.1111/j.1469-7610.2004.00390.x

Shih, E., Ahmad, S., Bush, N., Roubinov, D., Tylavsky, F., Graff, C., Karr, C., Sathyanarayana, S., LeWinn, K. (2021). A path model examination: Maternal anxiety and parenting mediate the association between maternal adverse childhood experiences and children's internalizing behaviors. *Psychological Medicine*, 1-11. https://doi.org/10.1017/S0033291721001203

Smith, A. L., Cross, D., Winkler, J., Jovanovic T., & Bradley, B. (2014). Emotional dysregulation and negative affect mediate the relationship between maternal history of child maltreatment and maternal child abuse potential. *Journal of Family Violence*, 29(5), 483-494. https://doi.org/10.1007/s10896-014-9606-5

Spieker, S. J., & Bensley, L. (1994). Roles of living arrangements and grandmother social support in adolescent mothering and infant attachment. *Developmental Psychology*, 30(1), 102-111.

Spieker, S. J., Bensley, L., McMahon, R. J., Fung, H., & Ossiander, E. (1996). Sexual abuse as a factor in child maltreatment by adolescent mothers of preschool aged children. *Development and Psychopathology*, 8(3), 497–509. https://doi.org/10.1017/s0954579400007239

Stargel, L. E., & Easterbrooks, M. A. (2020). Diversity of adverse childhood experiences among adolescent mothers and the intergenerational transmission of risk to children's behavior problems. *Social Science & Medicine*. Advance online publication. https://doi.org/10.1016/j.socscimed.2020.112828

Stevens–Simon, C., Nelligan, D., & Kelly, L. (2001). Adolescents at risk for mistreating their children: Part I: Prenatal identification. *Child Abuse & Neglect*, 25(6), 737-751. https://doi.org/10.1016/s0145-2134(01)00236-8

Storebø, O. J., Rasmussen, P. D., & Simonsen, E. (2016). Association between insecure attachment and ADHD: Environmental mediating factors. *Journal of Attention Disorders*, 20(2), 187-196. https://doi.org/10.1177/1087054713501079

Teicher, M. H., Andersen, S. L., Polcari, A., Anderson, C. M., Navalta, C. P., & Kim, D. M. (2003). The neurobiological consequences of early stress and childhood maltreatment. *Neuroscience & Biobehavioral Reviews,* 27(1), 33-44. https://doi.org/10.1016/s0149-7634(03)00007-1

Thompson, R. (2007). Mothers' violence victimization and child behavior problems: Examining the link. *American Journal of Orthopsychiatry*, 77(2), 306-315. https://doi.org/10.1037/0002-9432.77.2.306

U.S. Department of Health & Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2020). *Child maltreatment* 2018. https://www.acf.hhs.gov/sites/default/files/cb/cm2018.pdf.

Vaillancourt, K., Pawlby, S., & Fearon, R. P. (2017). History of childhood abuse and mother–infant interaction: A systematic review of observational studies. *Infant Mental Health Journal*, 38(2), 226-248. https://doi.org/10.1002/imhj.21634

Vando, J., Rhule-Louie, D. M., McMahon, R. J., & Spieker, S. J. (2008). Examining the link between infant attachment and child conduct problems in grade 1. *Journal of Child and Family Studies*, 17(5), 615. https://doi.org/10.1007/s10826-007-9173-y

Volling, B. L. (2001). Early attachment relationships as predictors of preschool children's emotion regulation with a distressed sibling. *Early Education and Development*, 12(2), 185-207. https://doi.org/10.1207/s15566935eed1202_2

Wakschlag, L. S., Gordon, R. A., Lahey, B. B., Loeber, R., Green, S. M., & Leventhal, B. L. (2000). Maternal age at first birth and boys' risk for conduct disorder. *Journal of Research on Adolescence*, 10(4), 417-441. https://doi.org/10.1207/sjra1004_03

Walker, H. M. (1995). *Walker-McConnell Scale of Social Competence and School Adjustment: Elementary Version*. Singular Publishing Group.

Wallinius, M., Delfin, C., Billstedt, E., Nilsson, T., Anckarsäter, H., & Hofvander, B. (2016). Offenders in emerging adulthood: School maladjustment, childhood adversities, and prediction of aggressive antisocial behaviors. *Law and Human Behavior*, 40(5), 551-563. https://doi.org/10.1037/lhb0000202

Webster-Stratton, C., & Hammond, M. (1998). Conduct problems and level of social competence in Head Start children: Prevalence, pervasiveness, and associated risk factors. *Clinical Child and Family Psychology Review*, 1(2), 101-124.

Wentzel, K. R. (2003). School adjustment. In W. M. Reynolds, & G. E. Miller (Eds.), *Handbook of psychology: Educational psychology* (7th ed., pp. 235-258). Wiley.

West, K. K., Mathews, B. L., & Kerns, K. A. (2013). Mother–child attachment and cognitive performance in middle childhood: An examination of mediating mechanisms. *Early Childhood Research Quarterly*, 28(2), 259-270. https://doi.org/10.1016/j.ecresq.2012.07.005

Woodcock, R. W., & Mather, N. (1989). *Woodcock-Johnson Tests of Achievement* (rev. ed.). Allen, TX: DLM Teaching Resources.

Wright, C. A., George, T. P., Burke, R., Gelfand, D. M., & Teti, D. M. (2000). Early maternal depression and children's adjustment to school. *Child Study Journal*, 30(3), 153-168. https://doi.org/10.1016/s0163-6383(96)90293-3

Yoon, Y., Cederbaum, J. A., Mennen, F. E., Traube, D. E., Chou, C. P., & Lee, J. O. (2019). Linkage between teen mother's childhood adversity and externalizing behaviors in their children at age 11: Three aspects of parenting. *Child Abuse & Neglect*, 88, 326-336. https://doi.org/10.1016/j.chiabu.2018.12.005

Yozwiak, J. A. (2010). Postpartum depression and adolescent mothers: A review of assessment and treatment approaches. J*ournal of Pediatric and Adolescent Gynecology*, 23(3), 172-178. https://doi.org/10.1016/j.jpag.2009.09.003

Zimmer-Gembeck, M. J., Webb, H. J., Pepping, C. A., Swan, K., Merlo, O., Skinner, E. A., Avdagic, E., & Dunbar, M. (2017). Is parent–child attachment a correlate of children's emotion regulation and coping? *International Journal of Behavioral Development*, 41(1), 74-93. https://doi.org/10.1177/0165025415618276

Zvara, B. J., Burchinal, M., & Family Life Project Key Contributors. (2021). Maternal history of childhood maltreatment and children's cognitive and social development. *Early Child Development and Care*, 191(3), 403-414. https://doi.org/10.1080/03004430.2019.1621861

Zvara, B. J., Mills-Koonce, W. R., Carmody, K. A., Cox, M., & Family Life Project Key Investigators. (2015). Childhood sexual trauma and subsequent parenting beliefs and behaviors. *Child Abuse & Neglect*, 44, 87-97. https://doi.org/10.1016/j.chiabu.2015.01.012

Zvara, B. J., Mills-Koonce, R., Carmody, K. A., Cox, M., & Family Life Project Key Investigators. (2017). Maternal childhood sexual trauma and child conduct problems. *Journal of Family Violence*, 32(2), 231-242. https://doi.org/10.1007/s10896-016-9876-1

Appendix.

Tables and Figures

Table 1. Descriptive Statistics and Correlations among Study Variables

	M	*SD*	Range	2	3	4	5	6	7	8	9	10	11	12
1. Maternal childhood abuse	.56	.74	0-2	-.12	.14	.14	.22*	-.23*	.01	.20*	-.01	.02	.11	-.04
2. Attachment security	3.12	1.42	1-5		-.17	-.28**	.12	.30**	.01	.24**	-.02	.09	-.12	-.08
3. Externalizing problems (age 4.5)	54.54	7.86	38-76			.16	.15	.01	.29**	-.01	.19	-.06	.05	.14
4. G3 Externalizing problems	57.78	10.56	39-87				.41**	-.58**	.01	-.09	.19	.04	-.19	.09
5. G3 Internalizing problems	55.26	10.33	36-80					-.48**	-.15	-.03	.11	.03	-.08	-.02
6. G3 Social competence	8.69	2.54	2-14						.03	.06	.17	.00	.19	.00
7. G3 Academic achievement	98.97	19.32	31-143							-.16	.06	-.10	.09	.07
8. Welfare status	.37	.49	0-1								-.03	-.02	-.13	-.14
9. Gender (1=girls)	.53	.5	0-1									.01	-.10	.04
10. Child age at attachment assessment	424.16	75	327-852										-.02	.01
11. Race (1=white)	.81	.39	0-1											-.02
12. Maternal depression	10.98	6.64	0-32											

Note. G = grade. * $p < .05$; ** $p < 0.01$

Table 2 (Model 1, Direct Effects) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History and Covariates Predicting Internalizing Problems, Externalizing Problems, Social Competence and Academic Achievement in Grade 3

	Externalizing Problems		Internalizing Problems		Social Competence		Academic Achievement	
	B (*SE*)	β	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
Maternal childhood abuse history	3.07 (1.65)	.21	3.75 (1.43)	.26**	-1.16 (.36)	-.34**	-.23 (2.72)	-.01
Gender (1=girls)	3.49 (2.01)	.16	1.83 (2.14)	.09	.92 (.52)	.18	1.67 (4.21)	.04
Race (1=white)	-6.76 (3.17)	-.24*	-3.43 (3.26)	-.12	1.73 (.67)	.26**	4.97 (5.18)	.10
Welfare status	-2.98 (2.24)	-.14	-1.91 (2.12)	-.09	.70 (.51)	.13	-6.29 (4.07)	-.16
Maternal depression	1.22 (2.35)	.05	-1.01 (2.18)	-.05	.08 (.57)	.01	2.62 (3.92)	.06
Age at attachment assessment	.01 (.01)	.05	.01 (.01)	.04	-.01 (.01)	-.03	-.03 (.03)	-.12

* $p < .05$; ** $p < 0.01$

Table 3. (Model 2) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History, Attachment and Covariates Predicting Internalizing Problems, Externalizing Problems, Social Competence and Academic Achievement in Grade 3; Maternal Childhood Abuse History and Covariates Predicting Attachment

	Externalizing Problems		Internalizing Problems		Social Competence		Academic Achievement		Mother-Infant Attachment	
	B (*SE*)	B	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β	*B (SE)*	B
Maternal childhood abuse	2.34 (1.69)	.16	3.56 (1.49)	.25*	-1.11 (.37)	-.29**	.04 (2.82)	.01	-.33 (.16)	-.17*
Mother-infant attachment	-1.94 (.76)	-.26*	-.49 (.74)	-.07	.43 (.19)	.24*	.80 (1.61)	.06	-	-
Gender (1=girls)	3.77 (2.09)	.18	1.9 (2.13)	.09	.85 (.51)	.16	1.52 (4.19)	.04	-.07 (.26)	-.02
Race (1=white)	-7.29 (3.02)	-.27*	-3.56 (3.26)	-.13	1.84 (.64)	.28**	5.15 (5.55)	.10	-.27 (.32)	-.07
Welfare status	-1.56 (2.26)	-.07	-1.55 (2.3)	-.07	.39 (.54)	.07	-6.79 (4.16)	-.17	.80 (.26)	.27**
Maternal depression	.88 (2.22)	.04	-1.1 (2.13)	-.05	.16 (.56)	.03	2.83 (4.14)	.07	-.14 (.27)	-.04
Age at attachment assessment	.01 (.01)	.07	.01 (.01)	.04	-.01 (.01)	-.05	-.03 (1.61)	-.12	.01 (.01)	.10

* $p < .05$; ** $p < 0.01$

Table 4. (Model 2) Bootstrap Tests of Mother-Infant Attachment as a Mediator between Maternal Childhood Abuse and Grade 3 Outcomes

	Externalizing Problems		Internalizing Problems		Social Competence		Academic Achievement	
	Bootstrap indirect effect (*SE*)	95% CI	Bootstrap indirect effect (*SE*)	95% CI	Bootstrap indirect effect (*SE*)	95% CI	Bootstrap indirect effect (*SE*)	95% CI
Indirect effect through mother-infant attachment	.63 (.41)*	**.03; 1.36**	.16 (.29)	-.27; .16	-.14 (.10)*	**-.34; -.01**	-.26 (.61)	-1.42; .60

* $p < .05$; ** $p < 0.01$

Table 5. (Model 3) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History, Child Externalizing Problems at Age 4.5 and Covariates Predicting Grade 3 Outcomes; Maternal Childhood Abuse History and Covariates Predicting Externalizing Problems at Age 4.5

	Externalizing Problems		Internalizing Problems		Social Competence		Academic Achievement		Externalizing Problems *(Age 4.5)*	
	B (SE)	β	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β	*B (SE)*	B
Maternal childhood abuse history	2.72 (1.68)	.19	3.46 (1.47)	.25*	-1.13 (.38)	.33**	-1.13 (2.59)	-.04	1.51 (.96)	.14
Child externalizing problems age 4.5	.20 (.15)	.15	.16 (9.15)	.13	-.01 (.03)	-.04	.73 (.27)	.30*	-	-
Gender (1=girls	2.97 (1.98)	.14	1.40 (2.1)	.07	.95 (.52)	.18	-.64 (4.01)	-.02	3.44 (1.53)	.22*
Race (1=white)	-7.4 (2.23)	.27*	-3.97 (3.24)	-.15	1.74 (.70)	.27*	1.74 (5.02)	.04	1.55 (2.07)	.08
Welfare status	-2.89 (2.26)	-.13	-1.83 (2.19)	-.08	.70 (.52)	.13	-5.77 (4.11)	-.15	.12 (1.57)	.01
Maternal depression	.64 (2.34)	.03	.64 (2.34)	-.07	.12 (.57)	.02	.76 (3.95)	.02	2.56 (1.77)	.15
Age at attachment assessment	.01 (.01)	-.06	.01 (0.01)	.05	-.01 (.01)	-.04	-.02 (.03)	-.10	-.01 (.01)	-.06

* $p < .05$; ** $p < 0.01$

Table 6. (Model 3) Bootstrap Tests of Externalizing Problems at Age 4.5 as a Mediator between Maternal Childhood Abuse History and Grade 3 Outcomes

	Externalizing Problems		Internalizing Problems		Social Competence		Academic Achievement	
	Bootstrap indirect effect (*SE*)	95% CI	Bootstrap indirect effect (*SE*)	95% I	Bootstrap indirect effect (*SE*)	95% CI	Bootstrap indirect effect (*SE*)	95% CI
Indirect effect through externalizing behaviour at age 4.5	.30 (.31)	-.16; 83	.25 (.30)	-.20; .70	-.02 (.07)	-.21; .09	1.1 (.92)	-.08; 2.92

* $p < .05$; ** $p < 0.01$

Table 7. (Model 4) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History, Mother-Infant Attachment, Child Externalizing Problems at Age 4.5 and Covariates Predicting Grade 3 Outcomes

	Externalizing Problems		Internalizing Problems		Social Competence		Academic Achievement	
	B (*SE*)	β	*B (SE)*	β	*B (SE)*	β	*B (SE)*	β
Maternal childhood abuse history	2.05 (1.7)	.14	3.3 (1.5)	.23*	-.98 (.38)	-.29**	-.78 (2.76)	-.03
Mother-infant attachment	-1.88 (.76)	-.25*	-.46 (.75)	-.06	.43 (.20)	.24*	1.11 (1.6)	.08
Child externalizing problems age 4.5	18 (-.15)	.13	.16 (.15)	.12	-.01 (.03)	-.03	.75 (.28)	.31**
Gender (1=girls)	3.3 (2.07)	.15	1.5 (2.16)	.07	1.85 (.64)	.17	-.81 (3.97)	-.02
Race (1=white)	-7.81 (3.14)	-.29*	-4.04 (3.44)	-.15	1.85 (.64)	.28**	2.07 (5.65)	.04
Welfare status	-1.55 (2.24)	-.07	-1.52 (2.31)	-.07	.4 (.54)	.07	-6.54 (4.11)	-.17
Maternal depression	.38 (2.35)	.02	-1.55 (2.11)	-.07	.20 (.58)	.04	1.06 (4.09)	.03
Age at attachment assessment	.01 (.01)	.08	.01 (.01)	.06	-.01 (.01)	-.06	-.02 (.03)	-.10

* $p < .05$; ** $p < 0.01$

Table 8. (Model 4) Estimates from Multiple Linear Regression of Maternal Childhood Abuse History and Covariates Predicting Mother-Infant Attachment and Child Externalizing Problems at Age 4.5

	Mother-Infant Attachment		Externalizing Problems (Age 4.5)	
	B (*SE*)	B	*B* (*SE*)	β
Maternal childhood abuse history	-.32 (-.16)	-.17	1.32 (0.96)	.12
Gender (1=girls)	-.07 (.26)	-.02	3.13 (1.5)	.21*
Race (1=white)	-.27 (.32)	-.07	1.24 (2.2)	.06
Welfare status	.79 (.26)	.27**	-.69 (1.72)	.04
Maternal depression	-.14 (0.27)	-.05	2.39 (1.82)	.14
Age at attachment assessment	,01 (.01)	.10	-.01 (0.01)	-.05

* $p < .05$; ** $p < 0.01$

Table 9. (Model 4) Bootstrap Tests of Mother-Infant Attachment and Externalizing Problems at age 4.5 as Mediators between Maternal Childhood Abuse and Grade 3 Outcomes

	Externalizing Problems		Internalizing Problems		Social Competence		Academic Achievement	
	Bootstrap indirect effect (*SE*)	95% CI	Bootstrap indirect effect (*SE*)	95% CI	Bootstrap indirect effect (*SE*)	95% CI	Bootstrap indirect effect (*SE*)	95% CI
Indirect effect through mother-infant attachment and externalizing problems	.03 (.06)	-.05;.03	.03 (.06)	-.05;.03	-.01 (.01)	-.02;.01	.14 (.20)	-.14;.46

* $p < .05$; ** $p < 0.01$

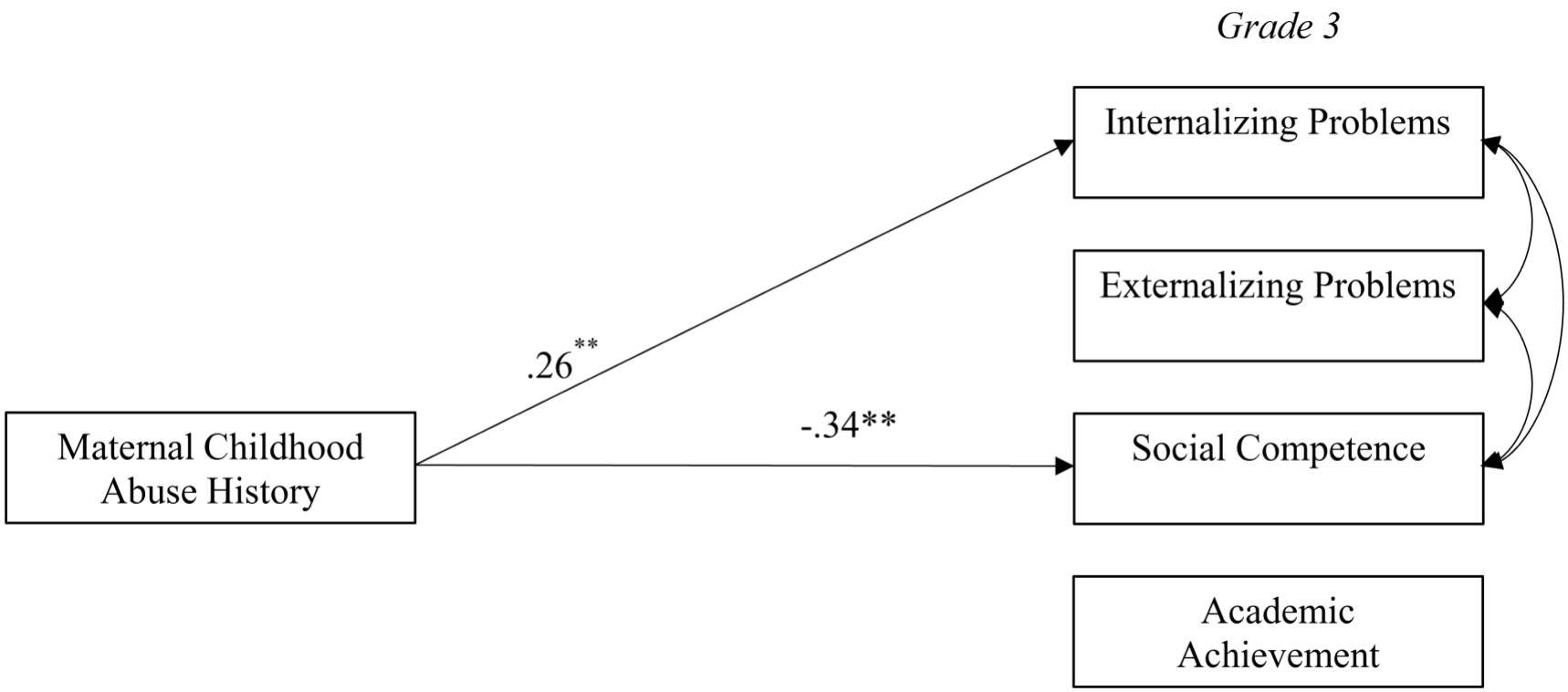

Figure 1. Path Model 1: Maternal childhood abuse history predicting internalizing problems, externalizing problems, social competence, and academic achievement. Covariates included in analyses but omitted from figure.

Only significant paths are shown.

* $p < .05$; ** $p < .01$

.

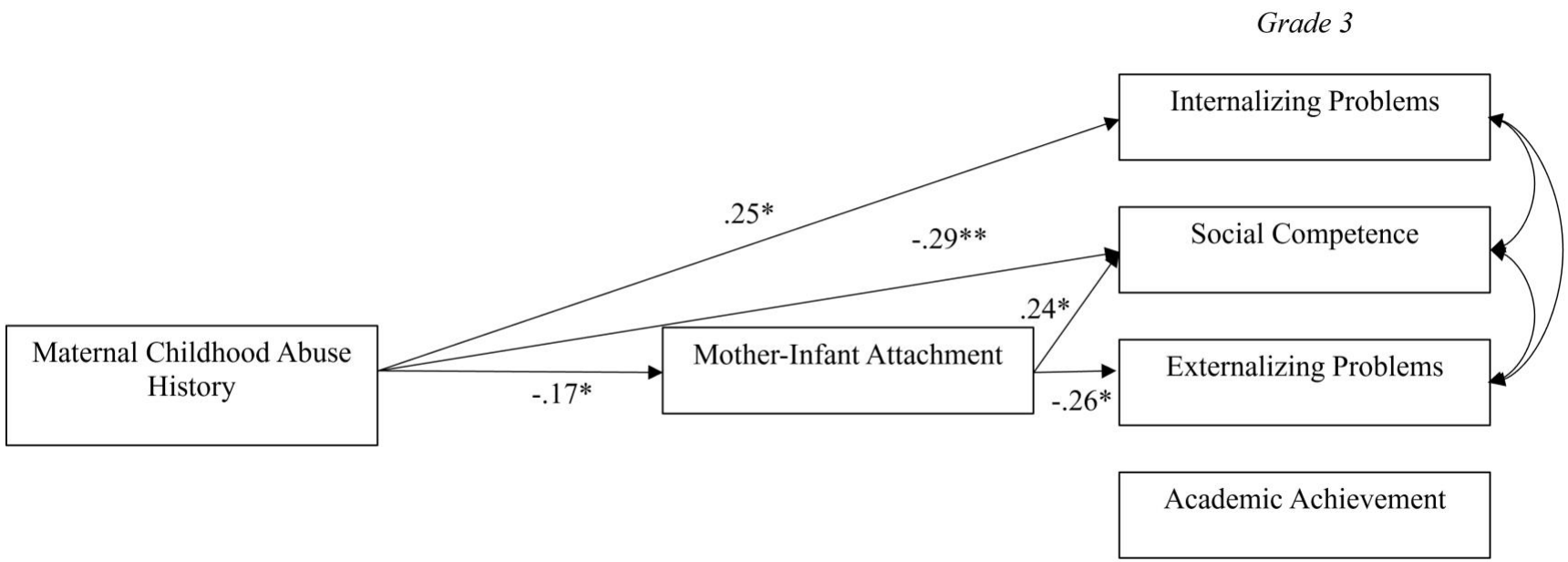

Figure 2. Path Model 2: Maternal childhood abuse history predicting internalizing problems, externalizing problems, social competence, and academic achievement, with mother-infant attachment as mediator. Covariates included in analyses but omitted from figure.

Only significant paths are shown.

* $p < .05$; ** $p < .01$.

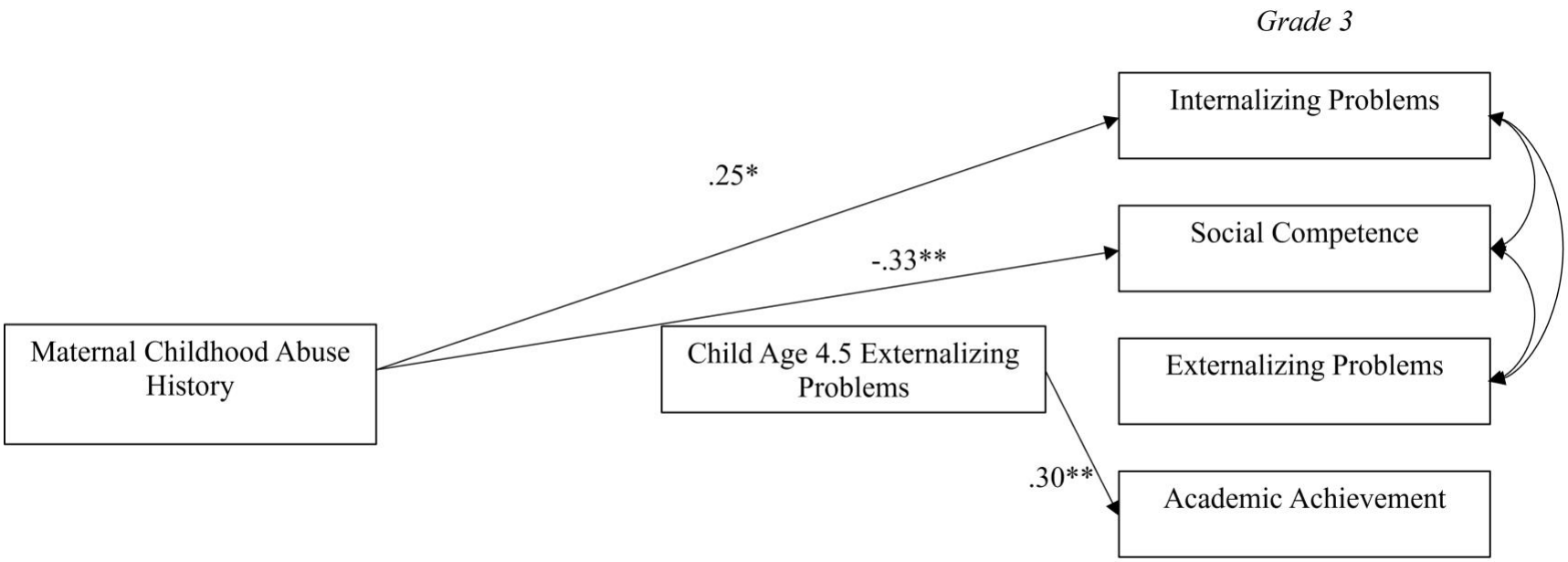

Figure 3. Path Model 3: Maternal childhood abuse history predicting internalizing problems, externalizing problems, social competence, and academic achievement; with child externalizing problems at age 4.5 as a mediator. Covariates included in analyses but omitted from figure.

Only significant paths are shown.

* $p < .05$; ** $p < .01$.

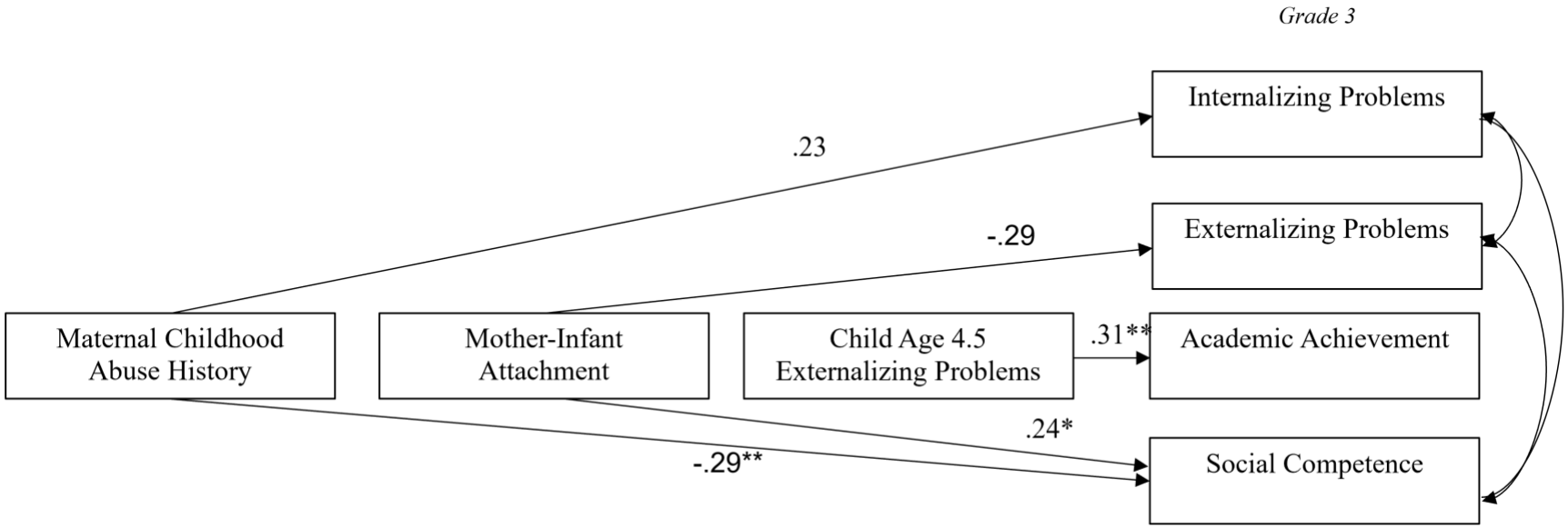

Figure 4. Path 4 Model: Maternal childhood abuse history predicting internalizing problems, externalizing problems, social competence, and academic achievement, with mother-infant attachment and child externalizing problems at 4.5 as sequential mediators. Covariates included in analyses but omitted from figure.

Only significant paths are shown.

* $p < .05$; ** $p < .01$.