THE IMPACT OF PRENATAL REPRESENTATIONS ON PRESCHOOL EXTERNALIZING BEHAVIOR IN THE CONTEXT OF INTIMATE PARTNER VIOLENCE

By

Alexandra Lauren Ballinger

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Psychology–Master of Arts

2021

ABSTRACT

THE IMPACT OF PRENATAL REPRESENTATIONS ON PRESCHOOL EXTERNALIZING BEHAVIOR IN THE CONTEXT OF INTIMATE PARTNER VIOLENCE

By

Alexandra Lauren Ballinger

Parent's representations, or cognitive schemas of self and other, are activated during pregnancy as the they develop an image of their unborn child. Prenatal representations of the child are associated with later parenting behaviors. Indifferent and emotionally distorted (unbalanced) prenatal representations predict more negative postnatal parenting while coherent, realistic (balanced) representations predict more sensitive parenting. Sensitive parenting in turn predicts key developmental outcomes including child externalizing behavior. Despite the association between prenatal representations and developmental correlates such parenting, the relationship between representations and child outcomes remains underexplored. The present study aimed to address this gap in the literature by investigating maternal sensitivity as a mechanism through which maternal prenatal representations impact preschool children's externalizing symptoms. I hypothesized that non-balanced representations would predict greater child externalizing behavior through lower maternal sensitivity and that child temperament would moderate this indirect effect. Participants (N=206) were enrolled in a larger longitudinal study investigating the impact of Intimate Partner Violence (IPV) on mothers and their children. Assessments occurred during pregnancy and annually between child ages one and four. IPV was covaried in all analyses. The hypotheses were not supported; the indirect effect of representations on child externalizing via maternal sensitivity was not significant nor was it conditional upon child temperament. Potential explanations for null findings and future directions are discussed.

ACKNOWLEDGEMENTS

I would like to thank my committee members Dr. Amy Nuttall, Dr. Alytia Levendosky, and Dr. G. Anne Bogat for their support, feedback and guidance on this project. I would also like to thank all of the undergraduate research assistants, lab managers and graduate students who assisted in the data collection for the Mother Infant Study. Last, but not least, I would like to thank all of the women and children who participated in this research study, without whom this project would not have been possible.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

The caregiving system is a complex, organized behavioral system in parents reciprocal to the attachment system in infants which functions to keep offspring close and protected from danger (Soloman & George, 1996). It is theorized that parent's representations, or internal working models of self and other, undergird the caregiving system. Internal working models are representations of relationships with attachment figures which develop early in life and serve as a template for future relationships (Bowlby, 1982). Working models include specific content as well as information-processing rules that guide expectations and attributions about how others think, feel, and behave (Bowlby, 1982; Soloman & George, 1996). The caregiving representational system begins to emerge during adolescence, when an individual develops a representation of the self as caregiver distinct yet parallel to the representation of the self as attached child (Soloman & George, 1996). It undergoes its greatest growth and transformation when a woman becomes pregnant for the first time (Soloman & George, 1996; Ammaniti et al., 1992). During pregnancy, a parent's representations of self and other are reactivated and reorganized specific to the relationship with the developing child. To the extent that the individual has had positive experiences in their caregiving relationships they are more likely to form representations of themselves as competent caregivers and of their child as worthy of care (Soloman & George, 1996).

A large body of empirical literature supports Solomon and George's caregiving theory, linking mother's representations of their children with both parenting behaviors and infant attachment classifications (Dayton et al., 2010; Foley & Hughs, 2018; Huth-Bocks et al., 2011; Rosenblum et al., 2008; Sokolowski et al., 2007; Tambelli et al., 2014). Despite the association between maternal representations and key developmental determinants including parenting and

attachment, there is a paucity of research investigating the impact of maternal representations on child outcomes. Additionally, to my knowledge there are no published studies investigating the mechanisms by which representations impact children's development. The present investigation aimed to address this gap in the extant literature by investigating the impact of prenatal representations on preschool externalizing behavior in a prospective, longitudinal sample of mothers and children. Representations are one mechanism by which risk is transmitted intergenerationally as mother's experiences with their attachment figures form the basis for their representations of themselves and their own children, which in turn impact their parenting and their children's attachment and development. Experiences of trauma and adversity are known to negatively influence internal working models of self and other, including maternal representations of the child (e.g. Huth-Bocks et al., 2004; Schechter et al., 2005). Therefore, representations may constitute a risk factor for negative child outcomes. Identifying modifiable mechanisms of risk can help guide targeted prevention and intervention efforts (Cicchetti et al., 2006).

Representations and Sensitive Parenting

It has long been recognized that during pregnancy representations of self and other become strongly activated, enriched, and updated as a woman prepares psychologically for the role of motherhood (e.g. Bibring et al., 1961). Prenatal representations form the framework for the developing relationship with the unborn child which begins early in pregnancy, first on the imaginary level as a woman fantasizes about what her child might be like. The image of the child becomes increasingly concrete as signals from the developing fetus are integrated into the mother's representation (Ammaniti et al., 1992). Simultaneously, the child starts to be differentiated as an autonomous being, that is both merged with the mother's body and separate

from it (Ammaniti et al., 1992). Psychoanalytic theorists have argued that during pregnancy the baby is psychologically as much a part of the mother's psyche as it is biologically a part of her body (e.g. Zeanah et al., 1986). As the pregnancy progresses women's representations become increasingly rich and specific (e.g. Lumley, 1982; Zeanah et al., 1986). During this period, internal working models of self and other are reactivated and reorganized as representations of the unborn baby begin to crystalize and an identity of the self-as-mother takes shape, informed by experiences in the mother's attachment relationships (Stern, 1995). Indeed, pregnancy has the potential to revive old psychic conflicts and recall caregiving experiences with one's own parents (e.g. Bibring et al., 1961). In particular, it is theorized that three types of representations are especially salient during this time 1) Representations of a woman's own mother and her attachment experiences, 2) Representation of her unborn child and, 3) Representations of herself as mother (Huth- Bocks et al., 2004; Stern, 1995). Various clinical and research instruments have been developed to measure these aspects of maternal representations.

The Working Model of the Child Interview (WMCI) developed by Zeanah and colleagues (Zeanah & Benoit, 1995; Zeanah et al., 1994) is the most common method for assessing maternal representations (Barlow, 2018). The semi-structed interview taps mothers' expectations and attributions about their unborn infant and their own ability to parent. The WMCI can be coded for a variety of representational qualities and categorized into 3 typologies—balanced, disengaged and distorted—which mirror attachment classifications used in the strange situation (Ainsworth et al., 1978). Balanced representations are characterized by appreciation for the child's individuality, flexibility and openness to new information, a recognition of the caregiver's impact on the child, engrossment in the relationship with the baby, and at least moderately rich detail and coherence. Disengaged representations are distinguished

by emotional withdrawal or indifference toward the child, generic descriptions of the child (e.g. "a regular baby") (Zeanah & Benoit, 1995), inflexibility and a lack of interest in the child, the relationship, and themselves as mothers. In contrast, distorted representations involve significant expression of emotion toward the child, but the emotion is unmodulated, characterized by anxious preoccupation, self-involvement or a sense of being overwhelmed by the child. Overall distorted representations "convey the sense of an unsuccessful struggle to feel close to the infant" and may include distorted descriptions of the infant that are incoherent, confused or even bizarre (Zeanah et al., 1994). These three categories can be further collapsed into balanced and non-balanced (distorted and disengaged) classifications (Huth-Bocks et al., 2011; Theran et al., 2005). Modification of the WMCI for use during pregnancy has been supported as a valid method for assessing prenatal representations (Benoit et al., 1997).

Prenatal representations are particularly compelling from a research perspective because they are formed before children are born and therefore are not bidirectionally influenced by child temperament or behavior, although they may be informed by signals from the developing child including fetal movement (e.g. Ammaniti et al., 1992). Mother's prenatal representations of their children predict postnatal parenting behaviors, including sensitive parenting: the ability to accurately read children's signals and respond to them flexibly, promptly, and appropriately across contexts (Ainsworth et al., 1978; Seifer & Schiller, 1995). Overly rigid, negative, distorted and/or inappropriate prenatal representations can be disruptive to postnatal maternal-child interactions insofar as they interfere with the mother's ability to accurately read and respond to their children's signals. Dayton et al. (2010) longitudinally investigated the impact of prenatal representations on parenting outcomes at one-year post-partum in the present sample. Balanced representations predicted more positive parenting, disengaged representations

predicted more controlling parenting and distorted representations predicted more hostile parenting (Dayton et al., 2010). Another longitudinal study investigating the impact of prenatal maternal representations on mother-child feeding interactions at 4 months postpartum, found that disengaged and ambivalent representations predicted negative maternal affect and less attunement to the child's signals. Ambivalent prenatal representations predicted more frequent and intense conflict in the dyad, greater anger and hostility, and intense distress and food refusal behavior on the part of the child when compared to balanced and disengaged representations (Tambelli et al., 2014). In a recent chapter on the topic of maternal representations in pregnancy, Barlow (2018) reviewed research on the influence of prenatal representations on postnatal parent-child interactions and concluded that there is a "consistent association" between prenatal representations and postnatal interactions regardless of how the constructs are measured. Similarly, in their meta-analytic review comprised of 14 studies with 1862 mothers and fathers, Foley and Hughs found that thoughts and feelings about the unborn infant exerted a modest but robust impact on observed parenting behaviors (Foley & Hughs, 2018). Effects were stronger for mothers than fathers. The authors identify a need for more research in this area that assesses child outcomes (Foley & Hughs, 2018).

Longitudinal research indicates that once formed, representations demonstrate high stability from pregnancy through early childhood (Ammaniti et al., 1992; Benoit, Parker, & Zeanah, 1997; Theran, Levendosky, Bogat, & Huth-Bocks, 2005). This relative continuity highlights that prenatal representations form the foundation of the representational system that structures maternal-child interactions postnatally. Representations influence attributions parents make about the child's behavior, how they understand their child's personality and the expectations they have about who their child is and how they will grow and develop. Therefore,

representations underlie mother's attributions about and responses to their children's signals. Rosenblum et al. (2006) has proposed that working model representations serve as emotion regulators which influence emotional activation and engagement in mothers. During infancy, maternal representations are associated with concurrent parenting behaviors. In a study of 17 to 20-month-old infants, Sokolowski et al. (2007) found that mothers with disengaged representations were less sensitive, more passive and offered less encouragement and guidance to their infants than did mothers with balanced representations. Rosenblum et al. (2008) investigated parenting reflectivity, a key aspect of maternal representations that taps mothers' understanding of the motivation underlying their infant's actions. The authors found that parenting reflectivity measured when children were 7 months was related to lower concurrent maternal intrusiveness and rejection/ anger.

Key social and environmental factors are known to affect maternal representations. In the present sample, exposure to intimate partner violence (IPV) during pregnancy has been linked to more negative prenatal representations and a higher likelihood of women being classified as distorted or disengaged on the WMCI (Huth-Bocks et al., 2004). Given that IPV is an attachment trauma occurring in close relationships, experiencing IPV might negatively affect representations or schemas of close others, including one's unborn child. Distortions in maternal representations due to relational trauma may lead to lower quality parenting and help explain the impact of prenatal IPV exposure on children (e.g. Martinez-Torteya et al., 2016). As such, prenatal IPV will be covaried in the present investigation to control for its effects on prenatal representations and child outcomes.

Sensitive Parenting and Child Externalizing Behavior

It is important to understand the cognitive processes undergirding early parenting given the robust impact of parenting on child development. Sensitive parenting is a predictor of many key child outcomes including child externalizing symptomatology (e.g. Boeldt et al., 2012; Nuttall et al., 2012; Wakschlag & Hans, 1999). Externalizing is the overarching term for a constellation of negative behaviors directed at the outside world which include disruptive, hyperactive and aggressive behaviors (Campbell et al., 2000; Eisenberg et al., 2001; Hinshaw, 1987). Wakschlag and Hans (1999) demonstrated that maternal responsiveness during infancy predicts disruptive behavior problems in childhood controlling for concurrent parenting. Nuttall et al. (2012) found that lower maternal warm responsiveness (a composite of responsiveness and sensitivity) in infancy predicts greater externalizing symptoms in toddlerhood. Similarly, Boeldt (2012) and colleagues tested longitudinal associations between positive parenting at ages 7-36 months and child externalizing behavior at ages 4-12 years and found that greater positive parenting in toddlerhood predicted lower levels of externalizing behavior in childhood (Boeldt et al., 2012).

Child externalizing behavior is an early indicator of later psychopathology (Beyer et al., 2012; Bornstein et al., 2010) and is associated both concurrently and prospectively with key social, academic and cognitive outcomes (Brennan et al., 2012; Bulotsky-Shearer & Fantuzzo, 2011; Campbell et al., 2006; Friedman-Weieneth et al., 2007). Preschool represents the earliest age at which externalizing behaviors demonstrate continuity with symptoms across childhood and adolescence (Beyer et al., 2012; Bornstein et al., 2010). Early childhood externalizing behaviors are concurrently associated with lower cognitive and pre-academic skills (Friedman-Weieneth et al., 2007) and prospectively related to school-aged academic achievement (Brennan

et al., 2012) including lower literacy rates (Bulotsky-Shearer & Fantuzzo, 2010) and social, peer and behavioral problems (Campbell et al., 2006). These associations demonstrate the importance of understanding the etiology of preschool externalizing difficulties to inform intervention.

Despite the connection between maternal representations and known determinants of behavioral problems, namely sensitive parenting, the impact of representations on child emotional development remains underexplored. However, there are a few studies supporting a link between maternal representations and child outcomes. For instance, in their study of 7-month-olds, Rosenblum et al. (2006) found that during still-face procedure all infants displayed distress, but only the infants of mothers with balanced representations returned to baseline positive affect. This finding speaks to the potential influence of maternal representations on the development of infant emotion regulation. In a study of 4-year-olds, Sher-Censor and Yates (2015) found that expressed emotion and narrative coherence in the WMCI were related to concurrent child behavioral problems, suggesting a link between maternal representations and behavioral outcomes in preschoolers. Given their cross-sectional design, neither of these studies speak to the mechanisms by which maternal representations influence child outcomes.

The Role of Temperament

Temperament is an important individual difference factor which interacts with environmental context to impact child development (Rothbart et al., 2000). Difficult child temperament is defined by high expression of negative emotion, poor self-regulation, low adaptability and a tendency toward withdrawal (Chess & Thomas, 1989). Individual differences in temperament shape the quality of parenting children receive (Belsky, 1984). Seminal studies have demonstrated that the parents of children with difficult temperaments tend to be less responsive to their children's cries, demonstrate lower overall responsiveness and respond more

negatively when their children display negative emotion (Campbell, 1979; Milliones, 1978; Kelley, 1976). In a more recent study employing a twin design, Jaffee and colleagues (2004) found that corporal punishment was genetically mediated by children's aggressive and difficult to manage behavior suggesting that children with difficult behavior provoke harsh parenting. In another twin study, researchers examined the effects of child characteristics on parenting behaviors and concluded that child-based genetic contributions to negative parenting were stronger when children exhibited challenging characteristics than when they did not (Ganiban et al., 2011). These findings suggest that children with more difficult characteristics may elicit more negative parenting behaviors. Additionally, the experience of parenting a child that is particularly difficult to care for may bring up old psychological conflicts and disappointments and exacerbate doubts about one's ability to parent (Soloman & George, 1996). In these ways, challenging child characteristics may exacerbate and reinforce negative maternal representations of the child and the self-as-mother. Therefore, the negative impact of non-balanced representations on parenting might be stronger when children have difficult temperaments that align with such representations.

It is unlikely that all children will be equally susceptible to parenting's influence on childhood externalizing behaviors. "Biological Sensitivity to Context" (Boyce et al., 1995) and "Differential Susceptibility" (Belsky, 1997) theories were independently proposed to explain findings that young children who were biologically "reactive" or had genetic and temperamental vulnerability had worse developmental outcomes in high stress, low quality environments but *better* outcomes in low stress, supportive environments than children without such vulnerabilities. The metaphor of dandelions and orchids has been used to describe this differential susceptibility. Whereas "Dandelion" children are relatively hardy and resilient in a

variety of environments contexts, "Orchid" children develop beautifully in supportive, nurturing environments but evidence adverse developmental outcomes in less optimal, more stressful environments (e.g. Kennedy, 2013). Empirical evidence supports the differential susceptibility hypothesis indicating that difficult temperament, among other risk factors, produces "Orchids". For instance, in a study of childcare settings, Pluess and Belsky (2009) found that children with difficult temperaments as infants displayed more behavior problems in kindergarten when they experienced low quality child care and fewer problems when exposed to high quality care than children with easier temperaments (Pluess & Belsky, 2009). Additionally, research has demonstrated that the relationship between parenting quality and externalizing behavior is stronger for children with difficult temperaments than it is for children with easier temperaments, indicating that children with difficult temperaments are differentially impacted by both negative and positive rearing influence (Belsky et al., 1998; Colder et al., 1997; Morris et al., 2002; Stoolmiller, 2001). Based on this literature, I predicted that in the present sample children with more difficult temperaments would be more susceptible to the influence of parenting quality and go on to develop higher levels of externalizing symptomatology when exposed to less sensitive parenting, and lower levels when exposed to more sensitive parenting than children with easier temperaments.

The Present Study

The present study sought to address the paucity of prospective research investigating the impact of prenatal maternal representations on child outcomes. I hypothesized that non-balanced representations in pregnancy would be associated with lower maternal sensitivity at age one, which would, in turn, predict greater child externalizing behavior at age four to result in a significant indirect effect of representations on externalizing through sensitivity. I also

hypothesized that each path of this indirect effect would be moderated by child temperament at age one. I predicted that difficult child temperament would exacerbate the negative influence of non-balanced representations on sensitivity such that among mothers with non-balanced prenatal representations those whose children had difficult temperaments would exhibit less sensitivity than those whose children had easier temperaments (moderation to path a). I also hypothesized that children with difficult temperaments exposed to more insensitive parenting at age one would develop higher levels of externalizing behavior at age four (moderation to path b). Child exposure to intimate partner violence both prenatally and over the life course were included as covariates. A conceptual model of these hypothesized relationships is displayed in Figure 1.

Dayton et al. (2010) demonstrated that prenatal representations predict parenting behavior at age 1 in this sample. The present study expanded upon those findings by investigating a developmental trajectory from prenatal representations to preschool externalizing behavior, mediated by maternal sensitive parenting. This study also uniquely investigated the role of infant temperament as a moderator of the association between representations and sensitive parenting as well as the relationship between sensitive parenting and externalizing. Through assessing temperament, I sought to identify which children would be most susceptible to the negative rearing influence of non-balanced maternal representations.

METHODS

These secondary analyses were conducted on a subset of data collected for the MSU Mother Infant Longitudinal Study (MIS), a prospective investigation of the effects of prenatal intimate partner violence (IPV) in a high-risk sample (Bogat et al., 1999; Levendosky et al., 2000). The MIS followed women from pregnancy through child age 10.

Participants

Participants in the full sample included 206 women from urban and rural counties in central Michigan. Women were recruited through fliers posted in OBGYN clinics, social service programs and other public places. A majority of the women, 63%, were White-Caucasian, 25% were Black/ African American, 5% were Latina, 4% were biracial, 1% were Native American, 1% were Asian American and 1% were other, their average age was 25 (*SD*=5). Education level was similarly diverse: 45% had a high school diploma, 35% had some college education, 7% had an associate degree, 8% had a bachelor's degree and 5% had a graduate degree, 42% were working outside of the home at the time of the first interview. Their mean monthly income was $1,823 (*SD*=1507).

Women were screened by phone. Eligibility criteria included being in the third trimester of pregnancy at initial interview, being between 18 and 40 years of age and being involved in a romantic relationship for at least 6 weeks at some point during their pregnancies. After about half of the sample had been recruited an additional screening item, the Conflict Tactics Scale (Straus, 1979) began to be administered to ensure a proportion of the sample had experienced IPV during the current pregnancy. There were no demographic differences between the participants and the women who were screened out.

Procedures

Women were first assessed during the third trimester of pregnancy either in the woman's home or the project office. Informed consent was completed at this time and again at each wave of data collection. IPV was assessed via questionnaire and an interview was conducted to tap prenatal representations. The interview was recorded for later transcription and coding. Participants were paid $50.

Time 3 interviews were conducted when infants were 12 months old (M= 12.6, SD= 1.81). 189 of the original participants were retained in this wave of the study (91.8% retention). Mothers and infants participated in a 3-hour interview at the project office. Mothers were shown to a room with toys and instructed to interact with their babies as they would at home during a 12-minute videoed interaction. They were administered questionnaires assessing their child's temperament and their experiences of IPV. Upon completion of the protocol participants were paid $75 and given a $5 baby book for their infant.

Time 6 interviews were conducted when children were 4 years old (M= 4.04, SD= 0.12). 177 of the original participants completed this wave of the study (86% retention). Before the scheduled in-person interview participants were mailed a packet of questionnaires to complete which included an assessment of child externalizing behaviors. During the in-person interview, mothers were again administered the IPV questionnaire. Upon completion of the interview, participants were paid $150 and children were given a book as a gift.

Time 4 and 5 interviews were conducted with mothers only when children were 2 (M= 1.97, SD= .66) and 3 years old (M= 3.01, SD= 0.08), respectively. The IPV questionnaire was completed at each of these time points. The IPV scores from Time 3 through 6 were summed in the present study to provide a child lifetime IPV exposure variable.

Measures

Prenatal Maternal Representations

Working Model of the Child Interview WMCI (Zeanah et al., 1994) was used to assess prenatal maternal representations. This semi-structured interview elicits a parent's internalized perceptions, thoughts and feelings about their children. In the present study the WMCI was modified for use during pregnancy, which has been supported as a reliable and valid method (Benoit, 1997). Two graduate-level research assistants received specialized training to code the interviews. The interviews were classified into three typologies: balanced, disengaged or distorted representations. Cohen's kappa revealed strong interrater reliability for the typology classifications ($\kappa = .94$, $p < .001$), with 96% agreement based on a subset of the sample (n = 26) which included interviews that were double-coded at regular intervals to prevent drift. Differences were resolved via conferencing and the resultant consensus codes were used in the analysis. Disengaged and distorted typologies were collapsed into a single non-balanced category (0 = balanced, 1 = non-balanced) in the present study consistent with prior work (Huth-Bocks et al., 2011).

Maternal Sensitive Parenting

Maternal Sensitivity was coded from the Mother Infant Interaction free play task recorded when children were 12 months old. Sensitivity measured the mother's ability to "perceive and accurately interpret the infant's signals and to respond to them appropriately and promptly" (Adapted from Ainsworth et al., 1971, 1974, 1978 and Crittenden, 1981). The scales ranges from 1 to 5 with higher scores indicating greater sensitivity or warmth. Reliability was calculated using intraclass correlation coefficients. Initial reliability was based on a subset of data (n = 23). Following the establishment of initial reliability approximately 20% of the video

segments were randomly chosen and double coded. Disagreements were resolved by discussion and consensus codes were analyzed. Cronbach's alpha for sensitivity was .83.

Child Temperament

The Toddler Temperament Scale (TTS; Fullard et al., 1984) is a 97-item measure administered to mothers at the Time 3 interviews when children were 12 months old. This scale is appropriate for infants 12-36 months of age. Participants rated their child's behavior during the previous four to six weeks, on a 6-point scale ranging from "Almost Never" to "Almost Always." For the present study 5 of the 9 TTS scales (rhythmicity, adaptability, approach, intensity and mood) were summed to create an overall temperament score (M = 16.53, SD= 2.41) (Martinez-Torteya et al., 2009; Saylor et al., 2003). Cronbach's alphas for the five subscales used in the current investigation were: rhythmicity: .68, approach: .81, adaptability: .55; intensity: 48, mood: 52. A dichotomous variable was created based on the median score for overall temperament, whereby children with scores below the median were classified as having easy temperament and those with scores greater the median (46.2% of the sample) were classified as having difficult temperament (Martinez-Torteya et al., 2009).

Child Externalizing Symptoms

The Child Behavior Checklist (CBCL 4–18, Achenbach, 1991) was used to assess child externalizing behavior. This 112-item scale was completed by mothers prior to the interview when children were 4 years old. The instrument yields eight subscales, two broad-band scales that tap internalizing and externalizing behavior and a total problem behavior score. Mothers are given a list of symptoms and asked to indicate how true the statement is for their child within the last six months on a 3-point scale from "Not True" to "Very True or Often True." For the present study, only the externalizing broad-band scale was utilized, Cronbach's alpha was .85.

IPV Exposure During Pregnancy

The Severity of Violence Against Women Scales (SVAWS; Marshall, 1992*)* was used to measure IPV during the current pregnancy. The SVAWS is a 46-item questionnaire asking about violent behaviors and or threats perpetrated against the woman by her partner. Mothers reported on violence experienced with their current partner during pregnancy. Respondents rated their experiences of abuse on a 4-point scale ranging from Never to Many Times. There are nine subscales assessing different categories of threat and abuse, in this sample internal consistencies for all subscales were high ($\alpha = 0.91–1.0$).

Cumulative IPV Exposure

The Severity of Violence Against Women Scales (SVAWS; Marshall, 1992) was administered to moms at each interview time point between child age 1 and 4, for a total of 4 SVAWS scores over the course of the child's early life. These scores were summed to create a cumulative IPV exposure variable (M = 16.79, SD= 30.98) (Martinez-Torteya et al., 2016).

Data Analytic Strategy

Substantive analyses were conducted in Mplus (Mplus version 8; Muthén & Muthén, 1998-2017) using full information maximum likelihood estimation to account for missing data due to participant attrition or failure to complete measures of interest. Prenatal IPV and cumulative IPV were included as continuous covariates in all analyses. The mediation effect was tested using the percentile bootstrapping method recommended by Falk (2018) with 1,000 re-samples to construct bias-corrected bootstrap 95% confidence intervals around the product coefficient of the indirect effect of WMCIs via the hypothesized mediator of maternal sensitivity on child externalizing behavior. Finally, the significance of the difference between the indirect effects in each group (i.e. easy versus difficult) was then tested

RESULTS

Preliminary Analyses

Means, standard deviations and bivariate correlations among study variables are reported in Table 1. Maternal sensitivity was significantly and negatively related to child externalizing behavior and child temperament indicating that moms who were less sensitive rated their children as having higher levels of externalizing behavior and more difficult temperaments. Difficult child temperament was significantly and positively related to externalizing, indicating that children rated by their mothers as more difficult at age 1 were rated as having more externalizing behavior at age 4. Prenatal and cumulative IPV were significantly and positively related. Prenatal IPV was positively associated with externalizing behaviors, cumulative IPV was not. As expected, those participants classified as non-balanced on the Working Model of the Child Interview (WMCI) had, on average, significantly lower maternal sensitivity and significantly higher levels of pregnancy IPV and difficult child temperament than those classified as balanced, see Table 2 for means, standard deviations and t-test statistics by WMCI group.

Path Analyses

A saturated mediation model was tested whereby maternal representations during pregnancy influence children's externalizing behavior at age four via maternal sensitivity at age one. Unstandardized regression coefficients are reported below. As predicted, non-balanced representations during the third trimester of pregnancy were associated with decreased maternal sensitivity when infants were one year old ($b = -0.78, SE = 0.16, p < .001$). Contrary to my hypothesis, low maternal sensitivity was not significantly associated with increased child externalizing behavior at age four ($b = -1.39, SE = 0.73, p = .057$). Pregnancy IPV did not significantly predict maternal sensitivity at child age one ($b = -0.01, SE = 0.01, p = 0.313$).

Prenatal IPV ($b = 0.09, SE = 0.08, p = 0.25$) and cumulative IPV ($b = -0.01, SE = 0.03, p = 0.93$) did not significantly predict age four externalizing.

Based on the percentile bootstrapping confidence interval, the indirect effect of representations on externalizing behavior via maternal sensitivity was estimated to lie between -0.04 and 2.38 with 95% confidence. Because the confidence interval contained zero, the indirect effect of representations on child externalizing via maternal sensitivity was not significant. Similarly, the direct effect of representation on externalizing was estimated to lie between -2.38 and 3.38 with 95% confidence. Because the confidence interval contained zero, there was not a significant direct effect of representations on externalizing behavior.

To test the second hypothesis and determine whether the mediation results reported above were different in the context of easy versus difficult child temperament, the above analyses were rerun using dichotomous temperament (i.e. easy versus difficult) as a grouping variable and testing the significance of the difference between the indirect effects in each group. Results indicated that the difference in the indirect effects between groups was not statistically significant -0.67 ($SE = 1.05, p = 0.53$). Therefore, the second hypothesis was not supported.

Post Hoc Analyses

The standardized parameter estimates for the present study, -0.35 for mediation pathway a and -0.17 for mediation pathway b, represent medium and small effects, respectively. Fritz and MacKinnon (2007) used a simulation study to determine the necessary sample size to test mediation with 0.8 power at different effect sizes for each of the mediating paths; results indicate that obtaining a power of 0.8 with path estimates of small or medium effect sizes would require a sample size of 404 using percentile bootstrapping. Therefore, the present sample size of 206 may have been underpowered to detect an indirect effect if one truly exists. An alternative method for

testing mediation is the nonparametric, bias-corrected bootstrapping approach (Fritz & MacKinnon, 2007; MacKinnon et al., 2004). The difference between percentile and bias-corrected bootstrapping is that the latter corrects for skew in the population, resulting in a more liberal test of the indirect effect (Fritz & MacKinnon, 2007). As such, obtaining a 0.8 power with the path estimates reported here using the bias-corrected bootstrapping strategy would require a sample size of 391 according to Fritz and MacKinnon (2007). Therefore, I ran a post-hoc analysis, testing the same mediation model as above, but using the bias-corrected bootstrapping approach rather than the percentile bootstrapping method to model the indirect effect. Using bias-corrected bootstrapping, the indirect effect of representations on child externalizing via maternal sensitivity was estimated to lie between 0.05 and 2.5 with 95% confidence, indicating a significant indirect effect at $p < .05$ level. This result supports my first hypothesis that there would be a significant indirect effect of non-balanced representations on child externalizing behavior via maternal sensitivity. Given that the study was underpowered, the more liberal bias-corrected bootstrapping approach may be appropriate in this case.

DISCUSSION

My first hypothesis, that non-balanced representations would predict higher age 4 externalizing behavior via maternal sensitivity was not supported using the percentile bootstrapping method. Additionally, the direct effect of working model classification on externalizing was not significant. My second hypothesis, that the mediation effect would be moderated by child temperament was also not supported. There was no difference between the indirect effects in the easy versus difficult temperament group. Post-hoc analyses revealed that using the bias-corrected rather than the percentile bootstrapping method the indirect effect of representations on externalizing via sensitivity was significant. Bias-corrected bootstrapping is perhaps the most common technique used to test mediation in Structural Equation Modeling. It has been shown to have superior power and more accurate confidence intervals than other methods (Fritz & MacKinnon, 2007; Mackinnon, Lockwood & Williams, 2004). However, these authors also caution that the bias-corrected method has inflated Type I error rates under certain parameter conditions. Falk (2018) utilized simulation to demonstrate that under null conditions the bias-corrected bootstrapping method yields low coverage rates which translate to high Type I error rates even with very large sample sizes (N=500). Additionally, while indirect effect was significant using the bias-corrected bootstrapping method it was quite small. Given these considerations, I believe that the percentile bootstrapping approach is the more appropriate method and will interpret results consistent with those null findings.

Consistent with previous work from this data set, prenatal representations significantly predicted parenting at age one in the present study. Contrary to my hypotheses, sensitive parenting at age one did not significantly predict child externalizing behavior at age four. While parenting sensitivity and positive parenting often emerge as predictors of externalizing behavior

in the literature (e.g. Boeldt et al., 2012; Nuttall et al., 2012; Miner & Clarke-Stewart, 2008), results are mixed with some studies finding no such effects (e.g. Lyons-Ruth et al., 1997; Stanger et al., 2004). In fact, a recent meta-analysis of 1,435 studies of the association between parenting practices and child externalizing behavior found that positive parenting showed very small to small negative concurrent and longitudinal associations with externalizing (Pinquart et al., 2017). These inconsistent findings indicate that while in some cases sensitive parenting exerts influence on the development of externalizing behavior, there may be boundary conditions and limits to this association. For one, the developmental timing of the assessments may explain why the path from sensitive parenting to externalizing was not significant in this study. Sensitive parenting at age one may impact child behavior in the more immediate future whereas other factors including concurrent parenting may exert stronger influence in the development of externalizing behavior at age 4. Timing might also help explain the nonsignificant indirect effect, it may be that representations affect proximal versus more distal child outcomes. Given that we measured representations during pregnancy and child externalizing at age 4, it may be that there was too much intervening time for prenatal representations to influence this particular developmental outcome. Additionally, while the present investigation controlled for the effects of IPV, it did not account for more normative levels of parental conflict that are associated with externalizing outcomes (e.g. Owens & Shaw, 2003). Given significant study limitations discussed below, the null findings in the present investigation do not preclude the possibility that representations do in fact influence externalizing behavior.

My second hypothesis that child temperament would moderate both paths of the indirect effect was also not supported. I predicted that when mothers with non-balanced representations faced the challenge of caring for particularly difficult infants, those representations would be

reinforced resulting in less sensitive parenting. Contrary to my hypothesis, the relationship between representations and parenting sensitivity was not conditional upon child temperament. The WMCI is coded using a variety of representational domains which inform the typology classifications. These typologies were further consolidated into balanced and non-balanced categories in the present investigation. While representations of the child as difficult to soothe and predictions of feeling helpless and overwhelmed by negative child affects characterize certain non-balanced transcripts, they are not required for a classification of non-balanced on the WMCI. Therefore, it might be that the WMCI typologies are too global to reflect the specific cognitions about infant temperament and caregiving competence that would be reinforced by the reality of caring for a difficult child.

My second moderation hypothesis was also not supported; the relationship between sensitive parenting and child externalizing behavior was not conditional upon child temperament. One obvious reason for this null finding is that the relationship between sensitivity and externalizing itself was not significant. As discussed above, empirical evidence that positive parenting predicts externalizing is inconsistent. A significant moderation effect to path B would require that children with difficult temperaments develop significantly more externalizing behavior when maternal sensitivity is low and/ or develop significantly less externalizing when maternal sensitivity is high. It might be that the influence of positive parenting at age one on externalizing at age four is not strong enough to produce these differential effects. Another possible explanation is that the majority of children in the present study were "dandelions" who were resilient to the effects of parenting (in)sensitivity on the development of preschool externalizing behavior.

Limitations

One limitation of the present study was the sample size, as discussed in the post-hoc analysis section above. Another limitation imposed by the sample size was that there were not enough women in the distorted or disengaged representational categories to model them separately, instead they were collapsed into a single non-balanced category for analysis. Distorted and disengaged representations are distinctly organized and while both predict negative and/ or less positive parenting, the specific manifestations of parenting behaviors differ between the groups (e.g. Dayton et al., 2010). Therefore, it is possible that a developmental sequela from representations to child externalizing behavior exists in one representational group or the other but was obscured when the categories were collapsed.

Another factor that likely contributed to my null result was the non-significant relationship between sensitive parenting and externalizing behavior in this sample. This might be due, in part, to reporter bias in the outcome of interest, child externalizing. Child externalizing behavior was measured with the externalizing subscale of the Child Behavior Checklist reported by moms when children were four years old. It has long been recognized that parent's report of their child's psychopathology is influenced by individual characteristics of the parent including their own psychiatric symptoms (e.g. Valentino et al., 2010). Maternal report of child externalizing behavior may not be accurate to the extent that it reflects the mother's own mental health status rather than, or in addition to, her child's mental health status. The same critique can be made of the temperament variable which was also assessed via maternal report. Both variables may reflect biases resulting from maternal stress and psychopathology. Future research should utilize observed measures or multi-informant report to achieve a more objective assessment of child behavior that is not conflated with maternal characteristics.

Future Directions

Due to the limitations discussed above, it is possible that a developmental sequela from maternal representations to child externalizing through maternal sensitivity exists but that I was underpowered or did not have the measurement precision to detect it. Additional research is needed to elucidate the impact of representations on child outcomes as this remains a significant gap in the literature. Future research should recruit sample sizes capable of detecting indirect effects with medium to small path estimates. Additionally, investigations involving externalizing behavior and temperament should include objective measures of these constructs such as observed behavior or utilize multi-informant reports to reduce bias resulting from maternal reports.

It is also possible that representations are not directly or indirectly related to externalizing behavior, which is a multiply determined outcome with many strong predictors. If this were the case it would suggest that maternal representations are not a fruitful target for parenting interventions aimed at reducing children's disruptive and aggressive behaviors. However, given the significant limitations of the present study, caution should be taken in interpretation. Additional research is needed to replicate these null findings before concluding that a relationship between representations and externalizing does not exist. Work investigating which parental cognitive mechanisms impact child outcomes is crucial to identifying targets of intervention to bolster healthy child development particularly in contexts of familial risk.

APPENDIX

Table 1.

Variable Inter-correlations and Descriptive Statistics

Variable	1	2	3	4	5
1. Maternal Sensitivity	1				
2. Difficult Child Temperament	-.282**	1			
3. Child Externalizing	-.202*	.23**	1		
4. Pregnancy IPV	-0.14	.20*	.16*	1	
5. Cumulative IPV	-0.09	0	0.09	.39**	1
Mean	2.83	16.53	48.99	6.37	16.79
Standard Deviation	1.12	2.41	9.07	11.99	30.98

Note. N= 206, **p<= 0.01, *p<= 0.05 (2-tailed). Continuous temperament variable used for correlations

Table 2.

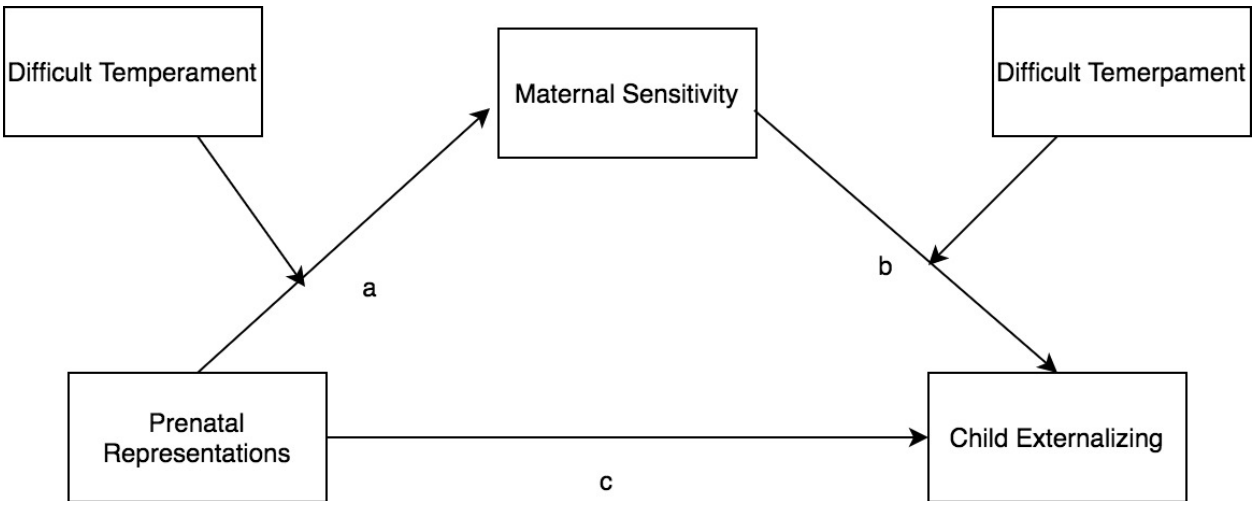
Means, Standard Deviations and T-tests by WMCI Classification

Variable	Balanced		Non-balanced		
	M	SD	M	SD	*t*-test
Maternal Sensitivity	3.22	1.10	2.40	0.96	5.12**
Difficult Child Temperament	15.93	2.48	17.15	2.22	-3.50**
Child Externalizing	47.89	9.08	49.88	9.14	-1.42
Pregnancy IPV	3.55	7.38	8.92	14.61	-3.24**

Note. **p< 0.01. The continuous temperament variable was used.

Figure 1.

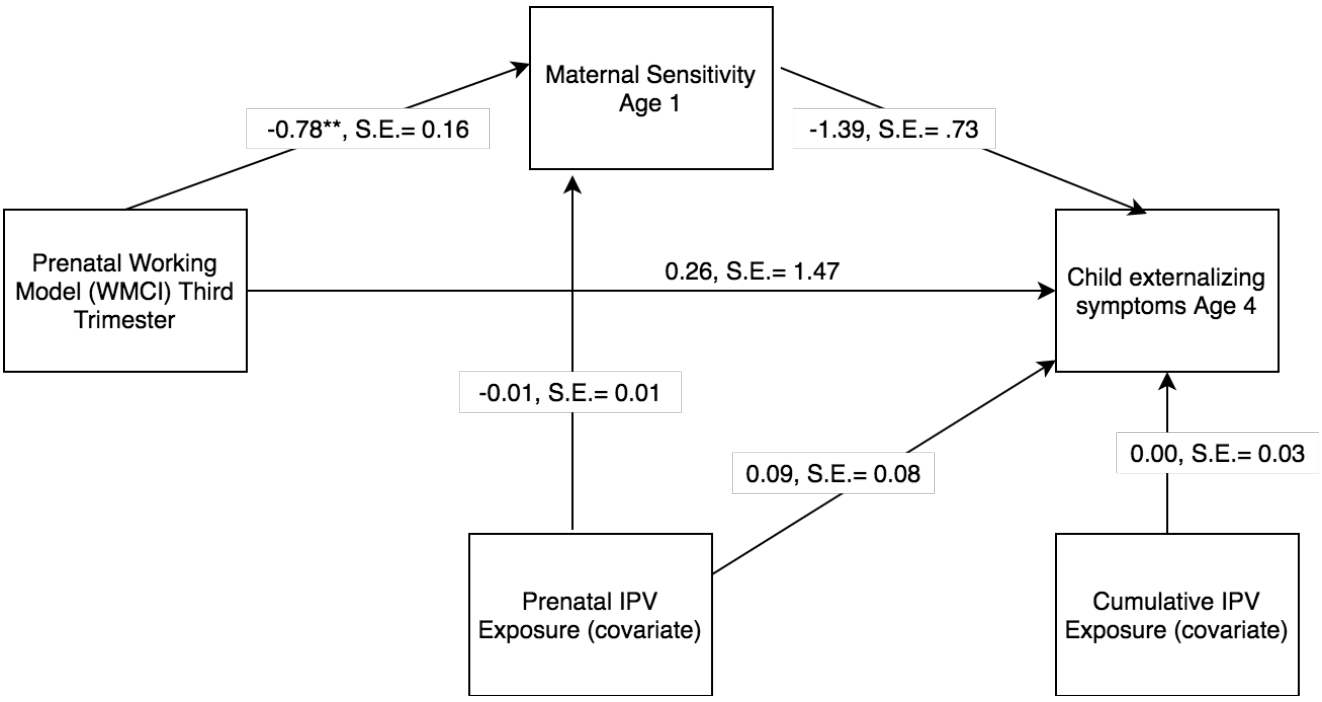
Conceptual Model Showing Representations Predicting Externalizing via Maternal Sensitivity.



Note. Prenatal IPV and cumulative IPV covaried in all analyses

Figure 2.

Mediation Model Results



Note: Path coefficients are unstandardized. Error variances are omitted from the figure. *$p < .05$, **$p<.01$

REFERENCES

REFERENCES

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and the 1991 profile*. Unpublished manuscript, Department of Psychiatry, University of Vermont.

Ainsworth, M.D.S., & Bell, S.M. (1974). Mother–infant interaction and the development of competence. In K. Connolly & J. Bruner (Eds.), *The growth of competence* (pp. 97–118). Academic Press.

Ainsworth, M.D.S., Bell, S.M., & Stayton, D.J. (1971). Attachment and exploratory behavior of one-year-olds. In H.R. Schaffer (Ed.), *The origins of human social relations* (pp. 17–52). Academic Press.

Ainsworth, M.D.S., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Erlbaum and Associates.

Ammaniti, M., Baumgartner, E., Candelori, C., Perucchini, P., Pola, M., Tambelli, R., & Zampino, F. (1992). Representations and narratives during pregnancy. *Infant Mental Health Journal*, *13*(2), 167–182. https://doi.org/10.1002/1097-0355(199223)13:2<167::AID-IMHJ2280130207>3.0.CO;2-M

Anton, M. T., Jones, D. J., & Youngstrom, E. A. (2015). Socioeconomic status, parenting, and externalizing problems in African American single-mother homes: A person-oriented approach. *Journal of Family Psychology*, *29*(3), 405. https://doi-org.proxy1.cl.msu.edu/10.1037/fam0000086

Barlow, J. (2018). Maternal representations in pregnancy: Importance of the mothers' relationship with their unborn babies. In P. Leach (Ed.), *Transforming infant wellbeing: Research, policy and practice for the first 1001 critical days* (pp. 37-47). Routledge.

Belsky, J. (1984). The Determinants of Parenting: A Process Model. *Child Development*, *55*(1), 83-96. https://doi.org/10.2307/1129836

Belsky, J. (1997). Variation in susceptibility to environmental influence: An evolutionary argument. *Psychological Inquiry*, *8*(3), 182–186. https://doi.org/10.1207/s15327965pli0803_3

Belsky, J., Hsieh, K., & Crnic, K. (1998). Mothering, fathering, and infant negativity as antecedents of boys' externalizing problems and inhibition at age 3 years: Differential susceptibility to rearing experience? *Development and Psychopathology*, *10*(2), 301-319. https://doi-org.proxy1.cl.msu.edu/10.1017/S095457949800162X

Benoit, D., Parker, K. C. H., & Zeanah, C. H. (1997). Mothers' representations of their infants assessed prenatally: Stability and association with infants' attachment classifications. *Journal*

of Child Psychology and Psychiatry, *38*(3), 307–313. https://doi.org/10.1111/j.1469-7610.1997.tb01515.x

Beyer, T., Postert, C., Müller, J. M., & Furniss, T. (2012). Prognosis and continuity of child mental health problems from preschool to primary school: Results of a four-year longitudinal study. *Child Psychiatry & Human Development*, *43*(4), 533–543. https://doi.org/10.1007/s10578-012-0282-5

Bibring, G.L., Dwyer, T.F., Huntington, D.S., & Valenstein, A.F. (1961). A study of the psychological processes in pregnancy and of the earliest mother–child relationship. *Psychoanalytic Study of the Child, 16*(1), 9–24. https://doi.org/10.1080/00797308.1961.11823198

Boeldt, D. L., Rhee, S. H., DiLalla, L. F., Mullineaux, P. Y., Schulz-Heik, R. J., Corley, R. P., Young, S. E., & Hewitt, J. K. (2012). The association between positive parenting and externalizing behavior. *Infant and Child Development*, *21*(1), 85-106. https://doi.org/10.1002/icd.764

Bogat, G. A., Levendosky, A. A., & Davidson, W. S. (1999). Understanding the intergenerational transmission of violence: From pregnancy through the first year of life, final project report. Rockville, MD: National Institutes of Justice.

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

Bowlby, J. (1982). *Attachment and loss volume 1: Attachment* (2nd ed.). New York: Basic Books.

Boyce, W. T., Chesney, M., Alkon, A., Tschann, J. M., Adams, S., Chesterman, B., Cohen, F., Kaiser, P., Folkman, S., & Wara, D. (1995). Psychobiologic reactivity to stress and childhood respiratory illnesses: Results of two prospective studies. *Psychosomatic Medicine*, *57*(5) 411-422.

Brennan, L. M., Shaw, D. S., Dishion, T. J., & Wilson, M. (2012). Longitudinal predictors of school-age academic achievement: Unique contributions of toddler-age aggression, oppositionality, inattention, and hyperactivity. *Journal of Abnormal Child Psychology*, *40*(8), 1289–1300. https://doi.org/10.1007/s10802-012-9639-2

Bulotsky-Shearer, R. J., & Fantuzzo, J. W. (2011). Preschool behavior problems in classroom learning situations and literacy outcomes in kindergarten and first grade. *Early Childhood Research Quarterly*, *26*(1), 61–73. https://doi.org/10.1016/j.ecresq.2010.04.004

Campbell, S. B. (1979). Mother-infant interaction as a function of maternal ratings of temperament. *Child Psychiatry & Human Development*, *10*(2), 67–76. https://doi.org/10.1007/BF01433498

Campbell S. B., Shaw D. S., & Gilliom M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology*, *12*, 467–488. https://doi-org.proxy1.cl.msu.edu/10.1017/S0954579400003114

Campbell, S. B., Spieker, S., Burchinal, M., Poe, M. D., & The NICHD Early Child Care Research Network. (2006). Trajectories of aggression from toddlerhood to age 9 predict academic and social functioning through age 12. *Journal of Child Psychology and Psychiatry*, *47*(8), 791–800. https://doi.org/10.1111/j.1469-7610.2006.01636.x

Chess, S. & Thomas, A. (1989). Temperament and its functional significance. In S. I. Greenspan, & G.H. Pollock (Eds.), *The course of life: Early childhood* (Vol. 2., pp. 163-227). International Universities Press.

Cicchetti, D., Rogosch, F. A., & Toth, S. L. (2006). Fostering secure attachment in infants in maltreating families through preventive interventions. *Development and Psychopathology, 18,* 623–649. https://doi.org/10.1017/S0954579406060329

Colder, C. R., Lochman, J. E., & Wells, K. C. (1997). The moderating effects of children's fear and activity level on relations between parenting practices and childhood symptomatology. *Journal of Abnormal Child Psychology*, *25*(3), 251-263. https://doi.org/10.1023/A:1025704217619

Crittenden, P.M. (1981). Abusing, neglecting, problematic, and adequate dyads: Differentiating by patterns of interaction. *Merrill–Palmer Quarterly of Behavior and Development*, *27*(3), 201–218.

Dayton, C. J., Levendosky, A. A., Davidson, W. S., & Bogat, G. A. (2010). The child as held in the mind of the mother: The influence of prenatal maternal representations on parenting behaviors. *Infant Mental Health Journal*, *31*(2), 220–241. https://doi.org/10.1002/imhj.20253

Eiden, R. D., Edwards, E. P., & Leonard, K. E. (2007). A conceptual model for the development of externalizing behavior problems among kindergarten children of alcoholic families: Role of parenting and children's self-regulation. *Developmental Psychology*, *43*(5), 1187-1201. https://doi.org/10.1037/0012-1649.43.5.1187

Eisenberg, N., Cumberland, A., Spinrad, T. L., Fabes, R. A., Shepard, S. A., Reiser, M., Murphy, B. C., Losoya, S. H., & Guthrie, I. K., (2001). The relations of regulation and emotionality to children's externalizing and internalizing problem behavior. *Child Development, 72*, 1112–1134. https://doi-org.proxy1.cl.msu.edu/10.1111/1467-8624.00337

Fagot, B. I., & Leve, L. D. (1998). Teacher ratings of externalizing behavior at school entry for boys and girls: Similar early predictors and different correlates. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *39*(4), 555-566. https://doi.org/10.1017/S002196309800225X

Falk, C. F. (2018). Are robust standard errors the best approach for interval estimation with nonnormal data in structural equation modeling? *Structural Equation Modeling: A Multidisciplinary Journal*, *25*(2), 244–266. https://doi.org/10.1080/10705511.2017.1367254

Foley, S., & Hughes, C. (2018). Great expectations? Do mothers' and fathers' prenatal thoughts and feelings about the infant predict parent-infant interaction quality? A meta-analytic review. *Developmental Review*, *48*, 40–54. https://doi.org/10.1016/j.dr.2018.03.007

Friedman-Weieneth, J. L., Harvey, E. A., Youngwirth, S. D., & Goldstein, L. H. (2007). The relation between 3-year-old children's skills and their hyperactivity, inattention, and aggression. *Journal of Educational Psychology*, *99*(3), 671–681. https://doi.org/10.1037/0022-0663.99.3.671

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18*(3), 233–239. https://doi.org/10.1111/j.1467-9280.2007.01882.x

Fullard, W., McDevitt, S. C., & Carey, W. B. (1984). Assessing temperament in one-to three-year-old children. *Journal of Pediatric Psychology*, *9*(2), 205–217. https://doi.org/10.1093/jpepsy/9.2.205

Ganiban, J. M., Ulbricht, J., Saudino, K. J., Reiss, D., & Neiderhiser, J. M. (2011). Understanding child-based effects on parenting: Temperament as a moderator of genetic and environmental contributions to parenting. *Developmental Psychology*, *47*(3), 676–692. https://doi.org/10.1037/a0021812

Solomon, J., & George, C. (1996). Defining the caregiving system: Toward a theory of caregiving. *Infant Mental Health Journal*, *17*(3), 183–197. https://doi.org/10.1002/(SICI)1097-0355(199623)17:3<183::AID-IMHJ1>3.0.CO;2-Q

Hinshaw S. P. (1987). On the distinction between attentional deficits/hyperactivity and conduct problems/aggression in child psychopathology. *Psychological Bulletin*, *101*(3), 443–463. https://doi-org.proxy1.cl.msu.edu/10.1037/0033-2909.101.3.443

Huth-Bocks, A. C., Levendosky, A. A., Theran, S. A., & Bogat, G. A. (2004). The impact of domestic violence on mothers' prenatal representations of their infants. *Infant Mental Health Journal*, *25*(2), 79–98. https://doi.org/10.1002/imhj.10094

Huth-Bocks, A. C., Theran, S. A., Levendosky, A. A., & Bogat, G. A. (2011). A social-contextual understanding of concordance and discordance between maternal prenatal representations of the infant and infant-mother attachment. *Infant Mental Health Journal*, *32*(4), 405–426. https://doi.org/10.1002/imhj.20304

Jaffee, S. R., Caspi, A., Moffitt, T. E., Polo-Tomas, M., Price, T. S., & Taylor, A. (2004). The limits of child effects: Evidence for genetically mediated child effects on corporal punishment but not on physical maltreatment. *Developmental Psychology*, *40*(6), 1047–1058. https://doi.org/10.1037/0012-1649.40.6.1047

Kelly, P. (1976). The relation of infant's temperament and mother's psychopathology to interactions in early infancy. In K. F. Riegal and J. A. Meacham (Eds.), *The developing individual in a changing world* (Vol. 11, pp. 664-675). Aldine.

Kennedy, E. (2013). Orchids and dandelions: How some children are more susceptible to environmental influences for better or worse and the implications for child development. *Clinical Child Psychology and Psychiatry*, *18*(3), 319–321. https://doi.org/10.1177/1359104513490338

Kupersmidt, J. B., Burchinal, M., & Patterson, C. J. (1995). Developmental patterns of childhood peer relations as predictors of externalizing behavior problems. *Development and Psychopathology*, *7*(4), 825-843. https://doi.org/10.1017/S0954579400006866

Leve, L. D., Kim, H. K., & Pears, K. C. (2005). Childhood temperament and family environment as predictors of internalizing and externalizing trajectories from ages 5 to 17. *Journal of Abnormal Child Psychology*, *33*(5), 505-520. https://doi.org/10.1007/s10802-005-6734-7

Levendosky, A. A., Bogat, G. A., Davidson, W. S., & von Eye, A. (2000). Risk and protective factors for domestic violence. Atlanta, GA: Centers for Disease Control, Injury Prevention Center.

Lumley, J.M. (1982). Attitudes to the fetus among primigravidae. *Journal of Paediatrics and Child Health*, *18*(2), 106-109. https://doi.org/10.1111/j.1440-1754.1982.tb02000.x

Lyons-Ruth, K., Easterbrooks, M. A., & Cibelli, C. D. (1997). Infant attachment strategies, infant mental lag, and maternal depressive symptoms: Predictors of internalizing and externalizing problems at age 7. *Developmental Psychology*, *33*(4), 681–692. https://doi.org/10.1037/0012-1649.33.4.681

Marshall, L.L. (1992). Development of the severity of violence against women scales. *Journal of Family Violence, 7,* 103–121. https://doi.org/10.1007/BF00978700

Martinez-Torteya, C., Bogat, G. A., Von Eye, A., & Levendosky, A. A. (2009). Resilience among children exposed to domestic violence: The role of risk and protective factors. *Child Development*, *80*(2), 562–577. https://doi.org/10.1111/j.1467-8624.2009.01279.x

Martinez-Torteya, C., Bogat, G. A., Levendosky, A. A., & von Eye, A. (2016). The influence of prenatal intimate partner violence exposure on hypothalamic–pituitary–adrenal axis reactivity and childhood internalizing and externalizing symptoms. *Development and Psychopathology*, *28*(01), 55–72. https://doi.org/10.1017/S0954579415000280

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39,* 99–128. https://doi.org/10.1207/s15327906mbr3901_4

Milliones, J. (1978). Relationship between perceived child temperament and maternal behaviors. *Child Development, 49*(4), 1255–1257. https://doi.org/10.2307/1128773

Miner, J. L., & Clarke-Stewart, K. A. (2008). Trajectories of externalizing behavior from age 2 to age 9: Relations with gender, temperament, ethnicity, parenting, and rater. *Developmental Psychology, 44*(3), 771–786. https://doi-org.proxy1.cl.msu.edu/10.1037/0012-1649.44.3.771

Morris, A. S., Silk, J. S., Steinberg, L., Sessa, F. M., Avenevoli, S., & Essex, M. J. (2002). Temperamental vulnerability and negative parenting as interacting predictors of child adjustment. *Journal of Marriage and Family*, *64*(2), 461–471. https://doi.org/10.1111/j.1741-3737.2002.00461.x

Muthén, L.K. and Muthén, B.O. (1998-2017). Mplus User's Guide. Eighth Edition. Los Angeles, CA: Muthén & Muthén.

Nuttall, A. K., Valentino, K., & Borkowski, J. G. (2012). Maternal history of parentification, maternal warm responsiveness, and children's externalizing behavior. *Journal of Family Psychology*, *26*(5), 767–775. https://doi.org/10.1037/a0029470

Owens, E. B., & Shaw, D. S. (2003). Predicting growth curves of externalizing behavior across the preschool years. *Journal of abnormal child psychology*, *31*(6), 575-590. https://doi.org/10.1023/A:1026254005632

Pinquart, M. (2017). Associations of parenting dimensions and styles with externalizing problems of children and adolescents: An updated meta-analysis. *Developmental Psychology, 53*(5), 873–932. https://doi-org.proxy1.cl.msu.edu/10.1037/dev0000295

Pluess, M., & Belsky, J. (2009). Differential susceptibility to rearing experience: The case of childcare. *Journal of Child Psychology and Psychiatry*, *50*(4), 396–404. https://doi.org/10.1111/j.1469-7610.2008.01992.x

Rosenblum, K. L., Dayton, C. J., & McDonough, S. C. (2006). Communicating feelings: Links between mothers' representations of their infants, parenting, and infant emotional development. In O. Mayseless (Ed.), *Parenting representations: Theory, research, and clinical implications* (pp. 109–148). Cambridge University Press.

Rosenblum, K. L., McDonough, S. C., Sameroff, A. J., & Muzik, M. (2008). Reflection in thought and action: Maternal parenting reflectivity predicts mind-minded comments and interactive behavior. *Infant Mental Health Journal*, *29*(4), 362–376. https://doi.org/10.1002/imhj.20184

Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology*, *78*(1), 122–135. https://doi.org/10.1037//0022-3514.78.1.122

Saylor, C. F., Boyce, G. C., & Price, C. (2003). Early predictors of school-age behavior problems and social skills in children with intraventricular hemorrhage (IVH) and/or extremely low

birthweight (ELBW). *Child Psychiatry and Human Development*, *33*(3), 175-192. https://doi.org/10.1023/A:1021402012924

Schechter, D. S., Coots, T., Zeanah, C. H., Davies, M., Coates, S. W., Trabka, K. A., Marshall, R. D., Liebowitz, M. R., Myers, M. M. (2005). Maternal mental representations of the child in an inner-city clinical sample: Violence-related posttraumatic stress and reflective functioning. *Attachment & Human Development*, *7*(3), 313–331. https://doi.org/10.1080/14616730500246011

Seifer, R., & Schiller, M. (1995). The role of parenting sensitivity, infant temperament, and dyadic interaction in attachment theory and assessment. *Society for Research in Child Development*, *60*(2/3), 146–174.

Sher-Censor, E., & Yates, T. M. (2015). Mothers' expressed emotion and narrative coherence: Associations with preschoolers' behavior problems in a multiethnic sample. *Journal of Child and Family Studies*, *24*(5), 1392–1405. https://doi.org/10.1007/s10826-014-9946-z

Sokolowski, M. S., Hans, S. L., Bernstein, V. J., & Cox, S. M. (2007). Mothers' representations of their infants and parenting behavior: Associations with personal and social-contextual variables in a high-risk sample. *Infant Mental Health Journal*, *28*(3), 344–365. https://doi.org/10.1002/imhj.20140

Stanger, C., Dumenci, L., Kamon, J., & Burstein, M. (2004). Parenting and children's externalizing problems in substance-abusing families. *Journal of Clinical Child and Adolescent Psychology*, *33*(3), 590-600. https://doi.org/10.1207/s15374424jccp3303_16

Stern, D. N. (1995). The motherhood constellation: A unified view of parent–infant psychotherapy. New York: Basic Books.

Straus, M. A. (1979). Measuring intrafamily conflict and violence: The conflict tactics (CT) scales. *Journal of Marriage and Family*, *41*(1), 75-88. https://doi.org/10.2307/351733

Stoolmiller, M. (2001). Synergistic interaction of child manageability problems and parent-discipline tactics in predicting future growth in externalizing behavior for boys. *Developmental Psychology*, *37*(6), 814–825. https://doi.org/10.1037//0012-1649.37.6.814

Tambelli, R., Odorisio, F., & Lucarelli, L. (2014). Prenatal and postnatal maternal representations in nonrisk and at-risk parenting: Exploring the influences on mother–infant feeding interactions. *Infant Mental Health Journal*, *35*(4), 376-388. https://doi-org/10.1002/imhj.21448

Theran, S. A., Levendosky, A. A., Bogat, G. A., & Huth-Bocks, A. C. (2005). Stability and change in mothers' internal representations of their infants over time. *Attachment & Human Development*, *7*(3), 253–268. https://doi.org/10.1080/14616730500245609

Valentino, K., Berkowitz, S., & Stover, C. S. (2010). Parenting behaviors and posttraumatic symptoms in relation to children's symptomatology following a traumatic event: Parenting and trauma. *Journal of Traumatic Stress*, *23*(3), 403–407. https://doi.org/10.1002/jts.20525

Wakschlag, L. S., & Hans, S. L. (1999). Relation of maternal responsiveness during infancy to the development of behavior problems in high-risk youths. *Developmental Psychology*, *35*(2), 569–579. https://doi.org/10.1037/0012-1649.35.2.569

Zeanah, C.H., Keener, M.A., & Anders, T.F. (1986). Adolescent mothers' prenatal fantasies and working models of their infants. *Psychiatry, 49*(3), 193–203. https://doi.org/10.1080/00332747.1986.1102432

Zeanah, C., Hirshberg, L., Barton, M., Benoit, D., & Regan, C. (1994). Mothers' representations of their infant are concordant with infant attachment classification. *Developmental Issues in Psychiatry and Psychology*, *1*, 9–18.

Zeanah, C.H., & Benoit, D. (1995). Clinical applications of a parent perception interview in infant mental health. *Child and Adolescent Psychiatric Clinics of North America*, *4,* 539–554. https://doi.org/10.1016/S1056-4993(18)30418-8