CHILDHOOD MALTREATMENT AND CAREGIVER SENSITIVITY: EXPLORING THE MEDIATING ROLE OF EMOTION REGULATION

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A DISSERTATION SUBMITTED TO

THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

GRADUATE PROGRAM IN PSYCHOLOGY

YORK UNIVERSITY

TORONTO, ONTARIO

June 2025

Abstract

Childhood maltreatment is believed to have intergenerational effects through its impact on caregiving behaviour, however the mechanisms underlying this relationship are still unclear. The current study aimed to investigate how emotion dysregulation and postpartum depressive symptomology may mediate the relationship between a caregiver's experiences of maltreatment in childhood and their sensitivity towards their own children in infancy. One hundred and twelve caregivers completed questionnaires related to their subjective experiences of maltreatment in childhood, their difficulties with emotion regulation, and their symptoms of postpartum depression. Caregivers also attended a virtual session during which a sample of dyadic interaction with their infants was obtained and coded for maternal sensitivity using the mini–Maternal Behaviour Q-sort. The Emotional Stroop Task was employed as a measure of implicit emotion regulation, however data from this task were excluded from analyses as an interference effect was not successfully demonstrated. No study variables were found to significantly predict caregiver sensitivity in this study, calling into question the validity of collecting samples of dyadic interaction virtually. Self-reported difficulties with emotion regulation were found to partially mediate the relationship between self-reported experiences of maltreatment in childhood and symptoms of postpartum depression. These findings lend support to the development and implementation of interventions focused on fostering adaptive emotion regulation among caregivers and caregivers-to-be, especially those who have experienced childhood maltreatment. Additional research is needed to further understand these relationships, including studies with different measures employed within more controlled settings, as well as diverse participant samples that are more representative.

Acknowledgements

There are many people to whom I owe my heartfelt thanks for their role in the completion of this dissertation and my doctoral journey.

First and foremost, I am deeply grateful to my supervisor and mentor, Dr. Yvonne Bohr, for her support and encouragement throughout every stage of this degree. Your inspirational guidance has shaped not only this project but also the clinician and researcher I have become.

I would also like to extend my sincere thanks to Dr. Maggie Toplak and Dr. Heather Prime for their invaluable feedback and support throughout the process of this dissertation. I am also grateful to the other members of my examination committee, Dr. Hala Tamim, Dr. Karen Milligan, and Dr. Mary Desrocher. Your thoughtful and engaging questions pushed me to think more critically and deeply about my work and its implications.

Special thanks go to Dr. Robert Cribbie for his support through the Statistical Consulting Service. I am also sincerely grateful to the members of the Infant and Child Mental Health Lab (Mariami Bimm, Khadija Bint Misbah, Jenna Barnhardt, Alaina Thomas, Nichaela Garvey, Sierra DiMarco, Sabrina Da Silva, Riya Trikha, Emma Puric, & Fernanda De La Mora) who generously offered their time and support throughout the various stages of this project.

I would also like to extend my gratitude to the caregivers and infants who chose to share their time and experiences with me during this project. I would like to gratefully acknowledge the financial support that was provided by the Social Sciences and Humanities Research Council, the Meighen Wright Foundation Graduate Scholarship, and the Academic Excellence Fund.

To my incredible cohort: thank you for being by my side throughout this long journey – to lean on, laugh with, and grow alongside. I could not have asked for a more supportive group of colleagues and friends!

Finally, to my family: words truly cannot express my gratitude to you. Your love, support, and unwavering belief in me are the reason why I am who I am. This achievement is as much yours as it is mine. Thank you.

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Childhood Maltreatment and Caregiver Sensitivity: Exploring the Mediating Role of Emotion Regulation

Introduction

Caregiver sensitivity refers to a caregiver's ability to notice their child's signals, to interpret them, and to respond promptly and appropriately (Ainsworth et al., 1978). Sensitive and responsive caregiving has been acknowledged to play a crucial role in the healthy physical and psychological development of children (Deans, 2020; World Health Organization, 2004). Specifically, the literature has established links between sensitive caregiving behaviour and important domains of child well-being, including social adjustment (Stams et al., 2002), attachment classifications (Pederson et al., 1990), executive functioning (Bernier et al., 2010), and cognitive and language outcomes (Bornstein et al., 2020; Hirsh-Pasek & Burchinal, 2006; Lemelin et al., 2006; Prime et al., 2023). Given the wealth of evidence supporting the role of caregiver sensitivity in healthy child development, it is important to understand what factors may hinder sensitive caregiving and put children at risk for suboptimal developmental outcomes. A great deal of research has focused on how experiences of maltreatment in childhood may impact future parenting behaviour; however the mechanisms underlying this relationship are still unclear (Greene et al., 2020; Madigan et al., 2019; Savage et al., 2019; Vaillancourt et al., 2017). One potential intermediary mechanism is the ability to regulate one's emotions. Early parenting is a highly emotional period, and challenges with emotion regulation may impede a caregiver's ability to behave sensitively with their child in the postpartum period (Cabecinha-Alati et al., 2020; Dix, 1991). As such, the goal of the current study was to further enhance our understanding of how childhood maltreatment may relate to caregiver sensitivity through its association with caregiver emotion regulation.

The Impact of Childhood Maltreatment

Childhood maltreatment represents a pervasive public health concern, with established links to poorer physical and mental health outcomes (England-Mason et al., 2018). Within Canada, recent estimates indicate that close to 60% of Canadian adults recall having experienced some form of maltreatment before the age of fifteen, including physical abuse, sexual abuse, emotional abuse, neglect, or exposure to intimate partner violence, with many individuals reporting experiencing multiple forms of maltreatment (Bader & Frank, 2023). Experiencing maltreatment early in life has been shown to negatively impact children's cognitive, social, and, most notably, emotional development (Cicchetti & Toth, 1995; Cicchetti & Toth, 2005). The impact of childhood maltreatment has also been shown to persist into adulthood, with links to an array of mental health challenges, including depression, suicidality, anxiety, substance use disorders, attentional difficulties, and psychosis (Afifi et al., 2014; Afifi et al., 2016; Halpern et al., 2018; Li et al., 2016; Nelson et al., 2017; Varese et al., 2012). Moreover, maltreatment in childhood has also been shown to have intergenerational effects, with children of mothers who have experienced maltreatment being at greater risk for emotional and behavioural difficulties themselves (Plant et al., 2018; Su et al., 2022). Given the multigenerational effects of childhood maltreatment on psychological well-being, it is important for researchers to investigate mechanisms through which childhood maltreatment may negatively affect future generations.

Childhood Maltreatment and Parenting

Parenting has received extensive attention as a mechanism through which the effects of one's own experiences of being parented can be transmitted to children. Although a great deal of research has focused on the perpetuation of abuse, the vast majority of those who endure maltreatment in childhood do not go on to abuse their own children (Kaufman & Zigler, 1987;

Schelbe & Geiger, 2017). However, parenting behaviours that, while not abusive, are still non-optimal, for example harsh, negative, or insensitive behaviours, are also known to negatively impact the healthy development of children (Cooke et al., 2020; Deans, 2020). Thus, it is important for researchers to look beyond the perpetuation of abusive parenting practices to more comprehensively understand how maltreatment may impact future generations through parenting behaviours more generally.

Existing research supports the relationship between childhood maltreatment and challenges with parenting (Greene et al., 2020; Hughes & Cossar, 2015; Hugill et al., 2017; Savage et al., 2019). In conducting a meta-analysis of 32 studies, Savage and colleagues (2019) found a small but statistically significant association between maltreatment history and various parenting outcomes. Specifically, maltreatment history was associated with less *positive* parenting behaviour (i.e., empathy, sensitivity, warmth), greater *negative* parenting behaviour (i.e., harshness, hostility, rejection), and poorer *relationship-based* outcomes (i.e., attachment, bonding; Savage et al., 2019). Similarly, based on their review of 97 studies examining the relationship between maltreatment and various parenting practices, Greene and colleagues (2019) concluded that experiences of maltreatment increase risk for suboptimal parenting practices, either by increasing negative parenting behaviours (e.g., hostility, rejection, role reversal) or decreasing positive parenting behaviours (e.g., sensitivity, responsivity, emotional availability, warmth). Experiences of childhood maltreatment have also been linked to other factors that are known to negatively impact parenting behaviour (see Souch et al., 2022 for review), such as lower perceived parenting competence (Bailey et al., 2012) and lower parenting self-efficacy (Caldwell et al., 2011).

Few studies have considered observed caregiving behaviour when examining the relationship between childhood maltreatment and parenting, instead relying on parent self-report measures. Vaillancourt and colleagues (2017) conducted a review of 14 studies examining the association between childhood maltreatment and observational measures of parent-child interaction. Of the studies reviewed, six revealed direct relationships between childhood maltreatment and quality of dyadic interaction (Vaillancourt et al., 2017). Childhood maltreatment was directly associated with lower ratings of maternal sensitivity across several measurement tools, including the Maternal Behaviour Q-sort (Pereira et al., 2012), the Ainsworth Maternal Sensitivity Scales (Lyons-Ruth & Block, 1996), and the Emotional Availability Scales (Fuchs et al., 2015). Maltreatment history has also been associated with an increased frequency of observed problematic parental behaviours, such as withdrawal, hostility, intrusiveness, and flat affect (Juul et al., 2016; Lyons-Ruth & Block, 1996; Moehler et al., 2007; Zvara et al., 2017). Although a great deal of literature supports the theory that parents who have experienced maltreatment as children are at a greater risk of engaging in insensitive caregiving behaviours, many studies have failed to find a direct link between these variables (Flagg et al., 2023; Jacobvitz et al., 2006; Leon et al., 2004; Lesser & Koniak-Griffin, 2000; Martinez-Torteya et al., 2014; Muzik et al., 2017; Sexton et al., 2017; Stacks et al., 2014). Given that direct effects are inconsistently observed in this association, there may be indirect effects operating wherein child maltreatment leads to differences in parenting behaviour through a more proximal mechanism (Madigan et al., 2019).

Pathways to Insensitivity

Parental mental health, specifically postpartum depression (PPD), has been well researched as a potential mediator of the association between maltreatment history and parenting

behaviour (Erickson et al., 2019; Greene et al., 2020; Souch et al., 2022; Vaillancourt et al., 2017). While a survey of new mothers in Canada suggests that nearly one quarter report feelings consistent with PPD (Statistics Canada, 2019), research suggests that individuals who have experienced childhood maltreatment may be up to two times more likely to experience a variety of mental health difficulties, including depression, in the postpartum period (Buist, 1998; Choi et al., 2019; Hutchens et al., 2017; Racine et al., 2021). The impact of depression on caregiver sensitivity is well documented. Mothers experiencing depression have consistently been found to be more withdrawn, less engaged, and less responsive during interactions with their infants and are more likely to engage in hostile, negative or intrusive behaviours than non-depressed mothers (see Bernard et al., 2018 and Lovejoy et al., 2000 for reviews). Maternal withdrawal, which has been associated with an array of poor outcomes for children (Lyons-Ruth et al., 2013; Lyons-Ruth & Yarger, 2022), has been specifically linked to experiencing multiple forms of maltreatment in childhood or more severe maltreatment (Khoury et al., 2022; Nyström-Hansen et al., 2019). Accordingly, several studies have found support for PPD as a mechanism underlying the relationship between childhood maltreatment and suboptimal parenting behaviour (Pears & Capaldi, 2001; Madigan et al., 2015; Martinez-Torteya et al., 2014; Schuetze & Eiden, 2005; Seltmann & Wright, 2013).

In addition to PPD, other emotional difficulties have also been found to influence the relationship between maltreatment history and parenting behaviour, including anxiety (Roberts et al., 2000), symptoms of PTSD (Erickson et al., 2019; Morelen et al., 2016; Muzik et al., 2013; Pears & Capaldi, 2001), and dissociation (Collin-Vézina et al., 2005; Kim et al., 2010). Moreover, some studies have found that other variables serve to better explain the relationship between maltreatment and caregiver sensitivity than symptoms of PPD. For example, in

investigating the relationship between maltreatment and caregiver sensitivity, Pereira and colleagues (2012) found that maternal depression did not mediate the relationship between maltreatment and maternal sensitivity. Rather, they found the association was better explained through self-reported parenting stress (Pereira et al., 2012). Similarly, Gonzales and colleagues (2012) found that stress responsivity as measured by hypothalamic-pituitary-adrenal (HPA) function mediated the relationship, even when controlling for depressive symptoms. These findings reveal that postpartum depressive symptomology may be only one factor explaining the relationship between childhood maltreatment and parenting. Thus, it may be worthwhile for researchers to look beyond PPD to better understand the mechanisms underlying the path from childhood maltreatment to parental insensitivity. Investigating the role of general emotional dysregulation, a transdiagnostic feature of many psychological disorders, including PPD (Cardoso & Fonseca, 2023; Haga et al., 2012; Marques et al., 2018), may further our understanding of the impact of maltreatment on parenting, and subsequently, on children's well-being.

Childhood Maltreatment and Emotion Regulation

Emotion regulation can be defined as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotions, especially their intensive and temporal features, to accomplish one's goals" (Thompson, 1994). These include unconscious processes, such as allocating attention towards or away from emotional information, as well as conscious processes, such as the identification and acceptance of emotional experiences, and the employment of behavioural strategies to manage emotional states (Gross & Thompson, 2007). Given that emotion regulation abilities are largely believed to develop within the family context, children who grow up experiencing maltreatment are at greater risk for challenges with emotion

regulation (Cicchetti & Toth, 2005; Gross, 2013; Morris et al., 2007). There are multiple theoretical explanations for this increased risk. In line with social learning theory, children who grow up experiencing maltreatment may be exposed to less optimal emotion regulation strategies and, as a result, have fewer opportunities to observe and learn adaptive regulation strategies (Kim & Cicchetti, 2010; Martin et al., 2023; Morris et al., 2007). Moreover, according to attachment theory, individuals develop patterns of emotion regulation through early interactions with their caregivers that are subsequently carried into adulthood (Cassidy, 1994; Mikulincer & Shaver, 2019; Schore & Schore, 2008). Children who experienced maltreatment in their family contexts may have endured suboptimal emotion socialization practices, such as ignoring, dismissing, or punishing expressions of emotion, and may in turn experience greater difficulties with emotional awareness, expression, and regulation later in life (Morris et al., 2007). Finally, chronic experiences of maltreatment may have implications for the development of the stress response system, affecting the function of the HPA axis and producing biochemical changes in the brain, such as an enhanced cortisol response (Ouellet-Morin et al., 2019; Wilson et al., 2011; Zhong et al., 2020).

The literature supports the association between childhood experiences of maltreatment and difficulty across several emotion regulation processes. In fact, emotion dysregulation has been proposed as a mechanism linking childhood maltreatment to many psychological difficulties in adulthood (McLaughlin et al., 2020; Weissman et al., 2019). The ability to regulate emotions is most often assessed using self-report questionnaires, such as the Difficulties in Emotion Regulation Scale (DERS), which includes subscales for challenges with emotional awareness, clarity, and acceptance, as well as challenges with goal-directed behaviour, controlling impulses, and employing strategies to regulate emotions (Gratz & Roemer, 2004).

Using this scale, several researchers have found that maltreated individuals demonstrate greater difficulty across multiple emotion regulation processes (Cheng & Langevin, 2023; Dumessa et al., 2020; ElBarazi, 2023; Jennissen et al., 2016; Krause-Utz et al., 2019). Research with other measures has further supported the link between childhood maltreatment and various challenges with emotion regulation, including lower emotional awareness and clarity, and several maladaptive regulation strategies such as rumination, suppression, and avoidance (Gratz & Roemer, 2004; Weissman et al., 2019; Weissman et al., 2020).

In addition to self-reported challenges, maltreated individuals also exhibit difficulties with unconscious, automatic processes related to emotion regulation, including the allocation of attention towards emotional information. Attention allocation is typically measured using attentional bias paradigms, which allow researchers to measure how mildly threatening emotional stimuli may impact an individual's behaviour during a task. For example, maltreated children and adults have been found to show biases towards emotional faces (Davis et al., 2014; Fani et al., 2011; Pine et al., 2005; Pollak et al., 1998). Other studies have found that individuals who have been maltreated may struggle to allocate attention towards emotional information, which can impede their ability to engage in goal-directed behaviour (Cromheeke, et al., 2014; Powers et al., 2015). Using the Emotional Stroop Task, a colour naming task designed to assess the interference of emotionally salient words on participants' reaction time, researchers have found that maltreated individuals exhibit greater interference (i.e., a longer reaction time) for emotionally salient words compared to neutral words (England-Mason et al., 2018; Fontenot et al., 2015). Given these findings, it is worthwhile for researchers to consider how both explicit, self-reported difficulties with emotion regulation and implicit attentional biases towards emotional information may impact goal-directed behaviour in the context of parenting.

The Role of Emotion Regulation in Caregiving

The ability to regulate one's emotions is a crucial component of effective parenting (Cabecinha-Alati et al., 2020; Dix, 1991; Rutherford et al., 2015). Parenting is an inherently emotional experience and caregivers in the postpartum period are particularly at risk for experiencing intense emotions as they manage the many demands of caring for a young infant (Dix, 1991). In the context of caregiving, parents must balance the goal of engaging sensitively with their children (noticing, interpreting, and responding to their signals; Ainsworth et al., 1978) with other goals, including self-oriented goals such as emotional regulation (Dix, 1991). Infant signalling behaviours (i.e., crying, screaming, clinging) are distinctly salient to caregivers as they are intended to elicit emotion and activate the caregiving behavioural system (Bowlby, 1969; Leerkes, 2010). Although these emotions can serve to engage and organize parenting behaviour, difficulty with downregulating negative emotions (i.e., anger, sadness, anxiety) and upregulating positive emotions (i.e., love, joy, interest) can interfere with or undermine sensitive caregiving (Dix, 1991; Gross, 2014). For example, feeling overwhelmed by an infant's distress may impair a caregiver's ability to engage warmly and sensitively with them. Conversely, failure to activate emotions in response to children's signals or behaviour can also result in a lack of responsivity and reduced sensitivity, as has been shown to be the case among depressed mothers (Dix et al., 2004; Leerkes, 2010). A parent's ability to adequately regulate their own emotional experiences in response to their infant's cues is thus crucial to being able to engage in sensitive and responsive caregiving (Cabecinha-Alati et al., 2020; Crandall et al., 2015; Dix, 1991).

Research supports the relationship between parental emotion regulation and parenting behaviour. In conducting a meta-analysis of the relationship between parental emotion regulation and positive/negative parenting behaviours, Zimmer-Gembeck and colleagues (2020) found that

self-reported *difficulties* with emotion regulation (e.g., poor emotional awareness, lack of access to emotion regulation strategies) were associated with less positive parenting behaviours and more negative parenting behaviours, to a greater extent than self-reported emotion regulation *skill* (e.g., cognitive reappraisal; Zimmer-Gembeck et al., 2020). While most studies have utilized self-reported parenting variables, such as questionnaires on parental emotion socialization practices, some have looked at observed parenting behaviour. Using the DERS, researchers have linked self-reported emotion regulation challenges to lower ratings of observed maternal sensitivity (Leerkes et al., 2020; Su et al., 2018), less positive and collaborative parenting behaviours (Shaffer & Obradović, 2017), and greater observed unsupportive parenting behaviours, including psychological control, hostility, and unavailability (McCullough et al., 2017). In fact, Carreras and colleagues (2019) found that difficulties with emotion regulation predicted observed caregiver sensitivity above and beyond general indicators of parental psychological distress. Thus, further understanding how challenges with emotion regulation relate to parenting behaviour among individuals who have experienced maltreatment in their own childhood may serve to improve interventions designed to support sensitive caregiving amongst this at-risk population.

Current Study

Despite theoretical support in the literature, very few studies have considered emotion regulation as a potential mechanism linking maltreatment history to caregiver sensitivity. Cabecinha-Alati and colleagues (2020) have recently proposed a conceptual model in which experiences of childhood maltreatment are negatively associated with parenting behaviour through the detrimental effects of maltreatment on the development of emotion regulation skills. However, results of the limited research investigating this mechanism have been somewhat

mixed. Using self-report measures of emotion regulation ability and parenting aggression, Rodriguez and colleagues (2021) found that maternal history of maltreatment was indirectly related to psychological aggression towards children through maternal emotion dysregulation. Similarly, self-reported ability to regulate one's emotions was found to mediate the relationship between maltreatment history and caregiver's self-reported responsiveness to their children's negative emotions (Cabecinha-Alati et al., 2020). Smith and colleagues (2014) found that emotion dysregulation and negative affect mediated the relationship between maternal childhood maltreatment and self-reported child abuse potential. Even fewer studies have investigated this mediation effect using measures of observed caregiver sensitivity. Using the Ainsworth Scales of Maternal Sensitivity (AMSS), Su and colleagues (2018) found that emotion dysregulation as assessed by the DERS partially explained the relationship between childhood maltreatment and sensitivity scores. However, Girod and colleagues (2023) failed to find support for the role of emotion dysregulation in the relationship between maltreatment history and observed caregiver sensitivity.

Considering these inconsistencies in the literature, further research is warranted to better understand the role that emotion regulation ability plays in the pathway from childhood maltreatment to sensitive caregiving. In light of evidence that many emotion regulation processes occur implicitly (Gross & Thompson, 2007; Koole & Rothermund, 2011; Koole et al., 2015), investigating the role of automatic processes involved in emotion regulation, in addition to the more commonly used self-report measures, may further our understanding of this relationship. Although attention biases towards emotional information have been shown to mediate the relationship between childhood maltreatment and postpartum depressive symptomology (Choi et al., 2017; England-Mason et al., 2018), no study has investigated how attentional biases to

emotional information may relate to observed parenting behaviour. As such, the first objective of this study was to explore the role of both conscious, self-reported difficulties with emotion regulation, and unconscious attentional biases towards emotional information in the relationship between experiences of maltreatment and observed caregiver sensitivity. It was expected that emotion dysregulation would partially mediate the relationship between experiences of childhood maltreatment and caregiver sensitivity.

The second objective of this study was to examine how difficulties with emotion regulation and symptoms of PPD would sequentially mediate the relationship between maltreatment history and sensitivity. As demonstrated in previous studies, it was expected that postpartum depressive symptomology would mediate the relationship between childhood maltreatment and caregiver sensitivity (Madigan et al., 2015; Martinez-Torteya et al., 2014; Schuetze & Eiden, 2005; Seltmann & Wright, 2013). However, given evidence that difficulties with emotion regulation may in fact underlie experiences of postpartum depression (Brake et al., 2019; Cardoso & Fonseca, 2023; Çankaya & Ataş, 2022; Dinni & Ardiyanti, 2020; Haga et al., 2012; Marques et al., 2018), it was further expected that the ability to regulate emotion would mediate the relationship between childhood maltreatment and postpartum depressive symptomology, further elucidating the intermediary mechanisms linking maltreatment and insensitivity.

Methods

Participants & Procedure

This study employed data collected as part of a larger research initiative investigating caregiver sensitivity. Ethics approval for the study was obtained by the York University Human Participants Review Sub-Committee (Certificate #: e2021-328). All study activities took place

virtually as a result of the COVID-19 pandemic. Caregivers of infants aged 3-10 months across Canada were recruited via social media posts (e.g., Facebook groups, Instagram pages, Reddit), community listservs/newsletters (e.g., university listservs, Mommy Connections newsletters), physical posters in various locations (e.g., mental health agencies, Early Years Centres, libraries, bus stops), and word of mouth (see sample recruitment flyer in Appendix A). This age range was selected to capture the age at which infants start to become more interactive with caregivers (Lamb et al., 1987; Lavelli & Fogel, 2002) while also spanning a period during which caregivers are likely to experience postpartum depression symptomology (Bobo & Yawn, 2014; Robbins et al., 2023)

Caregivers expressed interest in the study by completing an online form (available by visiting a URL link or scanning a QR code) or by emailing the research team directly. Two-hundred and thirty-one caregivers showed interest in the study and were screened for eligibility via email. In order to participate, caregivers needed access to an electronic device with a camera other than their cell phone on which to join the virtual Zoom session and complete other study tasks. Participants also had to have access to a stationary infant seat (i.e., highchair or reclined seat) in which their child could remain in for the duration of the Zoom session. One-hundred and sixty-six participants completed the screening process, met the eligibility criteria, and were registered for the study. Once registered, participants received a link to an online Qualtrics survey to complete the first phase of the study, which included the informed consent form (see Appendix B), the participant demographic information form (see Appendix C), and a series of questionnaires described in the Measures section. As part of the survey, parents were asked to provide their cell phone number, which was used by the research team during the second phase of the study. One-hundred and thirty-six caregivers completed the first phase of the study.

Once questionnaires were completed, caregiver-infant dyads completed the second phase of the study. This phase involved an approximately 30-minute recorded Zoom session during which a sample of caregiver-infant interaction was obtained to be coded for caregiver sensitivity using the Maternal Behaviour Q-sort as described in the Measures section. One-hundred and twelve caregivers completed the second phase of the study. The average length of time between the first phase and the second phase of the study was 10.08 days (range = 0 – 86 days). After completing the Zoom session, caregivers received a link to the third and final phase of the study, which entailed completing the Emotional Stroop Task via a platform called Gorilla, an online behavioural experiment builder designed to accurately and reliably capture reaction time in milliseconds (Anwyl-Irvine et al., 2020). One participant who completed the second phase of the study did not proceed to complete the Emotional Stroop Task. The average length of time between the second phase and the third phase of the study was 2.60 days (range = 0 – 26 days). Upon completion of all elements of the study, participants were compensated $20CAD for their time via Interac e-Transfer. Participants were also entered into a raffle to win one of four prizes valued at between $150-$200CAD. Finally, participants were sent a list of resources about caregiver-infant interactions to explore (see Appendix D).

Full demographic information for participants who completed the second phase of the study (N = 112) is available in Table 1. Caregivers (n = 109 mothers; 97.32%) were on average 33.57 years old (SD = 4.09). Infants (n = 59 female; 52.68%) were between 3 and 11 months old at the time of the Zoom session (M = 197.33 days; SD = 67.22 days). Data regarding gestational age at birth were missing for 18 infants (16.07%). Based on data collected, five participating infants (4.46%) were born prematurely (before 37 weeks gestation). The majority of caregivers (n = 79; 70.54%) participated in the study with their firstborn child. The remaining 33 caregivers

(29.46%) had between 1 and 3 children older than the infant that was included in the study. Aside from one participant, all caregivers reported being married or in a common law relationship. Most caregivers were biological parents to their participating infants, except for one caregiver. Almost all caregivers (n = 107; 95.54%) reported having completed a college or university degree, with more than half reporting also completing a post-graduate or professional degree (n = 59; 52.68%). The majority of caregivers (n = 89; 79.47%) reported a combined household income of more than $100,000 and 90 (80.36%) reported that they were at least moderately comfortable living off their income. Caregivers predominately self-identified as being of European/Caucasian descent (n = 77; 68.75%) and most identified English as their first language (n = 87; 77.68%).

Measures

Childhood maltreatment. Caregivers' subjective experiences of childhood maltreatment, neglect, or abuse were retroactively assessed using The Childhood Abuse and Trauma Scale (CATS; Sanders & Becker-Lausen, 1995). To address concerns regarding social desirability and negative response styles, this questionnaire was purposefully designed to detect a wide range of experiences of maltreatment, both in form and severity, with items intentionally phrased mildly (Sanders & Becker-Lausen, 1995). The questionnaire consists of 38 items and respondents select the extent to which they believe each statement reflects the general atmosphere of their childhood on a scale of 0 ("never) to 4 ("always"). The questionnaire yields a Total Score, as well as psychometrically valid subscales pertaining to a neglectful/negative home atmosphere (e.g., "How often were you left alone as a child?", "Did your parents ridicule you?", "Was your childhood stressful?"), punishment (e.g., "Did your parents ever hit or beat you when you weren't expecting it?"), and sexual abuse (e.g., "Did you have any traumatic sexual experiences

as a child or teenager?"). For the purposes of this study, only the Total Score was examined as a predictor. In previous studies, the CATS Total Score has been shown to have strong test-retest reliability (r = 0.89) as well as high internal consistency (α = .90; Kent & Waller, 1998; Sanders & Becker-Lausen, 1995). The Total Score has been shown to predict symptoms of depression as well as dissociative symptoms (Sanders & Becker-Lausen, 1995; Toyoshima et al., 2020). Responses to a small subset of items were missing for a total of 23 participants (one participant was missing one item, one participant was missing two items, 21 participants were missing three items) either due to a technical error on Qualtrics or because participants intentionally skipped the items. To maximize data retention, total scores were computed as a mean by averaging across the total number of items responded to, ranging from 35 to 38 items. The internal consistency for the study sample was excellent (α = .95).

Difficulties with emotion regulation. Caregiver's self-reported difficulties with emotion regulation were assessed using a short-form of the Difficulties in Emotion Regulation Scale (DERS-18; Victor & Klonsky, 2016). This questionnaire is a condensed form of the longer form DERS (Gratz & Roemer, 2004) and has been shown to exhibit the same factor structure as the original version while maintaining excellent reliability and validity (Victor & Klonsky, 2016). The questionnaire consists of 18 items (e.g., "I am attentive to my feelings", "When I'm upset, I lose control of my behaviours") and respondents select the frequency with which they agree with each item on a scale of 1 ("almost never") to 5 ("almost always"). The DERS-18 assesses difficulties regulating emotions across six dimensions: (a) nonacceptance of negative emotions ("Non-Acceptance"), (b) difficulties engaging in goal-directed behaviour when distressed ("Goals"), (c) difficulties controlling impulsive behaviours when experiencing negative emotions ("Impulse"), (d) limited access to emotion regulation strategies perceived as effective

("Strategies"), (e) lack of emotional awareness ("Awareness"), and (f) lack of emotional clarity ("Clarity"). A Total Score is derived based on the sum of all subscales, with higher scores indicating greater difficulty with emotion regulation. In the validation sample, the DERS Total Score was found to have high internal consistency (α = .91) while the subscales alphas ranged from .77 to .90. For the study sample, the internal consistency for the Total Score was good (α = .87). The internal consistency for each of the subscales were all acceptable or better (Awareness = .81; Clarity = .70; Goals = .92; Impulse = .87; Non-Acceptance = .85; Strategies = .79). The Total Score was used for all primary analyses, however additional exploratory analyses were conducted using the subscales individually.

Postpartum depressive symptomology. Caregiver's self-reported postpartum depressive symptomology was assessed using the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). The EPDS consists of 10 statements (e.g., "I have been able to laugh and see the funny side of things", "I have felt sad or miserable"). Caregivers were asked to respond to each item on a scale from 0 ("A lot of the time") to 3 ("Not at all") based on how much each statement reflected how they had been feeling in the past 7 days. Scores range from 0 to 30, with higher scores indicating higher levels of postpartum depressive symptoms. A score of 10 or more suggests possible depression while a score of 13 or more suggests more severe symptomology (Cox et al., 1987). Caregivers with a score of 10 or above were sent a list of mental health supports and resources to explore (see Appendix E). In the validation sample, the EPDS was found to have strong sensitivity (86%) and specificity (78%; Cox et al., 1987). A more recent review of the literature utilizing the EPDS confirms that there is sufficient evidence to support the validity and reliability of the EPDS as a screening tool for postnatal depression (McBride et al., 2014). In the current sample, the internal consistency of the EPDS was good (α = .83).

Attention bias to emotional information. The Emotional Stroop Task was employed in this study to evaluate attention bias towards emotional information as a measure of implicit emotion regulation ability. This task has been used in previous research studies to investigate selective attention to emotional information (Atkinson et al., 2009; England-Mason et al., 2018). Prior to completing the task, participants completed a brief practice phase to orient them to the task. The practice phase consisted of the traditional Stroop Task, in which participants were instructed to use their keyboard keys to select the colour of the word presented to them, while disregarding the text itself (i.e., selecting the key for green if the word was presented in green font, disregarding that the text reads "blue"). Once they completed the practice phase, participants began the test phase. For the test phase, participants were presented with words in three categories: emotionally neutral words (e.g., "pencil" or "triangle"), negative emotional words (e.g., "fail" or "toxic"), and attachment-related negative emotional words (e.g., "betray" or "abandon"). A full list of the 45 words used is available in Appendix F. Participants were tasked with indicating the font colour of the word presented by using the same keyboard keys as the practice phase. The test phase involved 180-word presentations, with each of the 45 words being presented four times in random order. Each word was presented for 500ms before it was removed, and the participant was prompted to indicate the colour of the font it appeared in. Response times were recorded by Gorilla in milliseconds. The entire task took approximately 15 minutes to complete. At the end of the task, participants were asked to rate the extent to which distractions in their environment or internet connectivity may have impacted their response times on a scale of one to seven. Seventy-seven participants (71.96%) reported experiencing at least some distractions (selecting a 2 or more). Only seven participants (6.54%) reported experiencing any issues with their internet connection (again, selecting a 2 or more).

In total, 111 participants completed the Emotional Stroop Task. Four participants' data were removed based on evidence of careless responding (i.e., less than 50% of trials correct). Data for the remaining 107 participants were cleaned by excluding responses faster or slower than 2.5 standard deviations from each participant's mean reaction time, as per the guidelines outlined by Ben Haim and colleagues (2016). A Welch paired sample t-test revealed a significant difference between reaction times for the negative emotional word category (M = 608.83ms) and the attachment-related negative word category (M = 603.77ms*;* $t(106) = -2.78$, $p = .006$). As such, attention bias scores were calculated separately for each word category by subtracting the average reaction time for the neutral word category (M = 610.40ms) from the average reaction time for each of the negative word categories, with greater scores indicating increased interference for negative words. The difference for the negative emotion word category was -1.58ms and the difference for the attachment-related negative word category was -6.63. The negative direction of both of these scores indicates that participants did not exhibit a longer reaction time for any of the emotionally valanced words than for the emotionally neutral words. Given that participants in this sample did not exhibit the expected Stroop interference effect, the decision was made to exclude the Stroop scores from the majority of analyses. Descriptive statistics and bivariate correlations presented in Tables 2 and 3 were calculated using the average interference scores across both negative and attachment-related negative words.

Caregiver sensitivity. Sensitivity was coded based on recorded samples of caregiver-infant interaction collected during a video call with dyads over Zoom for Healthcare hosted by two research assistants. Prior to the session, caregivers were sent an infographic with an outline of what to expect during the Zoom session (see Appendix G). The session included a frustration task and a divided attention task. At the start of the Zoom session, caregivers were asked to have

their phones nearby and were instructed to place their infants into an appropriate infant seat and to sit across from them. Caregivers were asked to keep their infant in their seat as much as possible throughout the session to allow the infant to remain within the camera's view, however, they were told that they could remove their infant to hold and/or soothe them if they became too upset or uncomfortable at any point during the session. Once positioned, caregivers were instructed to play with their infants for three minutes without using any toys. Caregivers were then asked to engage their infant with a "favourite toy" for one minute, before removing it from their infant's reach for one additional minute. The removal of the toy was intended to elicit a mild level of frustration from the infant to allow for the observation of the caregiver's response to their infant's distress. Caregivers were then asked to resume free play with their infants with or without toys for another three minutes. After three minutes, caregivers began receiving text messages from a research assistant for a total of five minutes. For the first 2.5 minutes, caregivers were not informed that they would be receiving text messages, to naturally observe how they would respond to spontaneously receiving notifications on their phone in daily life. For the second 2.5 minutes, caregivers were explicitly informed that the research team would be sending text messages and were told to "feel free to text back or not". The purpose of this task was to observe how caregivers divided their attention between interacting with their infants and responding to the messages on their phone. Afterwards, caregivers were asked to continue playing with their infants for another two minutes before the interaction was concluded. During periods of ongoing caregiver-infant interaction, research assistants turned their cameras and microphones off on Zoom to reduce distractions and encourage naturalistic interaction.

Recorded dyadic interactions were coded for caregiver sensitivity using the Mini-Maternal Behaviour Q-Sort-VR (Mini-MBQS-VR; Pederson et al., 1990; Tarabulsy et al., 2009).

The mini-MBQS-VR is a shortened version of the original 90-item MBQS card set (Pederson et al., 1990), adapted to be time efficient and better suited for coding filmed interactions (Tarabulsy et al., 2009). The mini-MBQS-VR is reliable (r = .94, p < .0001) and is significantly associated with the Original MBQS-90 (r = .35, p < .05; Tarabulsy et al., 2009). Examples of items include "Speaks to baby directly" and "Interactions revolve around baby's tempo and current state". Prior to conducting the Q-sort, coders watch the entire interaction, creating a "running narrative" of the interaction (i.e., identifying major themes regarding the quality of the caregivers' interaction with the infant, highlighting notable aspects of the interaction; Pederson et al., 2013) and reflecting on Mary Ainsworth's four dimensions of maternal sensitivity (Ainsworth, 1969). Sensitivity ratings are then derived by using a Q-sorter application to sort the 25 descriptive items into 5 piles ranging from behavior "most like the mother" to behavior "least like the mother". A correlation is then computed between the observers' sort and a sort describing the prototypically sensitive mother, with higher ratings reflecting greater sensitivity. Ratings range from -1.0 (least sensitive) to 1.0 (prototypically sensitive). The average length of the interaction coded was 18 minutes and 35 seconds. The intra-class correlation computed on 21% (n = 23) of the interactions, was 0.87. Videos were coded by the author and one other graduate student. Both coders were deemed research reliable as per the requirements of the instrument's authors (i.e., satisfactory inter-rater reliability with an existing reliable coder).

Data Analytic Plan

To address the first objective, a structural equation model was proposed to test the mediating effect of emotion regulation on the relationship between childhood maltreatment and caregiver sensitivity ratings. Three models were initially intended: one with self-reported emotion dysregulation as assessed by the DERS, the second with implicit emotion dysregulation

as assessed by interference on the Emotional Stroop Task, and a third with a latent variable ("Emotion Dysregulation") representing the shared variance between these two variables. Given that the Emotional Stroop Task did not produce the expected interference effect in this sample, only the model with self-reported emotion dysregulation was viable. Similarly, to address the second objective, a serial mediation model was initially proposed to examine the mediating effect of both the latent variable "Emotion Dysregulation" and postpartum depressive symptomology. However, the proposed serial mediation model was amended to include the self-report measure of emotion dysregulation instead of the latent variable.

Results

All analyses were performed using RStudio Statistical Software (R Studio Team, 2019) and were reviewed with a statistical consultant to ensure accuracy and interpretability of results. Prior to addressing the study objectives, preliminary analyses were conducted to explore the data. In order to determine if the subsample of participants who dropped out of the study after the first phase (N = 24) differed significantly from the subsample that completed additional phases (N = 112), independent t-tests were performed to compare the samples in terms of sociodemographic characteristics (parental age/education/ethnicity, family income, relationship status, number of children) as well as scores from the questionnaires completed. All t-tests were non-significant, indicating that there are no significant differences between the participants who dropped out of the study and those who did not. Given evidence that certain demographic characteristics, such as maternal age, level of education, and household income are associated with caregiver sensitivity ratings (Booth et al., 2018; McCullough et al., 2017; Neuhauser, 2016; Shin et al., 2006), bivariate correlations were computed between all parental demographic

characteristics and sensitivity ratings. No significant correlations were found and so no covariates were controlled for in subsequent analyses.

Descriptive statistics for each of the study variables are reported in Table 2. Of the 112 participants who completed the first two phases, 26 (23.21%) had a score of 10 or higher on the postpartum depression scale (indicating possible depressive symptomology), and ten (8.93%) had a score of 13 or higher (indicating more severe depressive symptomology; Cox et al., 1987). Zero-order correlations between all study variables are reported in Table 3. The childhood maltreatment Total Score was significantly correlated with the self-reported difficulties with emotion regulation Total Score ($r(110) = .20$, $p = .035$) and the postpartum depression symptomology Total Score ($r(110) = .27$, $p = .004$), in expected directions. The self-reported difficulties with emotion regulation Total Score was also significantly correlated with the postpartum depression symptomology Total Score ($r(110) = .48$, $p < .001$). The two indicators of emotion regulation, self-reported difficulties with emotion regulation and interference on the Emotional Stroop Task (averaged across negative and attachment-related negative words), were not correlated with one another ($r(110) = -.11$, $p = .265$). This finding supports the decision to exclude the results of the Emotional Stroop Task from subsequent analyses.

Surprisingly, no study variables were correlated with caregiver sensitivity. Thus, exploratory regression analyses were conducted to further examine the relationship between childhood maltreatment, emotion regulation, and caregiver sensitivity, before proceeding with the planned structural equation models (aim 1 and aim 2). For each regression model analyzed, highly influential cases were identified by computing Cook's Distance values and cases with extreme values (defined as those greater than $4/N$) were removed. All of the necessary assumptions for linear regression were also tested for each regression analysis performed. The

assumption of independent errors was satisfied by the study design (i.e., each caregiver only participated with one child). By plotting the residuals of the model against the predicted values, it was determined that the assumptions of linearity and homoscedasticity were also satisfied. A histogram of the residuals revealed significant non-normality, which was confirmed by a significant Shapiro-Wilk test ($p < .001$). Several attempts were made to improve the normality of residuals with little success, including applying several transformations to the outcome variable, removing highly influential cases, and categorizing the predictor variable. While a square root transformation applied to the outcome variable marginally improved the normality of residuals, the results of the regression model were nearly identical to those without the transformation, and so the non-transformed values were used to enhance interpretability of results. The results of the simple regression model predicting sensitivity from childhood maltreatment with highly influential cases removed was not significant ($F(1, 107) = 0.38$, $p = .538$, $R^2 = 0.00$). A multiple regression analysis was also examined with self-reported difficulties with emotion regulation entered along with childhood maltreatment to predict sensitivity scores. The model met all assumptions for multiple regression, including multicollinearity which was tested by computing the Variance Inflation Factor, however similar to the simple regression model, it had non-normal residuals. The results of the multiple regression model with influential cases removed was not significant ($F(2, 106) = 0.12$, $p = .891$, $R^2 = 0.00$). The full results of the simple and multiple regression models are reported in Table 4. Given the weak relationship between the predictor, the mediator, and the outcome variable, the structural equation models proposed for the first objective (the mediating effect of self-reported emotion dysregulation on the relationship between childhood maltreatment and caregiver sensitivity ratings) and the

second objective (the serial mediation model examining the mediating effect of both postpartum depressive symptomology and self-reported emotion dysregulation) were not analyzed.

Interestingly, there were strong correlations between self-reported childhood maltreatment scores, self-reported emotion dysregulation scores, and self-reported postpartum depression symptomology scores. The decision was made, post-hoc, to further examine the relationship among these variables in an exploratory analysis. A structural equation model was employed to explore the mediating effect of self-reported emotion regulation on the relationship between childhood maltreatment and postpartum depression scores. The model was first estimated using a structural equation model using the *lavaan* package (Rosseel, 2012) with the Maximum Likelihood approach and 5000 bootstrap samples to estimate the standard error. This approach allowed for the examination of the total effect of maltreatment on postpartum depression (which includes both the direct and indirect effects), the direct effect of maltreatment (after accounting for the indirect effect), and the indirect effect through self-reported emotion regulation. The results of this analysis, with 4981 successful bootstrap draws, are presented in Table 5 and the mediation model is depicted in Figure 1. All paths, including the indirect effect of childhood maltreatment on postpartum depression scores through self-reported emotion regulation were significant. Given the number of parameters entered, there were not sufficient degrees of freedom to compute valid model fit indices. Additional analyses were thus performed using the *MBESS* package (Kelly, 2007; Kelly, 2017) to evaluate the model fit using regression analyses. The significance test indicated an overall good fit ($F(2,109) = 19.00$, $p = .000$, $R^2 = 0.26$, RMSE = 3.67, 95% CI = [0.12, 0.39]). These results indicate that approximately 26% of the variance in postpartum depression symptomology is explained by childhood maltreatment and self-reported emotion dysregulation together. Furthermore, approximately 33% of the total

effect of childhood maltreatment on postpartum depression symptomology can be explained by the indirect effect through self-reported emotion dysregulation, indicating a partial mediation pathway.

Additional exploratory analyses were performed to further investigate the relationships between study variables and the individual dimensions of emotion dysregulation captured by the Difficulties with Emotion Regulation Scale (DERS). Bivariate correlations were performed between each subscale and sensitivity scores, childhood maltreatment scores, and postpartum depression symptomology scores. Again, no correlations were significant for sensitivity scores (see Table 6). Only the Goals subscale of the DERS was significantly correlated with childhood maltreatment scores (see Table 7). As shown in Table 8, the DERS subscales Goals, Clarity, Impulse, Strategies, and Non-Acceptance were all significantly correlated with postpartum depression symptomology scores, with Clarity and Strategies, and Non-Acceptance showing the strongest correlations (p <.001). Only Awareness was not correlated with postpartum depression symptomology scores. Importantly, while all subscales were found to have good internal consistency in preliminary analyses, which lends support to their analysis in isolation, the distribution of scores for the Impulse and Strategies subscales showed high levels of skew and kurtosis in the current sample (see Table 2), and as such their correlation coefficients may have been inflated.

Discussion

The purpose of this dissertation was to investigate the impact of childhood maltreatment on caregiver sensitivity and to explore the mediating roles of both emotion regulation and postpartum depression in this relationship. Specifically, the study aimed to understand how self-reported difficulties with emotion regulation and attention biases towards emotional information

may be related to past experiences of maltreatment, and in turn, to a caregiver's ability to respond sensitively to their infant's needs. Additionally, the research sought to examine whether postpartum depressive symptomology further mediates this relationship in conjunction with emotion regulation difficulties. By delving into these dynamics, the study aimed to explore the underlying mechanisms that influence parenting behaviors and contribute to the broader understanding of caregiver-infant interactions and healthy child development. Although several of the proposed objectives could not be fully explored in the current study, the lack of significant relationships sheds light on important methodological and conceptual challenges in this field of research which are explored below. Post-hoc and exploratory analyses further allowed for the examination of noteworthy interrelationships between childhood maltreatment, self-reported emotion regulation, and postpartum depression symptomology.

Absence of the Stroop Interference Effect

One of the goals of this study was to investigate how an implicit measure of emotion dysregulation, the Emotional Stroop Task, might relate to childhood maltreatment and caregiver sensitivity. However, this investigation was not possible as the results of the Emotional Stroop Task indicated that participants in this study did not demonstrate the expected interference effect for emotionally valanced words. Bivariate correlations confirm that the results of the Stroop task were not significantly related to any of the study variables, including self-reported emotion dysregulation. As such, it was not appropriate to proceed with the proposed latent variables analyses combining these variables as an overall measure of emotion dysregulation and the results of the Stroop task were excluded from mediation analyses.

These findings suggest that implicit emotion regulation processes may operate distinctly from more conscious processes, with each uniquely influenced by an array of factors, including

but not limited to temperament, hormones or other biological influences, and past experiences (Gross & Thompson, 2007). However, there are many other potential reasons why the attention bias scores yielded by the Emotional Stroop Task did not produce significant results in the current study. Firstly, the setting in which participants completed the task may have significantly impacted the validity of the results. Guidelines for the use of the Emotional Stroop Task suggest that participants complete it alone in a quiet room without distractions (Ben-Haim et al, 2016). In the current study, caregivers completed the task in their own homes on their own computers. While they were asked to ensure they were in a distraction free environment (i.e., their infant was sleeping or another caregiver was watching them), the majority of participants reported experiencing at least some level of distraction during the task. Although trials with extreme reaction times were removed to account for distractions or periodic careless responding, it is possible that distractions may have further impacted responding on trials that were retained. Additionally, since participants completed the task on their own personal computers, response times may have been influenced slightly by variations in participants' software and hardware (Anwyl-Irvine et al., 2021).

It is also possible that the sample of participants employed in this study simply did not display clear attention biases during the task. Much of the research using the Emotional Stroop Task has been conducted with samples of participants experiencing clinical levels of psychological distress, including clinical depression and post-traumatic stress disorder (Cisler et al., 2011; Epp et al., 2012; Joyal et al., 2019; MacLeod, 2005; Mogg & Bradley, 2005; Williams et al., 1996). Similarly, research linking experiences of maltreatment to attention biases using the Emotional Stroop task and other similar attention-bias tasks have typically employed samples of participants reporting high levels of abuse in childhood and/or reporting various forms of

psychopathology (Davis et al., 2011; Fani et al., 2011; Günther et al., 2015; Pine et al., 2005; Pollak et al., 1998; Wingenfeld et al., 2011). While there is literature to support the Emotional Stroop Effect in non-clinical, non-abused samples, these findings are notably less conclusive (Buhle et al., 2010; Dunajska et al., 2012; Fisk & Haase, 2022; Peach et al., 2012). In fact, some studies have even suggested that current psychopathology may be required for the demonstration of Emotional Stroop interference (Fontenot et a., 2015; McNally et al., 2000). As such, it is possible that the lack of results with the Emotional Stroop task are a product of the non-clinical, relatively well-off sample employed in the current study. Most caregivers reported low levels of postpartum depressive symptomology (i.e., below the possible depression cut-off score on the postpartum depression scale) and the majority did not report extreme abuse or neglect. Therefore, the participants in this sample may not have been exhibiting consistent interference in response to the emotional words. To the author's knowledge, only one study thus far has provided evidence of an attention bias to emotional information among a non-clinical sample of postpartum caregivers using the Emotional Stroop Task (England-Mason et al., 2018), and no studies have examined attention bias in relation to observed caregiver behaviour. Additional research is thus needed to better understand how both childhood maltreatment and experiences of postpartum depression may affect attention to emotional stimuli in the postpartum period and whether an association with observed caregiving behaviour exists.

Proposed Predictors were not associated with Caregiver Sensitivity

Contrary to the hypotheses, childhood maltreatment did not significantly predict caregiver sensitivity in the study sample. The lack of relationship between these variables in this study may reflect the current inconsistencies within the literature on the relationship between early maltreatment and parenting. As noted above, the majority of research in this area has

focused on risk for parenting abuse (Armfield et al., 2021; Greene et al., 2020; Madigan et al., 2019; Savage et al., 2019), with much less research investigating other parenting outcomes such as caregiver sensitivity. While some studies have demonstrated a relationship between childhood maltreatment and observed parenting behaviour (Fuchs et al., 2015; Lyons-Ruth & Block, 1996; Pereira et al., 2012; Zvara et al., 2017), other studies have failed to support this relationship (Jacobvitz et al., 2006; Leon et al., 2004; Lesser & Koniak-Griffin, 2000; Sexton et al., 2017). Thus, while the current findings may lend support to the possibility that experiences of childhood maltreatment do not reliably impact caregiver sensitivity, it is important to explore alternative explanations for these findings. Previous research has found that certain forms of maltreatment (e.g., physical abuse, sexual abuse, witnessing domestic violence) are especially predictive of parenting behaviours (Bailey et al., 2012; Greene et al., 2020; Khoury et al., 2022; Lyons-Ruth & Block, 1996; Madigan et al., 2019), however the current study did not consider different forms of maltreatment (i.e., physical abuse, sexual abuse, neglect) as distinct predictors of sensitivity. Moreover, cumulative experiences of maltreatment (i.e., experiencing multiple forms of maltreatment in childhood, further adverse experiences in adulthood) have been found to amplify the impact on caregiver behaviour (Greene et al., 2020; Souch et al., 2022). The current study only included one global measure of self-reported childhood maltreatment in a caregivers' family of origin, and as such, did not account for this cumulative effect.

The primary goal of this study was to further elucidate inconsistencies in the literature by investigating potential intermediary mechanisms in the relationship between childhood maltreatment and parenting behaviour. Preliminary analyses revealed that neither the predictor, caregiver maltreatment, or either of the proposed mediators, self-reported emotion dysregulation or postpartum depression symptomology, significantly predicted caregiver sensitivity in this

sample. Accordingly, the proposed mediation analyses were not performed. However, it is worthwhile to explore the implication of these non-significant results. The lack of support for postpartum depressive symptomology as a predictor of caregiver sensitivity is especially surprising, given existing evidence for PPD as both a predictor of sensitivity and a mediator between maltreatment and observed parenting behaviour (Morelen et al., 2016; Madigan et al., 2015; Martinez-Torteya et al., 2014; Schuetze & Eiden, 2005; Seltmann & Wright, 2013; Vaillancourt et al., 2017). However, there are mixed findings even for PPD, with some studies failing to support this association (Gonzales et al., 2012; Lesser & Koniak-Griffin, 2000; Pereira et al., 2012). While the body of evidence supporting the link between PPD and sensitivity is strong, much of the research supporting this association has compared caregivers who meet the clinical threshold for depression to healthy controls (Bernard et al., 2018). The majority of participants in the current study's sample did not exhibit significant postpartum depression symptomology, with less than a quarter meeting the cut-off for possible depression and only ten showing more severe symptomology. Prior research investigating this mediation pathway has shown that experiences of childhood maltreatment in the absence of postpartum psychopathology did not infer parenting risk (Muzik et al., 2017). As such, it is possible that the lack of a significance for PPD symptoms as a predictor of sensitivity was a product of the relatively low level of symptoms displayed by study participants.

Self-reported emotion dysregulation was also not related to caregiver sensitivity in the current study. This finding contrasts with evidence supporting the link between caregiver sensitivity and emotion regulation ability (Zimmer-Gembeck et al., 2020), including studies focused on observed parenting behaviour (Carreras et al., 2019; Leerkes et al., 2020; McCullough et al., 2015; Shaffer & Obradović, 2017; Su et al., 2018). Additional research may

be required to further explore how general emotion dysregulation, as distinct construct from postpartum depressive symptomology, may relate to both childhood maltreatment and sensitivity among new caregivers. While there is some existing literature to support the theory that emotion dysregulation mediates the relationship between childhood maltreatment and parenting behaviour, most of these studies employed self-report measures of parenting behaviour, including self-reported emotion socialization (Cabecinha-Alati et al., 2020), physical/psychological aggression (Rodriguez et al., 2021), and child abuse potential (Smith et al., 2014). Only Su and colleagues (2018) found a significant indirect effect involving emotion regulation using an observational measure of caregiver sensitivity as an outcome. Given the results of the current study, further evidence is needed to clarify the intermediary role of emotion regulation in the pathway proposed by Cabecinha-Alati and colleagues (2020), including studies employing observational measures of parenting behaviour.

Importantly, the manner in which caregiver behaviour was assessed in the current study may have played a critical role in the non-significant results, as different measures have been shown to tap into different aspects of caregiver behaviour (Bohr et al., 2018). Based in Ainsworth's original scales of maternal sensitivity (accessibility, acceptance, cooperation, and sensitivity; Ainsworth, 1969), the MBQS is designed to capture positive aspects of caregiver behaviours that are believed to foster a secure attachment bond, with higher scores indicating a closer alignment with the "prototypically sensitive mother" (Pederson et al., 1990). While one study has found a link between experiences of childhood maltreatment and sensitivity using the MBQS (Pereira et al., 2012), there appears to be more evidence of a relationship with observational measures focused on more negative parenting behaviours, such as withdrawal, role reversal, hostility, flat affect, and rejection (Greene et al., 2020; Juul et al., 2016; Lyons-Ruth &

Block, 1996; Moehler et al., 2007; Zvara et al., 2017). In fact, in their meta-analysis on 32 studies, Savage and colleagues (2019) found that the effect size for the direct effect of childhood maltreatment was larger for parenting measures focused on *negative* parenting behaviours and *relationship-based* measures, which consider both caregiver and child behaviour, as opposed to measures which examine caregiver behaviour alone. Given that the MBQS is neither of these, it may not have been well-suited to detecting a direct relationship between childhood maltreatment and parenting behaviour. Future research should seek to employ other measures that may be better able to detect these differences. For example, the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE; Bronfman et al., 2008) or AMBIANCE-Brief (Madigan et al., 2018), captures many of the negative parenting behaviours reviewed above, including affective communication errors, role/boundary confusion, fearful/disoriented behaviour, intrusiveness/negativity, and withdrawal. Additionally, measures that incorporate infant behaviour as well as caregiver behaviour may provide a better picture of infant-caregiver relationship quality and the impact of caregivers past experiences of maltreatment on this relationship. For example, using the Emotional Availability Scales (Biringen et al., 1998), which include scales related to both infant and caregiver behaviour, Fuchs and colleagues (2015) found significant associations with self-reported experiences of childhood maltreatment.

It is also noteworthy that sensitivity in the current study was not linked to demographic factors that have been previously associated with parenting behaviour in the literature (Booth et al., 2018; McCullough et al., 2017; Neuhauser, 2016; Shin et al., 2006). Therefore, there may be other potential explanations for the non-significant relationships in the study, including elements of the study's procedure. The MBQS was designed to evaluate sensitivity in naturalistic conditions where caregivers must balance attending to their infants with the demands and tasks

of everyday life (Pederson et al., 1990). In the context of this study, a divided attention task was employed in which caregivers were sent text messages to their cell phone while they were interacting with their infants and were prompted to reply to if they desired. The purpose of this task was to impose an additional demand upon caregivers, beyond interacting with their infants, to observe how they managed both demands simultaneously. While some caregivers did choose to respond to the messages, many opted not to, and continued playing normally with their infants, rendering the task ineffective. Even among the caregivers who did choose to respond to messages, many did so slowly or inconsistently. Although a caregivers' choice to not respond to messages may in itself have been a sign of sensitivity, there are inevitably situations in caregivers' lives in which they are not able to ignore distractions and must divide their attention between their infant and other tasks. As such, this task likely did not successfully imitate the more pressing demands of everyday life which the MBQS is best suited for. The divided attention task, along with the frustration task, were also intended to elicit minor amounts of distress from infants. As discussed above, infant's distress cues are distinctly salient to caregivers as they are intended to activate the caregiving behaviour system (Bowlby, 1969; Leerkes, 2010). Accordingly, sensitivity to infant distress has been conceptualized as distinct from sensitivity to non-distress (Leerkes et al., 2012) and may be more closely related to experiences of maltreatment, emotion dysregulation, and postpartum depression. These two tasks were thus intended to allow for the observation of caregiver behaviours in response to infant distress. However, as noted above, many caregivers chose not to engage in the divided attention task. Additionally, while some infants did become distressed when their caregiver removed the toy they were playing with, many did not, and continued engaging with their caregivers

normally. As a result, not all interactions included an opportunity to observe how caregivers responded to infant distress, which may have impacted the validity of results.

Another factor to consider is the setting in which interactions occurred. Sensitivity was coded based on samples of caregiver-infant interaction collected virtually over Zoom for Healthcare. While there is some evidence to support the reliability of observational measures of caregiving behaviour across in-person and virtual contexts (McElwain et al., 2022; Schein et al., 2023), there is currently no evidence supporting the use of the MBQS specifically in a virtual context. Moreover, while caregivers were told to act as naturally as possible during the session, there were several factors that limited the genuineness and spontaneity of the virtual interaction. Firstly, caregivers and infants were asked to remain in a particular seating arrangement, with infants in a stationary infant seat and caregiver seated an arms-length away from them. This arrangement was required to allow coders to see both caregivers and infants at the same time (i.e., to avoid caregivers blocking their infants' face during the interaction). For some caregivers, this resulted in a somewhat contrived interaction. Many caregivers commented that the set-up was quite foreign to them, and they were not used to interacting with their children in this way. Many of the infants also displayed some level of discomfort due to the seating requirement, especially towards the end of the session. While mothers were allowed to pick up their infants if they perceived that they were excessively distressed, some may have felt uncomfortable doing so due to the researchers' request to keep infants seated whenever possible. Additionally, for many infants, the screen on which dyads were attending the virtual session was a novel experience, and as such, highly distracting. Many parents commented that their child was not as engaged in their play as they usually were, due to the presence of the screen. Finally, dyads were interrupted several times during their interaction in order for the researcher to provide the next instructions

or additional prompts, which may have made caregivers more aware of their own behaviour and biased sensitivity. Thus, while efforts were made to ensure that coded interactions were as naturalistic as possible, the constraints of conducting the interaction session over Zoom due to the COVID-19 pandemic may have impacted the validity of caregiver sensitivity scores.

Emotion Dysregulation as a Mediator between Childhood Maltreatment and Postpartum Depressive Symptomology

Self-reported experiences of childhood maltreatment were found to be correlated with self-reported postpartum depressive symptomology among caregivers. These findings align with prior research suggesting that caregivers who have experienced maltreatment as children are at a higher risk of developing depression in the postpartum period (Buist, 1998; Choi et al., 2019; Hutchens et al., 2017; Racine et al., 2021). In addition, self-reported emotion dysregulation, as assessed by the DERS, was significantly related to postpartum depression symptoms, supporting previous research linking emotion regulation with depression in the postpartum period (Cardoso & Fonseca, 2023; Haga et al., 2012; Marques et al., 2018). Given these significant relationships, a decision was made post-hoc to examine these variables together within a mediation model. Self-reported emotion dysregulation was found to partially mediate the relationship between self-reported childhood maltreatment and self-reported postpartum depressive symptomology, with both variables explaining about one-quarter of the variance in PPD symptoms and self-reported emotion dysregulation accounting for about one-third of the relationship between maltreatment and PPD symptoms. This mediation pathway suggests that adverse experiences with caregivers in childhood may compromise an individual's ability to effectively regulate their emotions, which in turn increases their vulnerability to depressive symptoms in the postpartum period. As discussed above, there are several potential theoretical explanations for these findings.

Caregivers who have experienced maltreatment as children may have been exposed to less effective emotion regulation strategies and more negative emotion socialization practices (Kim & Cicchetti, 2010; Morris et al., 2007). Their neurophysiological stress response may also have been altered by their early adverse experiences, which may affect the brain's ability to process and regulate strong emotions (Ouellet-Morin et al., 2019; Wilson et al., 2011; Zhong et al., 2020). As such, caregivers who have experienced maltreatment may be less equipped to handle the many stresses of the postpartum period. Moreover, while the postpartum period is known to be difficult for all caregivers for an array of reasons, including significant hormonal changes, sleep disturbances, interpersonal stressors, and high caregiving demands (Carlson et al., 2024; Ghaedrahmati et al., 2017), it may be an exceptionally stressful period for those who have experienced maltreatment as caring for an infant may activate upsetting attachment-related schemas (Alexander et al., 2001; Madsen et al., 2022; Mazzeschi et al., 2015). This combination of increased stress and diminished regulation capabilities may put maltreated caregivers at an especially high risk for symptoms of postpartum depression.

Additional exploratory analyses were performed to further understand the relationship between various subscales of the Difficulties with Emotion Regulation Scale (DERS), childhood maltreatment, and postpartum depressive symptomology. In line with previous studies, a significant correlation was found between experiences of childhood maltreatment and challenges engaging in goal-directed behaviour (ElBarazi, 2023; Jennissen et al., 2016). These findings are in line with research showing that individuals with maltreatment histories may struggle with executive functions crucial to engaging in goal directed behaviour, such as sustained attention, planning, organizing, and inhibitory control (Beers & De Bellis, 2002; DePrince et al., 2009; Gould et al., 2012; Malarbi et al., 2017; Nolin & Ethier, 2007), even when controlling for

internalizing psychopathology (Letkiewicz et al, 2021). Challenges with executive functioning may be further exacerbated in the postpartum period, when caregivers are experiencing heightened emotions while navigating the many new tasks and responsibilities that come with caring for their infant. Appropriately, additional analyses also revealed a correlation between difficulty engaging in goal directed behaviour and symptoms of postpartum depression. The inability to effectively manage emotions and complete tasks can contribute to feelings of overwhelm and inadequacy, which may increase the emotional and psychological challenges of the postpartum period, leading to higher vulnerability to postpartum depression.

Follow-up analyses also revealed significant relationships between postpartum depressive symptomology and self-reported lack of emotional clarity, nonacceptance of negative emotions, difficulty controlling impulsive behaviours when experiencing negative emotions, and limited access to effective emotion regulation strategies. These findings align with previous research showing that understanding and accepting emotional experiences, rather than attempting to suppress or ignore them, and utilizing effective emotion regulation strategies are linked to lower levels of postpartum distress (Caçador et al., 2021; Cardoso & Fonesca, 2023; Coo et al., 2022; Edwards et al., 2017; England-Mason et al., 2017; Haga et al., 2012; Marques et al., 2018; Tharwat et al., 2022). These results support the need to bolster emotion regulation abilities among caregivers, as doing so may serve a protective role in the postpartum period. It is important to note that the non-normal distribution of scores for the subscales pertaining to impulsive behaviour and access to skills may have influenced this pattern of results. More specifically, these subscales showed an extremely positive skew with most participants reporting very low levels of impulsivity and very high access to skills. While the strong correlations make intuitive sense, as these caregivers likely also reported experiencing fewer symptoms of

postpartum depression, the results of these statistical analyses may have been inflated due to non-normality.

In the study sample, a lack of emotional awareness was not found to be related to postpartum depressive symptomology. A potential explanation for these findings could be that awareness of emotions, by itself, does not necessarily translate into the ability to manage those emotions in especially challenging situations. Individuals might be aware of their general emotional state but still struggle with other aspects of emotion regulation, such as making sense of their emotions, controlling their impulses, and selecting appropriate coping strategies, which can overshadow the protective effects of awareness alone. In the context of the postpartum period, caregivers may be aware of their distress, but they are faced with more immediate and practical concerns than self-regulation, namely caring for and soothing their infants. Thus, while emotional awareness is an important component of overall emotion regulation, its specific impact on postpartum depression might be less pronounced compared to the other facets discussed above.

Implications for Postpartum Depression Prevention and Intervention Programs

Given the established relationship between postpartum depression and poor developmental outcomes for children (Bernard et al, 2018; Choi et al., 2017; Lovejoy et al., 2000; Lyons-Ruth et al., 2013; Lyons-Ruth & Yarger, 2022), the current findings lend support to the development of interventions aimed at enhancing emotion regulation among caregivers and caregivers-to-be, especially those who have experienced childhood maltreatment. In line with the results of this study, such interventions should focus on helping caregivers address and overcome their self-perceived difficulties with emotion regulation. The observed relationships highlight the importance of addressing specific emotion regulation deficits, including non-acceptance of

emotions, lack of clarity regarding emotional experiences, challenges engaging in goal-directed behaviour when upset, impulsivity in response to emotions, and lack of access to effective emotion regulation strategies. The results further suggest that caregivers who have experienced maltreatment in childhood may especially struggle with engaging in goal directed behaviour when upset and may benefit from interventions that emphasize this component of emotion regulation. Additionally, the results suggest that emotional awareness on its own does not seem to be related to postpartum depressive symptomology. Accordingly, interventions that focus primarily on fostering strong emotional awareness may not be as effective in supporting new caregivers as those that also provide tangible skills and strategies to utilize in emotional situations.

These results also lend support to the widespread implementation of existing interventions focused on enhancing emotion regulation skills among new caregivers. Based on an appraisal of 83 systematic reviews on interventions for postpartum depression, the use of antidepressants and telehealth interventions are currently the best evidence-supported approaches to treatment (Chow et al., 2021). However, many caregivers have concerns about pharmacological interventions for postpartum depression for various reasons, including fear or dependence, stigma surrounding anti-depressant medication, and concerns about transmission through breastmilk (Boath et al., 2004; Charbrol et al., 2004; Dennis & Chung-Lee, 2006). Thus, telehealth interventions appear to offer a more acceptable option to caregivers who may be wary of medication. Indeed, the literature supports telehealth interventions as both effective and accessible to caregivers during the demanding postpartum period (Ansaari et al., 2024; Liu et al., 2022; Singla et al., 2022; Zhao et al., 2021). A recent example of such an intervention is “Be A Mom”, a web-based, self-guided intervention with the goal of decreasing postpartum depression

(Fonseca et al., 2019). Informed by previous findings linking emotion dysregulation to postpartum depression (Edwards et al., 2017; Haga et al., 2012; Marques et al., 2018), “Be A Mom”, focuses on supporting emotion regulation, along with psychological flexibility and self-compassion (Fonseca et al., 2019). More specifically, the intervention helps caregivers “be aware of, understand and non-judgmentally accept the diversity of their private experiences (emotions and thoughts) during the postpartum period [and] use more psychologically flexible and self-compassionate ways to deal with such experiences” (Fonseca et al., 2019, p. 3). These strategies include questioning or challenging negative thoughts, defusion, identifying sources of support, and asking for help when needed (Carona et al., 2023). In a clinical trial evaluating this intervention, researchers found that it significantly decreased caregivers’ self-reported emotion dysregulation, as assessed by the DERS, and in turn, lowered their self-reported postpartum depressive symptomology, as assessed by the EPDS (Carona et al., 2023; Fonseca et al., 2019). The findings from this study support the importance and effectiveness of interventions such as "Be A Mom," which provide an accessible means for caregivers to enhance their emotion regulation skills and may potentially safeguard against postpartum depression, especially for caregivers at risk due to early childhood maltreatment.

Limitations and Future Directions

This study had several notable limitations. Firstly, the demographic profile of the sample, characterized by high levels of education and income, may present a limitation in the generalizability of the findings. A substantial portion of the sample reported having a college/university degree or higher and more than half of the participants had household incomes exceeding $100,000. Additionally, while there was a wide variety of ethnicities represented in the study sample, over two third of participants identified as European (Caucasian). The relative

homogeneity of the sample in terms of socio-economic status and ethnicity could restrict the ability to generalize the findings to broader populations that may differ in these key demographic variables. Moreover, while efforts were made to recruit participants who may be at greater risk of postpartum difficulties by advertising the study at mental health agencies and Early Years centres, the lack of significant findings in the current study may be a product of the relatively low levels of reported childhood maltreatment and postpartum depression symptomology in the study sample. Future explorations of these relationships should intentionally seek to recruit more diverse samples, in terms of demographic characteristics, experiences of maltreatment, and current level of functioning (i.e., PPD symptoms), in order to ensure results are more representative of the general population.

One of the main limitations of this study pertains to the collection of data entirely online, which was necessitated by the COVID-19 pandemic. As discussed above, the collection of the caregiver-infant interaction over Zoom for Healthcare presented several challenges for validly coding caregiver sensitivity. Likewise, the completion of the Emotional Stroop Task in a non-controlled environment likely impacted the validity of the attention bias scores, due to the potential impact of distractions or internet interruptions. While these limitations were unavoidable in the current study, future research investigating the relationships among these variables may reveal different results using more controlled methods of data collection. As discussed above, researchers should also seek to investigate these relationships using other measures of caregiver behaviour or caregiver-infant relationship quality, in order to more fully understand the impact of childhood maltreatment on parenting.

The COVID-19 pandemic itself also represents a notable confound in this study. Data were collected between late 2021 and early 2023, a period during which Statistics Canada (2022)

estimated that at least one-third of Canadians experienced some form of mental health difficulty. Research suggests that rates of postpartum depression and general postpartum distress also increased during this time (Goyal et al., 2022; Harrison et al., 2023; Vigod et al., 2021). In addition to stressors faced by the general population, new parents may have experienced heightened concerns related to their infants' health – particularly if their children were too young to be vaccinated – and reduced access to social support due to ongoing isolation measures. These factors may have contributed to reported levels of emotion dysregulation and postpartum depressive symptomatology, independent of participants' childhood maltreatment histories. Conversely, it is also possible that this period was less stressful for some caregivers. For example, some may have been able to delay returning to work – potentially reducing stress – and may have had more day-to-day support from partners who were working from home. Therefore, while it is not entirely clear how the COVID-19 pandemic influenced the variables examined in this study, it remains an important contextual factor to consider when interpreting the results.

The significant mediation effect found in this study was based on three self-report questionnaires completed by caregivers. This reliance on a single informant may have introduced bias in the results, as the caregiver's personal perceptions, memory, and emotional state at the time of reporting may have influenced their responses. For instance, caregivers experiencing depressive symptoms may have reported higher levels of childhood maltreatment or difficulties in emotion regulation due to their current mood state, rather than their objective experiences. Another concern is that all questionnaire data was collected at the same time point. With such cross-sectional data, the inference of causal pathways is limited as the data collection of the predictor variable did not temporally precede the collection of the mediator variable and the outcome variable. Efforts were made to circumvent this limitation by selecting measures that

queried different points in time. The Childhood Abuse and Trauma Scale (Sanders & Becker-Lausen, 1995) asked participants to recall their subjective experiences of maltreatment in their childhood. The temporal relationship between the mediator and outcome variables is less clear. Postpartum depressive symptomology was evaluated using a questionnaire that queried symptoms in the previous 7-day period (e.g., “In the past 7 days, I have felt sad or miserable”), while difficulties with emotion regulation were evaluated using a questionnaire that probed more global patterns and habits (e.g., “I pay attention to how I feel”, “When I'm upset, I have difficulty concentrating”). The intention was to capture participants’ general emotion regulation ability as distinct from their state of emotional wellbeing in the previous week, however, it is possible there was some level of confounding between the two variables. Future researchers should thus seek to investigate the relationship between difficulties with emotion regulation and postpartum depression at different time points. For example, information regarding emotion regulation could be collected prior to pregnancy, which would more clearly allow for the establishment of a causal mediation pathway from childhood maltreatment to emotion dysregulation to postpartum depression symptomology.

In order to more fully understand the pathway between childhood maltreatment and parenting behaviour, future research should also seek to explore other intermediary mechanisms. The current study focused on exploring emotion dysregulation as a precursor to postpartum depression symptomology. However, the lack of a relationship between all three predictors in this study and caregiver sensitivity suggests that there may be other factors that are more directly influencing the pathway to parenting behaviour. For example, several studies have shown that postpartum depression symptoms may mediate the relationship between experiences of childhood maltreatment and impaired caregiver-infant bonding (Chau et al., 2023; Choi et al.,

2017; Erickson et al., 2019; Lehnig et al., 2019), with implications for positive parenting behaviour (Muzik et al., 2013). Another study found that negative attributions towards infant crying (e.g., that the infant was spoiled, trying to be difficult) mediated the relationship between childhood maltreatment and maternal sensitivity to distress (Girod et al., 2023). These findings suggest that it may be more important to look at potential consequences of postpartum depression, such as impaired bonding or negative parenting attributions, that may more directly impact caregiving behaviour to further understand the pathway to insensitivity. It may also be beneficial to consider other factors known to support sensitive caregiving behaviour, such as caregiver social support (Kivijärvi et al., 2004; Meritesacker et al., 2004; Neuhauser, 2016, Shin et al., 2006).

Conclusion

Childhood maltreatment is believed to have intergenerational effects through its impact on subsequent parenting behaviour. However, the evidence for such effects is inconsistent, suggesting there may be multiple factors influencing this relationship. This dissertation aimed to investigate potential mediators of the relationship between experiences of childhood maltreatment and caregiver sensitivity to better understand what factors might put children at risk for suboptimal caregiving. Emotion dysregulation, as assessed by a self-report measure and an attention bias task, were proposed as potential mediators of this relationship, with postpartum depression proposed as a sequential mediator stemming from emotion dysregulation. The attention bias task failed to produce the expected interference effect and was thus excluded from analyses. None of the remaining variables were found to predict caregiver sensitivity, and thus the mediation analyses were not performed. These results raise questions about the use of the MBQS in the context of this field of study and about the validity of caregiver sensitivity ratings

collected virtually. Self-reported difficulties with emotion regulation did mediate the relationship between experiences of maltreatment in childhood and symptoms of postpartum depression. These significant findings lend support to the development and implementation of interventions focused on fostering strong emotion regulation abilities among caregivers and caregivers-to-be, to reduce the incidence of postpartum depression and its subsequent negative effects on child development. Given the lack of associations between attention bias scores and all other variables in the current study, further research is needed to understand the role that implicit emotion regulation might play in both postpartum depression and parenting behaviour. Future research should also seek to investigate these relationships with more diverse samples, in more controlled settings, and using different measures at different timepoints, to ensure results are both valid and representative of the population.

References

Afifi, T. O., MacMillan, H. L., Boyle, M., Taillieu, T., Cheung, K., & Sareen, J. (2014). Child abuse and mental disorders in Canada. *Canadian Medical Association Journal, 186*(9), E324-E332. https://doi.org/10.1503/cmaj.131792

Afifi, T. O., MacMillan, H. L., Boyle, M., Cheung, K., Taillieu, T., Turner, S., & Sareen, J. (2016). Child abuse and physical health in adulthood. *Health Reports, 27*(3), 10-18.

Ainsworth, M. D. S. (1969). Maternal sensitivity scales. *Power*, *6*, 1379–1388.

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

Alexander, R., Feeney, J., Hohaus, L., & Noller, P. (2001). Attachment style and coping resources as predictors of coping strategies in the transition to parenthood. *Personal Relationships, 8*(2), 137–152. https://doi.org/10.1111/j.1475-6811.2001.tb00032.x

Ansaari, N., Rajan, S. K., & Kuruveettissery, S. (2024). Efficacy of in-person versus digital mental health interventions for postpartum depression: Meta-analysis of randomized controlled trials. *Journal of Reproductive and Infant Psychology*, 1–21. https://doi.org/10.1080/02646838.2024.2303470

Anwyl-Irvine, A., Dalmaijer, E. S., Hodges, N., & Evershed, J. K. (2021). Realistic precision and accuracy of online experiment platforms, web browsers, and devices. *Behavior Research Methods, 53(*4), 1407–1425. https://doi.org/10.3758/s13428-020-01501-5

Anwyl-Irvine, A. L., Massonnié, J., Flitton, A., Kirkham, N., & Evershed, J. K. (2020). Gorilla in our midst: An online behavioral experiment builder. *Behavior Research Methods, 52(*1), 388–407. https://doi.org/10.3758/s13428-019-01237-x

Armfield, J. M., Gnanamanickam, E. S., Johnston, D. W., Preen, D. B., Brown, D. S., Nguyen, H., & Segal, L. (2021). Intergenerational transmission of child maltreatment in South Australia, 1986-2017: A retrospective cohort study. *The Lancet Public Health, 6*(7), e450–e461. https://doi.org/10.1016/S2468-2667(21)00024-4

Atkinson, L., Leung, E., Goldberg, S., Benoit, D., Poulton, L., Myhal, N., Blokland, K., & Kerr, S. (2009). Attachment and selective attention: Disorganization and emotional Stroop reaction time. *Development and Psychopathology*, *21*(1), 99–126. https://doi.org/10.1017/S0954579409000078

Bader, D., & Frank, K. (2023). What do we know about physical and non-physical childhood maltreatment in Canada? *Statistics Canada*. https://doi.org/10.25318/36280001202300100001-eng

Bailey, H. N., DeOliveira, C. A., Wolfe, V. V., Evans, E. M., & Hartwick, C. (2012). The impact of childhood maltreatment history on parenting: A comparison of maltreatment types and assessment methods. *Child Abuse & Neglect, 36*(3), 236–246. https://doi.org/10.1016/j.chiabu.2011.11.005

Beers, S. R., & De Bellis, M. D. (2002). Neuropsychological function in children with maltreatment-related posttraumatic stress disorder. *The American Journal of Psychiatry, 159*(3), 483–486. https://doi.org/10.1176/appi.ajp.159.3.483

Ben-Haim, M.S., Williams, P., Howard, Z., Mama, Y., Eidels, A., Algom, D. (2016). The Emotional Stroop Task: Assessing cognitive performance under exposure to emotional content. *Journal of Visualized Experiments* (112), e53720, doi:10.3791/53720 (2016).

Bernard, K., Nissim, G., Vaccaro, S., Harris, J. L., & Lindhiem, O. (2018). Association between maternal depression and maternal sensitivity from birth to 12 months: A meta-analysis.

Attachment & Human Development, 20(6), 578–599. https://doi.org/10.1080/14616734.2018.1430839

Bernier, A., Carlson, S. M., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development, 81*(1), 326-339. http://dx.doi.org/10.1111/j.1467-8624.2009.01397.x

Biringen, Z., Robinson, J. L., & Emde, R. N. (1998). *Emotional Availability Scales* (3rd ed.). Unpublished manual, Colorado State University, Department on Human Development and Family Studies, Fort Collins, CO.

Boath, E., Bradley, E., & Henshaw, C. (2004). Women's views of antidepressants in the treatment of postnatal depression. *Journal of Psychosomatic Obstetrics and Gynaecology, 25*(3-4), 221–233. https://doi.org/10.1080/01674820400017889

Bobo, W. V., & Yawn, B. P. (2014). Concise review for physicians and other clinicians: Postpartum depression. *Mayo Clinic Proceedings, 89*(6), 835–844. https://doi.org/10.1016/j.mayocp.2014.01.027

Bohr, Y., Putnick, D. L., Lee, Y., & Bornstein, M. H. (2018). Evaluating caregiver sensitivity to infants: Measures matter. *Infancy. 23*(5), 730–747. https://doi.org/10.1111/infa.12248

Booth, A. T., Macdonald, J. A., & Youssef, G. J. (2018). Contextual stress and maternal sensitivity: A meta-analytic review of stress associations with the Maternal Behavior Q-Sort in observational studies. *Developmental Review, 48,* 145–177. https://doi.org/10.1016/j.dr.2018.02.002

Bornstein, M. H., Putnick, D. L., Bohr, Y., Abdelmaseh, M., Lee, C. Y., & Esposito, G. (2020). Maternal sensitivity and language in infancy each promotes child core language skill in

preschool. *Early Childhood Research Quarterly, 51*, 483–489. https://doi.org/10.1016/j.ecresq.2020.01.002

Bowlby, J. (1969). *Attachment and loss: Attachment* (Vol. 1). New York: Basic.

Brake, E., Berle, D., Reilly, N. M., & Austin, M.-P. (2020). The relationship between emotion dysregulation and postnatal attachment in women admitted to a mother baby unit. *Australian Journal of Psychology, 72*(3), 283–292. https://doi.org/10.1111/ajpy.12289

Bronfman, E., Madigan, S., & Lyons-Ruth, K. (2008). Atypical Maternal Behavior Instrument for Assessment and Classification. Unpublished manual, Harvard University Medical School.

Buhle, J., Wager, T., & Smith, E. (2010). Using the Stroop task to study emotion regulation. In *Self Control in Society, Mind, and Brain*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195391381.003.0006

Buist, A. (1998). Childhood abuse, postpartum depression and parenting difficulties: A literature review of associations. *Australian and New Zealand Journal of Psychiatry, 32*(3), 370–378. https://doi.org/10.3109/00048679809065529

Cabecinha-Alati, S., Langevin, R., Kern, A., & Montreuil, T. C. (2020). Pathways from childhood maltreatment to unsupportive emotion socialization: Implications for children's emotional inhibition. *Journal of Family Violence. 36*(8), 1033–1043. https://doi.org/10.1007/s10896-020-00184-y

Cabecinha-Alati, S., Langevin R., & Montreuil T. (2020). A conceptual model of the intergenerational transmission of emotion dysregulation in mothers with a history of

childhood maltreatment. *International Journal of Child and Adolescent Resilience*, *7*(1), 49-71. https://doi.org/10.7202/1072588ar

Caçador, M. I., & Moreira, H. (2021). Fatigue and mindful parenting in the postpartum period: The role of difficulties in emotion regulation and anxious and depressive symptomatology. *Mindfulness, 12*(9), 2253–2265. https://doi.org/10.1007/s12671-021-01688-4

Caldwell, J. G., Shaver, P. R., Li, C. S., & Minzenberg, M. J. (2011). Effects of childhood maltreatment: Childhood maltreatment, adult attachment, and depression as predictors of parental self-efficacy in at-risk mothers. *Journal of Aggression, Maltreatment and Trauma, 20*(6), 595-616. https://doi.org/10.1080/10926771.2011.595763

Çankaya, S., & Ataş, A. (2022). Factors affecting postpartum depression in Turkish women. *Archives of Psychiatric Nursing*, *41*, 74–80. https://doi.org/10.1016/j.apnu.2022.07.024

Cardoso, C., Fonseca, A. (2023). Mothers at-risk for postpartum depression: Mental health and emotion regulation throughout the postpartum period. *Current Psychology, 42*, 12988–13002. https://doi.org/10.1007/s12144-021-02435-7

Carlson, K., Mughal, S., Azhar, Y., Siddiqui, W., & May, K. (2024). Postpartum Depression (Nursing). In StatPearls. StatPearls Publishing.

Carona, C., Pereira, M., Araújo-Pedrosa, A., Canavarro, M. C., & Fonseca, A. (2023). The efficacy of Be a Mom, a web-based intervention to prevent postpartum depression: Examining mechanisms of change in a randomized controlled trial. *JMIR Mental Health, 10*, e39253. https://doi.org/10.2196/39253

Carreras, J., Carter, A. S., Heberle, A., Forbes, D., & Gray, S. A. O. (2019). Emotion regulation and parent distress: Getting at the heart of sensitive parenting among parents of preschool children experiencing high sociodemographic risk. *Journal of Child and Family Studies*, *28*(11), 2953–2962. https://doi.org/10.1007/s10826-019-01471-z

Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. *Monographs of the Society for Research in Child Development, 59*(2-3), 228–283. https://doi.org/10.2307/1166148

Chabrol, H., Teissedre, F., Armitage, J., Danel, M., & Walburg, V. (2004). Acceptability of psychotherapy and antidepressants for postnatal depression among newly delivered mothers. *Journal of Reproductive and Infant Psychology, 22*(1), 5–12. https://doi.org/10.1080/02646830310001643094

Chau, V., Dryer, R., & Brunton, R. (2023). Examining the relationship between maternal childhood abuse history and mother-infant bonding: The mediating roles of postpartum depression and maternal self-efficacy. *Child Abuse & Neglect, 145*, 106439. https://doi.org/10.1016/j.chiabu.2023.106439

Cheng, P., & Langevin, R. (2023). Unpacking the effects of child maltreatment subtypes on emotional competence in emerging adults. *Psychological Trauma: Theory, Research, Practice, and Policy, 15*, S102–S111. https://doi.org/10.1037/tra0001322

Choi, K. W., Sikkema, K. J., Vythilingum, B., Geerts, L., Faure, S. C., Watt, M. H., Roos, A., & Stein, D. J. (2017). Maternal childhood trauma, postpartum depression, and infant outcomes: Avoidant affective processing as a potential mechanism. *Journal of Affective Disorders*, *211*, 107–115. https://doi.org/10.1016/j.jad.2017.01.004

Choi, K. W., Houts, R., Arseneault, L., Pariante, C., Sikkema, K. J., & Moffitt, T. E. (2019). Maternal depression in the intergenerational transmission of childhood maltreatment and its sequelae: Testing postpartum effects in a longitudinal birth cohort. *Development and Psychopathology, 31*(1), 143–156. https://doi.org/10.1017/S0954579418000032

Chow, R., Huang, E., Li, A., Li, S., Fu, S. Y., Son, J. S., & Foster, W. G. (2021). Appraisal of systematic reviews on interventions for postpartum depression: Systematic review. *BMC Pregnancy and Childbirth, 21*(1), 18. https://doi.org/10.1186/s12884-020-03496-5

Cicchetti, D., & Toth, S. L. (1995). A developmental psychopathology perspective on child abuse and neglect. *Journal of the American Academy of Child & Adolescent Psychiatry, 34*(5), 541–565. https://doi.org/10.1097/00004583-199505000-00008

Cicchetti, D., & Toth, S. L. (2005). Child maltreatment. *Annual Review of Clinical Psychology*, *1*, 409–438. https://doi.org/10.1146/annurev.clinpsy.1.102803.144029

Cisler, J. M., Wolitzky-Taylor, K. B., Adams, T. G., Jr, Babson, K. A., Badour, C. L., & Willems, J. L. (2011). The emotional Stroop task and posttraumatic stress disorder: A meta-analysis. *Clinical Psychology Review, 31*(5), 817–828. https://doi.org/10.1016/j.cpr.2011.03.007

Collin-Vézina, D., Cyr, M., Pauzé, R., & McDuff, P. (2005). The role of depression and dissociation in the link between childhood sexual abuse and later parental practices. *Journal of Trauma & Dissociation, 6*(1), 71–97. https://doi.org/10.1300/J229v06n01_05

Coo, S., García, M. I., Prieto, F., & Medina, F. (2022). The role of interpersonal emotional regulation on maternal mental health. *Journal of Reproductive and Infant Psychology, 40(*1), 3–21. https://doi.org/10.1080/02646838.2020.1825657

Cooke, J. E., Deneault, A. A., Devereux, C., Eirich, R., Fearon, R. M. P., & Madigan, S. (2022). Parental sensitivity and child behavioral problems: A meta-analytic review. *Child Development*, *93*(5), 1231–1248. https://doi.org/10.1111/cdev.13764

Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry: The Journal of Mental Science*, *150*, 782–786. https://doi.org/10.1192/bjp.150.6.782

Crandall, A., Deater-Deckard, K., & Riley, A. W. (2015). Maternal emotion and cognitive control capacities and parenting: A conceptual framework. *Developmental Review*, *36*, 105–126. https://doi.org/10.1016/j.dr.2015.01.004

Cromheeke, S., Herpoel, L. A., & Mueller, S. C. (2014). Childhood abuse is related to working memory impairment for positive emotion in female university students. *Child Maltreatment*, *19*(1), 38–48. https://doi.org/10.1177/1077559513511522

Davis, J. S., Fani, N., Ressler, K., Jovanovic, T., Tone, E. B., & Bradley, B. (2014). Attachment anxiety moderates the relationship between childhood maltreatment and attention bias for emotion in adults. *Psychiatry Research*, *217*(1-2), 79–85. https://doi.org/10.1016/j.psychres.2014.03.010

Deans, C. L. (2020). Maternal sensitivity, its relationship with child outcomes, and interventions that address it: A systematic literature review. *Early Child Development and Care, 190*(2), 252–275. https://doi.org/10.1080/03004430.2018.1465415

Dennis, C. L., & Chung-Lee, L. (2006). Postpartum depression help-seeking barriers and maternal treatment preferences: A qualitative systematic review. *Birth, 33*(4), 323–331. https://doi.org/10.1111/j.1523-536X.2006.00130.x

DePrince, A. P., Weinzierl, K. M., & Combs, M. D. (2009). Executive function performance and trauma exposure in a community sample of children. *Child Abuse & Neglect*, *33*(6), 353–361. https://doi.org/10.1016/j.chiabu.2008.08.002

Dinni, S.M., & Ardiyanti, D. (2020). Predictors of postpartum depression: The role of emotion regulation, maternal self-confidence, and marital satisfaction on postpartum depression. *Jurnal Psikologi, 47*(3). http://doi.org/10.22146/jpsi.46603

Dix, T. (1991). The affective organization of parenting: Adaptive and maladaptative processes. *Psychological Bulletin, 110*(1), 3–25. https://doi.org/10.1037/0033-2909.110.1.3

Dix, T., Gershoff, E. T., Meunier, L. N., & Miller, P. C. (2004). The affective structure of supportive parenting: depressive symptoms, immediate emotions, and child-oriented motivation. *Developmental Psychology, 40*(6), 1212–1227. https://doi.org/10.1037/0012-1649.40.6.1212

Dumessa, L., Oliveros, A. D., & Coleman, A. (2020). Attributions of conflict: Impact on the relation between parental physical maltreatment and emotion regulation difficulties. *Journal of Aggression, Maltreatment & Trauma, 29*(1), 129. https://doi.org/10.1080/10926771.2018.1559610

Dunajska, M., Szymanik, A., & Trempała, J. (2012). Attentional bias and emotion in older adults: Age-related differences in responses to an emotional Stroop task. *Polish Psychological Bulletin, 43*(2), 86–92. https://doi.org/10.2478/v10059-012-0014-5

Edwards, E. S., Holzman, J. B., Burt, N. M., Rutherford, H. J. V., Mayes, L. C., & Bridgett, D. J. (2017). Maternal emotion regulation strategies, internalizing problems and infant

negative affect. *Journal of Applied Developmental Psychology, 48*, 59–68. https://doi.org/10.1016/j.appdev.2016.12.001

ElBarazi, A. S. (2023). Childhood maltreatment and its mental health consequences among university's students. *The Family Journal*. https://doi.org/10.1177/10664807231157022

England-Mason, G., Kimber, M., Khoury, J., Atkinson, L., MacMillan, H., & Gonzalez, A. (2017). Difficulties with emotion regulation moderate the association between childhood history of maltreatment and cortisol reactivity to psychosocial challenge in postpartum women. *Hormones and Behavior, 95*, 44–56. https://doi.org/10.1016/j.yhbeh.2017.07.007

England-Mason, G., Casey, R., Ferro, M., MacMillan, H. L., Tonmyr, L., & Gonzalez, A. (2018). Child maltreatment and adult multimorbidity: Results from the Canadian Community Health Survey. *Canadian Journal of Public Health, 109* (4), 561–572. https://doi.org/10.17269/s41997-018-0069-y

England-Mason, G., Khoury, J., Atkinson, L., Hall, G. B., & Gonzalez, A. (2018). Attentional avoidance of emotional stimuli in postpartum women with childhood history of maltreatment and difficulties with emotion regulation. *Emotion, 18*(3), 424–438. https://doi.org/10.1037/emo0000372

Epp, A. M., Dobson, K. S., Dozois, D. J., & Frewen, P. A. (2012). A systematic meta-analysis of the Stroop task in depression. *Clinical Psychology Review, 32*(4), 316–328. https://doi.org/10.1016/j.cpr.2012.02.005

Erickson, N., Julian, M., & Muzik, M. (2019). Perinatal depression, PTSD, and trauma: Impact on mother-infant attachment and interventions to mitigate the transmission of risk. *International Review of Psychiatry 31*(3), 245–263. https://doi.org/10.1080/09540261.2018.1563529

Fani, N., Bradley-Davino, B., Ressler, K. J., & McClure-Tone, E. B. (2011). Attention bias in adult survivors of childhood maltreatment with and without posttraumatic stress disorder. *Cognitive Therapy and Research, 35*(1), 57–67. https://doi.org/10.1007/s10608-010-9294-2

Fisk, G. D., & Haase, S. J. (2022). No emotional Stroop effect from masked and unmasked stimuli in non-clinical young adults tested online. *Journal of Articles in Support of the Null Hypothesis, 19*(1), https://link-gale-com.ezproxy.library.yorku.ca/apps/doc/A715674867/AONE?u=yorku_main&sid=bookmark-AONE&xid=ebebb6e6

Flagg, A. M., Lin, B., Crnic, K. A., Gonzales, N. A., & Luecken, L. J. (2023). Intergenerational consequences of maternal childhood maltreatment on infant health concerns. *Maternal and Child Health Journal, 27*(11), 1981–1989. https://doi.org/10.1007/s10995-023-03717-1

Fonseca, A., Monteiro, F., Alves, S., Gorayeb, R., & Canavarro, M. C. (2019). Be a Mom, a web-based intervention to prevent postpartum depression: The enhancement of self-regulatory skills and its association with postpartum depressive symptoms. *Frontiers in Psychology, 10,* 265. https://doi.org/10.3389/fpsyg.2019.00265

Fontenot, L. G., Jackson, J. L., & Terry, D. P. (2015). Depressive and anxious symptomatology moderate the relationship between childhood emotional abuse severity and attentional bias on the modified Stroop task. *Journal of Aggression, Maltreatment & Trauma, 24*(7), 753–772. https://doi.org/10.1080/10926771.2015.1062446

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

Ghaedrahmati, M., Kazemi, A., Kheirabadi, G., Ebrahimi, A., & Bahrami, M. (2017). Postpartum depression risk factors: A narrative review. *Journal of Education and Health Promotion, 6*, 60. https://doi.org/10.4103/jehp.jehp_9_16

Girod, S. A., Leerkes, E. M., & Zvara, B. J. (2023). Childhood maltreatment predicts maternal sensitivity to distress: Negative attributions during the transition to parenthood. *Journal of Family Psychology, 37*(5), 709–719. https://doi.org/10.1037/fam0001088

Gonzalez, A., Jenkins, J.M., Steiner, M., & Fleming, A.S. (2012). Maternal early life experiences and parenting: The mediating role of cortisol and executive function. *Journal of the American Academy of Child & Adolescent Psychiatry, 51*, 673–682. https://doi.org/10.1016/j.jaac.2012.04.003

Gould, F., Clarke, J., Heim, C., Harvey, P. D., Majer, M., & Nemeroff, C. B. (2012). The effects of child abuse and neglect on cognitive functioning in adulthood. *Journal of Psychiatric Research*, *46*(4), 500–506. https://doi.org/10.1016/j.jpsychires.2012.01.005

Goyal, D., Beck, C. T., Webb, R., & Ayers, S. (2022). Postpartum depressive symptoms and experiences during COVID-19. *American Journal of Maternal Child Nursing, 47*(2), 77–84. https://doi.org/10.1097/NMC.0000000000000802

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment, 26,* 41–54. http://dx.doi.org/10.1023/B:JOBA.0000007455.08539.94

Greene, C. A., Haisley, L., Wallace, C., & Ford, J. D. (2020). Intergenerational effects of childhood maltreatment: A systematic review of the parenting practices of adult survivors of childhood abuse, neglect, and violence. *Clinical Psychology Review*, *80*, 101891. https://doi.org/10.1016/j.cpr.2020.101891

Gross, J. J. (2013). Emotion regulation: Taking stock and moving forward. *Emotion, 13*(3), 359–365. https://doi.org/10.1037/a0032135

Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3–20). The Guilford Press.

Gross, J. J., & Thompson, R. A. (2007). Emotion Regulation: Conceptual Foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3–24). The Guilford Press.

Günther, V., Dannlowski, U., Kersting, A., & Suslow, T. (2015). Associations between childhood maltreatment and emotion processing biases in major depression: results from a dot-probe task. *BMC psychiatry, 15*, 123. https://doi.org/10.1186/s12888-015-0501-2

Haga, S. M., Ulleberg, P., Slinning, K., Kraft, P., Steen, T. B., & Staff, A. (2012). A longitudinal study of postpartum depressive symptoms: Multilevel growth curve analyses of emotion regulation strategies, breastfeeding self-efficacy, and social support. *Archives of Women's Mental Health*, *15*(3), 175–184. https://doi.org/10.1007/s00737-012-0274-2

Halpern, S. C., Schuch, F. B., Scherer, J. N., Sordi, A. O., Pachado, M., Dalbosco, C., Fara, L., Pechansky, F., Kessler, F., & Von Diemen, L. (2018). Child maltreatment and illicit substance abuse: A systematic review and meta-analysis of longitudinal studies. *Child Abuse Review, 27*(5), 344–360. https://doi.org/10.1002/car.2534

Harrison, S., Quigley, M. A., Fellmeth, G., Stein, A., & Alderdice, F. (2023). The impact of the COVID-19 pandemic on postnatal depression: Analysis of three population-based

national maternity surveys in England (2014–2020). *The Lancet Regional Health. Europe, 30*, Article 100654. https://doi.org/10.1016/j.lanepe.2023.100654

Hirsh-Pasek, K., & Burchinal, M. (2006). Mother and caregiver sensitivity over time: Predicting language and academic outcomes with variable- and person-centered approaches. *Merrill-Palmer Quarterly, 52*(3), 449-485. https://doi.org/10.1353/mpq.2006.0027

Hughes, M., & Cossar, J. (2016). The relationship between maternal childhood emotional abuse/neglect and parenting outcomes: A systematic review. *Child Abuse Review, 25*(1), 31–45. https://doi.org/10.1002/car.2393

Hugill, M., Berry, K., & Fletcher, I. (2017). The association between historical childhood sexual abuse and later parenting stress: A systematic review. *Archives of Women's Mental Health*, *20*(2), 257–271. https://doi.org/10.1007/s00737-016-0708-3

Hutchens, B. F., Kearney, J., & Kennedy, H. P. (2017). Survivors of child maltreatment and postpartum depression: An integrative review. *Journal of Midwifery & Women's Health*, *62*(6), 706–722. https://doi.org/10.1111/jmwh.12680

Jacobvitz, D., Leon, K., & Hazen, N. (2006). Does expectant mothers' unresolved trauma predict frightened/frightening maternal behavior? Risk and protective factors. *Development and Psychopathology, 18*, 363–379. https://doi.org/10.1017/S0954579406060196

Jennissen, S., Holl, J., Mai, H., Wolff, S., & Barnow, S. (2016). Emotion dysregulation mediates the relationship between child maltreatment and psychopathology: A structural equation model. *Child Abuse & Neglect*, *62*, 51–62. https://doi.org/10.1016/j.chiabu.2016.10.015

Joyal, M., Wensing, T., Levasseur-Moreau, J., Leblond, J., T Sack, A., & Fecteau, S. (2019). Characterizing emotional Stroop interference in posttraumatic stress disorder, major

depression and anxiety disorders: A systematic review and meta-analysis. *PloS one, 14*(4), e0214998. https://doi.org/10.1371/journal.pone.0214998

Juul, S. H., Hendrix, C., Robinson, B., Stowe, Z. N., Newport, D. J., Brennan, P. A., & Johnson, K. C. (2016). Maternal early-life trauma and affective parenting style: The mediating role of HPA-axis function. *Archives of Women's Mental Health, 19*(1), 17–23. https://doi.org/10.1007/s00737-015-0528-x

Kaufman, J., & Zigler, E. (1987). Do abused children become abusive parents? *The American Journal of Orthopsychiatry*, *57*(2), 186–192. https://doi.org/10.1111/j.1939-0025.1987.tb03528.x

Kelley K. (2007). Methods for the behavioral, educational, and social sciences: An R package. *Behavior Research Methods, 39*(4), 979–984. https://doi.org/10.3758/bf03192993

Kelley, K. (2017). MBESS (Version 4.0.0 and higher) [Computer software and manual]. Accessible from http://cran.r-project.org.

Kent, A., & Waller, G. (1998). The impact of childhood emotional abuse: An extension of the Child Abuse and Trauma Scale. *Child Abuse & Neglect, 22*(5), 393–399. https://doi.org/10.1016/s0145-2134(98)00007-6

Khoury, J. E., Dimitrov, L., Enlow, M. B., Haltigan, J. D., Bronfman, E., & Lyons-Ruth, K. (2022). Patterns of maternal childhood maltreatment and disrupted interaction between mothers and their 4-month-old infants. *Child Maltreatment, 27*(3), 366–377. https://doi.org/10.1177/10775595211007567

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, K., Trickett, P. K., & Putnam, F. W. (2010). Childhood experiences of sexual abuse and later parenting practices among non-offending mothers of sexually abused and comparison. *Child Abuse & Neglect, 34*(8), 610–622. https://doi.org/10.1016/j.chiabu.2010.01.007

Kivijärvi, M., Räihä, H., Virtanen, S., Lertola, K., & Piha, J. (2004). Maternal sensitivity behavior and infant crying, fussing and contented behavior: The effects of mother's experienced social support. *Scandinavian Journal of Psychology, 45*(3), 239–246. https://doi.org/10.1111/j.1467-9450.2004.00400.x

Koole, S. L., & Rothermund, K. (2011). "I feel better but I don't know why": The psychology of implicit emotion regulation. *Cognition & Emotion*, *25*(3), 389–399. https://doi.org/10.1080/02699931.2010.550505

Koole, S.L., Webb, T.L., Sheeran, P., L., (2015). Implicit emotion regulation: Feeling better without knowing why. *Current Opinion in Psychology, 3, 6-10.* https://doi.org/10.1016/j.copsyc.2014.12.027

Krause-Utz, A., Erol, E., Brousianou, A. V., Cackowski, S., Paret, C., Ende, G., & Elzinga, B. (2019). Self-reported impulsivity in women with borderline personality disorder: The role of childhood maltreatment severity and emotion regulation difficulties. *Borderline Personality Disorder and Emotion Dysregulation*, *6*, 6. https://doi.org/10.1186/s40479-019-0101-8

Lamb, M. E., Morrison, D. C., & Malkin, C. M. (1987). The development of infant social expectations in face-to-face interaction: A longitudinal study. *Merrill-Palmer Quarterly, 33*(2), 241–254.

Lavelli, M., & Fogel, A. (2002). Developmental changes in mother-infant face-to-face communication: Birth to 3 months. *Developmental Psychology, 38*(2), 288–305. https://doi.org/10.1037/0012-1649.38.2.288

Leerkes E. M. (2010). Predictors of maternal sensitivity to infant distress. *Parenting, Science and Practice*, *10*(3), 219–239. https://doi.org/10.1080/15295190903290840

Leerkes, E. M., Su, J., & Sommers, S. A. (2020). Mothers' self-reported emotion dysregulation: A potentially valid method in the field of infant mental health. *Infant Mental Health Journal, 41*(5), 642–650. https://doi.org/10.1002/imhj.21873

Leerkes, E. M., Weaver, J. M., & O'Brien, M. (2012). Differentiating Maternal Sensitivity to Infant Distress and Non-Distress. *Parenting, Science and Practice, 12*(2-3), 175–184. https://doi.org/10.1080/15295192.2012.683353

Lehnig, F., Nagl, M., Stepan, H., Wagner, B., & Kersting, A. (2019). Associations of postpartum mother-infant bonding with maternal childhood maltreatment and postpartum mental health: A cross-sectional study. *BMC Pregnancy and Childbirth, 19*(1), 278. https://doi.org/10.1186/s12884-019-2426-0

Lemelin, J., Tarabulsy, G. M., & Provost, M. A. (2006). Predicting preschool cognitive development from infant temperament, maternal sensitivity and psychosocial risk. *Merrill-Palmer Quarterly, 52*(4), 779-806. https://doi.org/10.1353/mpq.2006.0038

Leon, K., Jacobvitz, D.B., & Hazen, N.L. (2004). Maternal resolution of loss and abuse: Associations with adjustment to the transition to parenthood. *Infant Mental Health Journal, 25*, 130–148. https://doi.org/10.1002/imhj.10091

Lesser, J., & Koniak-Griffin, D. (2000). The impact of physical or sexual abuse on chronic depression in adolescent mothers. *Journal of Pediatric Nursing, 15*, 378–387. https://doi.org/10.1053/jpdn.2000.16714

Letkiewicz, A. M., Funkhouser, C. J., & Shankman, S. A. (2021). Childhood maltreatment predicts poorer executive functioning in adulthood beyond symptoms of internalizing psychopathology. *Child Abuse & Neglect*, *118*, 105140–105140. https://doi.org/10.1016/j.chiabu.2021.105140

Li, M., D'Arcy, C., & Meng, X. (2016). Maltreatment in childhood substantially increases the risk of adult depression and anxiety in prospective cohort studies: Systematic review, meta-analysis, and proportional attributable fractions. *Psychological Medicine*, *46*(4), 717–730. https://doi.org/10.1017/S0033291715002743

Liu, X., Huang, S., Hu, Y. & Wang, G. (2022) The effectiveness of telemedicine interventions on women with postpartum depression: A systematic review and meta-analysis. *Worldviews on Evidence-Based Nursing, 19*, 175–190. https://doi.org/10.1111/wvn.12576

Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clinical Psychology Review*, *20*(5), 561–592. https://doi.org/10.1016/s0272-7358(98)00100-7

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, 257–275. https://doi.org/10.1002/(SICI)1097-0355(199623)17:3<257::AID-IMHJ5>3.0.CO;2-L

Lyons-Ruth, K., Bureau, J. F., Easterbrooks, M. A., Obsuth, I., Hennighausen, K., & Vulliez-Coady, L. (2013). Parsing the construct of maternal insensitivity: Distinct longitudinal pathways associated with early maternal withdrawal. *Attachment & Human Development*, *15*(5-6), 562–582. https://doi.org/10.1080/14616734.2013.841051

Lyons-Ruth, K., & Yarger, H. A. (2022). Developmental costs associated with early maternal withdrawal. *Child Development Perspectives*, *16*(1), 10–17. https://doi.org/10.1111/cdep.12442

MacLeod, C. (2005). The Stroop task in clinical research. In A. Wenzel & D. C. Rubin (Eds.), *Cognitive methods and their application to clinical research* (pp. 41–62). American Psychological Association. https://doi.org/10.1037/10870-003

Madigan, S., Bronfman, E.T., Lyons-Ruth, K., Haltigan, J.D. (2018). Atypical Maternal Behavior Instrument for Assessment and Classification. Unpublished manual, University of Calgary.

Madigan, S., Cyr, C., Eirich, R., Fearon, R. M. P., Ly, A., Rash, C., . . . Alink, L. R. A. (2019). Testing the cycle of maltreatment hypothesis: Meta-analytic evidence of the intergenerational transmission of child maltreatment. *Development and Psychopathology, 31*, 23–51. https://doi.org/10.1017/S0954579418001700

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

Madsen, E. B., Smith-Nielsen, J., Egmose, I., Lange, T. & Væver, M. S. (2022). The impact of childhood adversity on parenting stress is mediated by adult attachment and depressive symptoms. *Scandinavian Journal of Psychology*, 63, 47–54. https://doi.org/10.1111/sjop.12788

Malarbi, S., Abu-Rayya, H. M., Muscara, F., & Stargatt, R. (2017). Neuropsychological functioning of childhood trauma and post-traumatic stress disorder: A meta-analysis. *Neuroscience and Biobehavioral Reviews*, *72*, 68–86. https://doi.org/10.1016/j.neubiorev.2016.11.004

Marques, R., Monteiro, F., Canavarro, M. C., & Fonseca, A. (2018). The role of emotion regulation difficulties in the relationship between attachment representations and depressive and anxiety symptoms in the postpartum period. *Journal of Affective Disorders, 238*, 39–46. https://doi.org/10.1016/j.jad.2018.05.013

Martinez-Torteya, C., Dayton, C.J., Beeghly, M., Seng, J.S., McGinnis, E., Broderick, A. et al. (2014). Maternal parenting predicts infant biobehavioral regulation among women with a history of childhood maltreatment. *Development and Psychopathology, 26,* 379–392. https://doi.org/10.1017/S0954579414000017

Martin, L.N., Renshaw, K.D., Mauro, K.L. Curby, T.W., Ansell, E., Chaplin, T. (2023). Intergenerational effects of childhood maltreatment: Role of emotion dysregulation and emotion socialization. *Journal of Child and Family Studies, 32,* 2187–2197. https://doi.org/10.1007/s10826-023-02608-x

Mazzeschi, C., Pazzagli, C., Radi, G., Raspa, V., & Buratta, L. (2015). Antecedents of maternal parenting stress: the role of attachment style, prenatal attachment, and dyadic adjustment

in first-time mothers. *Frontiers in Psychology, 6,* 1443. https://doi.org/10.3389/fpsyg.2015.01443

McBride, H. L., Wiens, R. M., McDonald, M. J., Cox, D. W., & Chan, E. K. H. (2014). The Edinburgh Postnatal Depression Scale (EPDS): A review of the reported validity evidence. In Zumbo, B.D. & Chan, E. K. H (Eds.) *Validity and Validation in Social, Behavioral, and Health Sciences* (pp. 157–174). Springer International Publishing. https://doi.org/10.1007/978-3-319-07794-9_9

McCullough, C., Han, Z. R., Morelen, D., & Shaffer, A. (2017). The moderating effects of maternal age at childbirth and emotion dysregulation on the intergenerational continuity of emotionally unsupportive parenting behaviors. *Journal of Family Issues, 38*(7), 948–971. https://doi.org/10.1177/0192513X15597290

McElwain, N. L., Hu, Y., Li, X., Fisher, M. C., Baldwin, J. C., & Bodway, J. M. (2022). Zoom, zoom, baby! Assessing mother-infant interaction during the still face paradigm and infant language development via a virtual visit procedure. *Frontiers in Psychology, 12*, 734492. https://doi.org/10.3389/fpsyg.2021.734492

McLaughlin, K. A., Colich, N. L., Rodman, A. M., & Weissman, D. G. (2020). Mechanisms linking childhood trauma exposure and psychopathology: A transdiagnostic model of risk and resilience. *BMC Medicine*, *18*(1), 96. https://doi.org/10.1186/s12916-020-01561-6

McNally, R. J., Clancy, S., Schacter, D., & Pitman, R. (2000). Cognitive processing of trauma cues in adults reporting repressed, recovered or continuous memories of childhood sexual abuse. *Journal of Abnormal Psychology, 109*, 355–359. https://doi.org/10.1037/0021-843X.109.3.355

Meritesacker, B., Bade, U., Haverkock, A., & Pauli-Pott, U. (2004). Predicting maternal reactivity/sensitivity: The role of infant emotionality, maternal depressiveness/anxiety, and social support. *Infant Mental Health Journal, 25*(1), 47–61. https://doi.org/10.1002/imhj.10085

Mikulincer, M., & Shaver, P. R. (2019). Attachment orientations and emotion regulation. *Current Opinion in Psychology*, *25*, 6–10. https://doi.org/10.1016/j.copsyc.2018.02.006

Moehler, E., Biringen, Z., & Poustka, L. (2007). Emotional availability in a sample of mothers with a history of abuse. *American Journal of Orthopsychiatry, 77*(4), 624–628. https://doi.org/10.1037/0002-9432.77.4.624

Mogg, K., & Bradley, B. P. (2005). Attentional bias in generalized anxiety disorder versus depressive disorder. *Cognitive Therapy and Research, 29*(1), 29–45. https://doi.org/10.1007/s10608-005-1646-y

Morelen, D., Menke, R., Rosenblum, K. L., Beeghly, M., & Muzik, M. (2016). Understanding bidirectional mother-infant affective displays across contexts: Effects of maternal maltreatment history and postpartum depression and PTSD symptoms. *Psychopathology, 49(*4), 305–314. https://doi.org/10.1159/000448376

Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development, 16*(2), 361–388. https://doi.org/10.1111/j.1467-9507.2007.00389.x

Muzik, M., Bocknek, E.L., Broderick, A., Richardson, P., Rosenblum, K.L., Thelen, K., & Seng, J.S. (2013). Mother–infant bonding impairment across the first 6 months postpartum: The primacy of psychopathology in women with childhood abuse and neglect histories.

Archives of Women's Mental Health, 16, 29–38. https://doi.org/10.1007/s00737-012-0312-0

Muzik, M., Morelen, D., Hruschak, J., Rosenblum, K. L., Bocknek, E., & Beeghly, M. (2017). Psychopathology and parenting: An examination of perceived and observed parenting in mothers with depression and PTSD. *Journal of Affective Disorders, 207*, 242–250. https://doi.org/10.1016/j.jad.2016.08.035

Nelson, J., Klumparendt, A., Doebler, P., & Ehring, T. (2017). Childhood maltreatment and characteristics of adult depression: Meta-analysis. *The British Journal of Psychiatry: The Journal of Mental Science*, *210*(2), 96–104. https://doi.org/10.1192/bjp.bp.115.180752

Neuhauser, A. (2016). Predictors of maternal sensitivity in at-risk families. *Early Child Development and Care, 188*(2), 126–142. https://doi.org/10.1080/03004430.2016.1207065

Nolin, P., & Ethier, L. (2007). Using neuropsychological profiles to classify neglected children with or without physical abuse. *Child Abuse & Neglect*, *31*(6), 631–643. https://doi.org/10.1016/j.chiabu.2006.12.009

Nyström-Hansen, M., Andersen, M. S., Khoury, J. E., Davidsen, K., Gumley, A., Lyons-Ruth, K., MacBeth, A., & Harder, S. (2019). Hair cortisol in the perinatal period mediates associations between maternal adversity and disrupted maternal interaction in early infancy. *Developmental Psychobiology*, *61*(4), 543–556. https://doi.org/10.1002/dev.21833

Ouellet-Morin, I., Robitaille, M.-P., Langevin, S., Cantave, C., Brendgen, M., & Lupien, S. J. (2019). Enduring effect of childhood maltreatment on cortisol and heart rate responses to

stress: The moderating role of severity of experiences. *Development and Psychopathology*, *31*(2), 497–508. doi:10.1017/S0954579418000123

Peach, N., Jovev, M., Foster, A., & Jackson, H. (2012). Testing the Stroop effect in a nonclinical sample: Hypervigilance or difficulty to disengage? *Journal of Experimental Psychopathology, 3*(3), 496–510. https://doi.org/10.5127/jep.017211

Pears, K. C., & Capaldi, D. M. (2001). Intergenerational transmission of abuse: A two-generational prospective study of an at-risk sample. *Child Abuse & Neglect*, *25*(11), 1439–1461. https://doi.org/10.1016/s0145-2134(01)00286-1

Pederson, D. R., Moran, G., Sitko, C., Campbell, K., Ghesquire, K., & Acton, H. (1990). Maternal sensitivity and the security of infant-mother attachment: A Q-sort study. *Child Development, 61*(6), 1974-1983. https://doi.org/10.1111/j.1467-8624.1990.tb03579.x

Pederson, D.R R., Moral, G., Bento, S. (2013). The Maternal Behaviour Q-Sort (MBQS): Assessing maternal sensitivity and the quality of mother-infant interaction. Unpublished manual, University of Western, Child Development Study Group.

Pereira, J., Vickers, K., Atkinson, L., Gonzalez, A., Wekerle, C., & Levitan, R. (2012). Parenting stress mediates between maternal maltreatment history and maternal sensitivity in a community sample. *Child Abuse & Neglect, 36,* 433–437. https://doi.org/10.1016/j.chiabu.2012.01.006

Pine, D. S., Mogg, K., Bradley, B. P., Montgomery, L., Monk, C. S., McClure, E., Guyer, A. E., Ernst, M., Charney, D. S., & Kaufman, J. (2005). Attention bias to threat in maltreated children: implications for vulnerability to stress-related psychopathology. *The American Journal of Psychiatry, 162*(2), 291–296. https://doi.org/10.1176/appi.ajp.162.2.291

Plant, D. T., Pawlby, S., Pariante, C. M., & Jones, F. W. (2018). When one childhood meets another - maternal childhood trauma and offspring child psychopathology: A systematic review. *Clinical Child Psychology and Psychiatry*, *23*(3), 483–500. https://doi.org/10.1177/1359104517742186

Pollak, S. D., & Tolley-Schell, S. (2003). Selective attention to facial emotion in physically abused children. *Journal of Abnormal Psychology, 112*(3), 323-338. https://doi.org/10.1037/0021-843x.112.3.323

Powers, A., Etkin, A., Gyurak, A., Bradley, B., & Jovanovic, T. (2015). Associations between childhood abuse, posttraumatic stress disorder, and implicit emotion regulation deficits: Evidence from a low-income, inner-city population. *Psychiatry*, *78*(3), 251–264. https://doi.org/10.1080/00332747.2015.1069656

Prime, H., Andrews, K., Markwell, A., Gonzalez, A., Janus, M., Tricco, A. C., ... & Atkinson, L. (2023). Positive parenting and early childhood cognition: A systematic review and meta-analysis of randomized controlled trials. *Clinical Child and Family Psychology Review*, 26(2), 362–400. https://doi.org/10.1007/s10567-022-00423-2

Racine, N., Devereaux, C., Cooke, J. E., Eirich, R., Zhu, J., & Madigan, S. (2021). Adverse childhood experiences and maternal anxiety and depression: A meta-analysis. *BMC Psychiatry*, *21*(1), 28. https://doi.org/10.1186/s12888-020-03017-w

Robbins, C. L., Ko, J. Y., D'Angelo, D. V., Salvesen von Essen, B., Bish, C. L., Kroelinger, C. D., Tevendale, H. D., Warner, L., & Barfield, W. (2023). Timing of postpartum depressive symptoms. *Preventing Chronic Disease, 20*, E103. https://doi.org/10.5888/pcd20.230107

Roberts, R., O'Connor, T., Dunn, J., & Golding, J. (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

Rodriguez, V. J., Are, F., Madden, A., Shaffer, A., & Suveg, C. (2021). Intergenerational transmission of childhood maltreatment mediated by maternal emotion dysregulation. *Journal of Child and Family Studies, 30*(8), 2068–2075. https://doi.org/10.1007/s10826-021-02020-3

Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. In Journal of Statistical Software (Vol. 48, Issue 2, pp. 1–36). http://www.jstatsoft.org/v48/i02/

RStudio Team (2019). RStudio: Integrated Development for R. RStudio, Inc., Boston, MA. http://www.rstudio.com/.

Rutherford, H. J., Wallace, N. S., Laurent, H. K., & Mayes, L. C. (2015). Emotion regulation in parenthood. *Developmental Review, 36*, 1–14. https://doi.org/10.1016/j.dr.2014.12.008

Sanders, B., & Becker-Lausen, E. (1995). The measurement of psychological maltreatment: Early data on the Child Abuse and Trauma Scale. *Child Abuse & Neglect, 19*(3), 315-323. https://doi.org/10.1016/S0145-2134(94)00131-6

Savage, L. É., Tarabulsy, G. M., Pearson, J., Collin-Vézina, D., & Gagné, L. M. (2019). Maternal history of childhood maltreatment and later parenting behavior: A meta-analysis. *Development and Psychopathology*, *31*(1), 9–21. https://doi.org/10.1017/S0954579418001542

Schein, S. S., Roben, C. K. P., Costello, A. H., & Dozier, M. (2023). Assessing changes in parent sensitivity in telehealth and hybrid implementation of attachment and biobehavioral

catch-up during the COVID-19 pandemic. *Child Maltreatment, 28*(1), 24–33. https://doi.org/10.1177/10775595211072516

Schelbe, L., & Geiger, J. M. (2017). *Intergenerational transmission of child maltreatment.* Springer Science + Business Media. https://doi.org/10.1007/978-3-319-43824-5

Schore, J. R., & Schore, A. N. (2008). Modern attachment theory: The central role of affect regulation in development and treatment. *Clinical Social Work Journal, 36*(1), 9–20. https://doi.org/10.1007/s10615-007-0111-7

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

Seltmann, L. A., & Wright, M. O. (2013). Perceived parenting competencies following childhood sexual abuse: A moderated mediation analysis. *Journal of Family Violence, 28*(6), 611–621. https://doi.org/10.1007/s10896-013-9522-0

Sexton, M. B., Davis, M. T., Menke, R., Raggio, G. A., & Muzik, M. (2017). Mother–child interactions at six months postpartum are not predicted by maternal histories of abuse and neglect or maltreatment type. *Psychological Trauma: Theory, Research, Practice, and Policy,* 9(5), 622–626. https://doi.org/10.1037/tra0000272

Shaffer, A., & Obradović, J. (2017). Unique contributions of emotion regulation and executive functions in predicting the quality of parent–child interaction behaviors. *Journal of Family Psychology, 31*(2), 150-159. https://doi.org/10.1037/fam0000269

Shin, H., Park, Y. J., & Kim, M. J. (2006). Predictors of maternal sensitivity during the early postpartum period. *Journal of Advanced Nursing*, *55*(4), 425–434. https://doi.org/10.1111/j.1365-2648.2006.03943.x

Singla, D. R., Savel, K., Dennis, C. L., Kim, J., Silver, R. K., Vigod, S., Dalfen, A., & Meltzer-Brody, S. (2022). Scaling up mental healthcare for perinatal populations: Is telemedicine the answer? *Current Psychiatry Reports, 24*(12), 881–887. https://doi.org/10.1007/s11920-022-01389-2

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

Souch, A. J., Jones, I. R., Shelton, K. H. M., & Waters, C. S. (2022). Maternal childhood maltreatment and perinatal outcomes: A systematic review. *Journal of Affective Disorders, 302,* 139–159. https://doi.org/10.1016/j.jad.2022.01.062

Stacks, A. M., Muzik, M., Wong, K., Beeghly, M., Huth-Bocks, A., Irwin, J. L., & Rosenblum, K. L. (2014). Maternal reflective functioning among mothers with childhood maltreatment histories: Links to sensitive parenting and infant attachment security. *Attachment & Human development, 16*(5), 515–533. https://doi.org/10.1080/14616734.2014.935452

Stams, G. J. M., Juffer, F., & van IJzendoorn, M. H. (2002). Maternal sensitivity, infant attachment, and temperament in early childhood predict adjustment in middle childhood: The case of adopted children and their biologically unrelated parents. *Developmental Psychology, 38*(5), 806-821.

Statistics Canada. (2019). Maternal Mental Health in Canada, 2018/2019. Retrieved from https://www150.statcan.gc.ca/n1/daily-quotidien/190624/dq190624b-eng.htm.

Statistics Canada. (2022). Impacts of COVID-19, *Canada at a Glance*. Retrieved from https://www150.statcan.gc.ca/n1/pub/12-581-x/2022001/sec14-eng.htm

Su, J., Leerkes, E. M., & Augustine, M. E. (2018). DRD4 interacts with adverse life events in predicting maternal sensitivity via emotion regulation. *Journal of Family Psychology, 32*(6), 783–792. https://doi.org/10.1037/fam0000454

Su, Y., D'Arcy, C., & Meng, X. (2022). Intergenerational effect of maternal childhood maltreatment on next generation's vulnerability to psychopathology: A systematic review with meta-analysis. *Trauma, Violence, & Abuse*, *23*(1), 152–162. https://doi.org/10.1177/1524838020933870

Tarabulsy, G., Provost, M., Bordeleau, S., Trudel-Fitzgerald, C., Moran, G., Pederson, D., ... Pierce, T. (2009). Validation of a short version of the maternal behavior Q-set applied to a brief video record of mother–infant interaction. *Infant Behavior and Development, 32*(1), 132–136. https://doi.org/10.1016/j.infbeh.2008.09.006

Tharwat, D., Trousselard, M., Fromage, D., Belrose, C., Balès, M., Sutter-Dallay, A. L., Ezto, M. L., Hurstel, F., Harvey, T., Martin, S., Vigier, C., Spitz, E., & Duffaud, A. M. (2022). Acceptance mindfulness-trait as a protective factor for post-natal depression: A preliminary research. *International Journal of Environmental Research and Public Health, 19*(3), 1545. https://doi.org/10.3390/ijerph19031545

Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development, 59*(2-3), 25–52, 250–283. https://doi.org/10.2307/1166137

Toyoshima, K., Inoue, T., Masuya, J., Fujimura, Y., Higashi, S., Tanabe, H., & Kusumi, I. (2020). Structural equation modeling approach to explore the influence of childhood maltreatment in adults. *PloS One, 15*(10), e0239820–e0239820. https://doi.org/10.1371/journal.pone.0239820

Vaillancourt, K., Pawlby, S., & Fearon, R. M. (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

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., Read, J., van Os, J., & Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: A meta-analysis of patient-control, prospective- and cross-sectional cohort studies. *Schizophrenia Bulletin*, *38*(4), 661–671. https://doi.org/10.1093/schbul/sbs050

Victor, S. E., & Klonsky, E. D. (2016). Validation of a brief version of the Difficulties in Emotion Regulation Scale (DERS-18) in five samples. *Journal of Psychopathology and Behavioral Assessment, 38*(4), 582–589. https://doi.org/10.1007/s10862-016-9547-9

Vigod, S. N., Brown, H. K., Huang, A., Fung, K., Barker, L. C., Hussain-Shamsy, N., Wright, E., Dennis, C.-L., Grigoriadis, S., Gozdyra, P., Corsi, D., Walker, M., & Moineddin, R. (2021). Postpartum mental illness during the COVID-19 pandemic: A population-based, repeated cross-sectional study. *Canadian Medical Association Journal, 193*(23), E835–E843. https://doi.org/10.1503/cmaj.210151

Weissman, D. G., Bitran, D., Miller, A. B., Schaefer, J. D., Sheridan, M. A., & McLaughlin, K. A. (2019). Difficulties with emotion regulation as a transdiagnostic mechanism linking child maltreatment with the emergence of psychopathology. *Development and Psychopathology*, *31*(3), 899–915. https://doi.org/10.1017/S0954579419000348

Weissman, D. G., Nook, E. C., Dews, A. A., Miller, A. B., Lambert, H. K., Sasse, S. F., Somerville, L. H., & McLaughlin, K. A. (2020). Low emotional awareness as a transdiagnostic mechanism underlying psychopathology in adolescence. *Clinical Psychological Science, 8*(6), 971–988. https://doi.org/10.1177/2167702620923649

Williams, J. M., Mathews, A., & MacLeod, C. (1996). The emotional Stroop task and psychopathology. *Psychological Bulletin, 120*(1), 3–24. https://doi.org/10.1037/0033-2909.120.1.3

Wilson, K. R., Hansen, D. J., & Li, M. (2011). The traumatic stress response in child maltreatment and resultant neuropsychological effects. *Aggression and Violent Behavior*, *16*(2), 87–97. https://doi.org/10.1016/j.avb.2010.12.007

Wingenfeld, K., Riedesel, K., Petrovic, Z., Philippsen, C., Meyer, B., Rose, M., Grabe, H. J., Barnow, S., Löwe, B., & Spitzer, C. (2011). Impact of childhood trauma, alexithymia, dissociation, and emotion suppression on emotional Stroop task. *Journal of Psychosomatic Research*, *70*(1), 53–58. https://doi.org/10.1016/j.jpsychores.2010.06.003

World Health Organization (2004). The importance of caregiver-child interactions for the survival and healthy development of young children: A review. https://iris.who.int/bitstream/handle/10665/42878/924159134X.pdf?sequence=1

Zhao, L., Chen, J., Lan, L., Deng, N., Liao, Y., Yue, L., Chen, I., Wen, S. W., & Xie, R. H. (2021). Effectiveness of telehealth interventions for women with postpartum depression: Systematic review and meta-analysis. *JMIR mHealth and uHealth, 9*(10), e32544. https://doi.org/10.2196/32544

Zhong, X., Ming, Q., Dong, D., Sun, X., Cheng, C., Xiong, G., Li, C., Zhang, X., & Yao, S. (2020). Childhood Maltreatment Experience Influences Neural Response to Psychosocial

Stress in Adults: An fMRI Study. *Frontiers in Psychology*, *10*, 2961. https://doi.org/10.3389/fpsyg.2019.02961

Zimmer-Gembeck, M. J., Rudolph, J., Kerin, J., & Bohadana-Brown, G. (2022). Parent emotional regulation: A meta-analytic review of its association with parenting and child adjustment. *International Journal of Behavioral Development, 46*(1), 63–82. https://doi.org/10.1177/01650254211051086

Zvara, B. J., Mills-Koonce, R., & Cox, M. (2017). Maternal childhood sexual trauma, child directed aggression, parenting behavior, and the moderating role of child sex. *Journal of Family Violence, 32*(2), 219–229. https://doi.org/10.1007/s10896-016-9839-6

Appendix A: Sample Flyer

You may be eligible to participate in an interesting virtual study examining caregiver experiences, as well as infants' reactions to caregivers' use of technology.

This study will take approximately 45 minutes to complete + a few questionnaires.

Participants will be **paid $20** and will be entered into a raffle to win **1 of 4 prizes valued at $150-$200.** If desired, you will be connected to resources on parenting.

Participation is voluntary, and all information will be kept confidential.

SCAN TO GO TO OUR WEBSITE

If you are interested in participating, please contact us:
yorkparentingproject@gmail.com

Appendix B: Informed Consent Form

INFORMED CONSENT FORM

Date:	December 2021
Study Name:	An investigation of caregiver sensitivity across diverse caregiving contexts
Principal Investigator:	Dr. Yvonne Bohr, C.Psych.
Co-Investigators:	Mariami Bimm, Marette Abdelmaseh
Research Assistants:	Jenna Barnhardt, Khadija Bint Misbah, Alaina Thomas, Sierra DiMarco, Sabrina Da Silva, Fernanda De La Mora, Nichaela Garvey
Sponsor:	LaMarsh Centre for Child and Youth Research, York University 4700 Keele Street, Toronto ON M3J 1P3

PURPOSE OF THE RESEARCH: The purpose of our research project is to learn more about caregiver-child relationships in diverse contexts (the term "caregiver", as used throughout this protocol, will refer to a parent or guardian of children). We are particularly interested in understanding the ways in which risk and protective factors relate to infant stress, synchrony between caregiver and infant behaviours, parenting style, attention, early experiences, and child development.

WHAT WILL YOU BE ASKED TO DO: If you agree to participate in this study, you will be asked to complete a series of questionnaires about your demographics, your relationships, your early childhood experiences, and your emotions. These questionnaires should take between 30-45 minutes and will be completed through Qualtrics, a secure data collection platform[1]. Once you have completed the questionnaires, you will be contacted to schedule a virtual meeting with one or two members of the research team through Zoom for Healthcare[1] (a secure, PHIPA compliant 3rd party platform). During this virtual meeting, you and your infant will be asked to complete a series of activities in view of your computer's web camera. You will first be asked to play/interact normally with your child for 4 minutes without toys. You will then be asked to play with a preferred toy with your infant for one minute, and then withhold that toy from your infant for another minute. Next, you will be asked to continue to interact with your child as you typically would at home (with or without toys) for another 6 minutes. In the following phase, you will be asked to interact with your infant while keeping your phone nearby (for the first 2.5 minutes, your phone should be face-down with alerts set at maximum volume; for the last 2.5 minutes, your phone should be face-up). You will then be asked to again play with your infant as you typically would at home, for up to 2 minutes. These interactions with your child will be videorecorded through Zoom for Healthcare and should take between 20 – 25 minutes altogether. Following these interactions, you will be asked two additional questions about mobile technology. Finally, you will complete a "word task" on your own time (15 – 20 minutes), where you will be asked to identify the colour of different words shown on a screen using a platform called Gorilla[1]. In total, participation in this study will require approximately 1- 1.5 hours of your time.

RISKS AND DISCOMFORTS: Some of the items of the questionnaires may feel difficult or upsetting. For example, some questions will relate to painful early childhood experiences. If any items are difficult for you to answer, you may skip them. The research team will be available to help you if you feel uncomfortable or start to feel upset while answering these questionnaires. The tasks you complete with your infant are designed to help us understand your relationship, but some of them may be difficult or uncomfortable to complete (e.g. withholding a toy). If at any point these tasks become too difficult for you or your infant, you may discontinue the task and provide comfort to your infant. If you feel discomfort during or after participating in this project, the research team will be available to answer any questions you may have. In addition, we can connect you with online and community resources that may be helpful to you (please click here to access a compiled list of resources). You can also stop participating in the study at any point because participation is voluntary.

BENEFITS OF THE RESEARCH AND BENEFITS TO YOU: This study will contribute to the current knowledge base about child development and may help us better understand how to modify existing services for caregivers and their children. As a token of appreciation for your time, you will be paid $20 for your time and your name will be entered into a raffle to win a prize (e.g. 1 of 4 prizes such as a developmentally appropriate play kits, Montessori toy, or spa gift card valued at approximately $150-200CAD).
You will also be offered various psychoeducational resources as desired, such as manuals about parenting and child development, and/or a parenting seminar led by our research team that will include a Q & A session.

VOLUNTARY PARTICIPATION: Your participation in the study is completely voluntary and you may choose to stop participating at any time with no consequence whatsoever. You are not required to agree to participate in this study. If you do not agree to take part in the study, this will have no impact on your participation in any of the programs offered by the agency you were recruited from (if applicable). Furthermore, your decision not to participate in the study will have no influence on the nature of your relationship with York University or the agency you were recruited from (if applicable), either now, or in the future. If you do agree to take part in the study, then you will be free to request that any specific question or information you provide be removed from our research.

WITHDRAWAL FROM THE STUDY: You have the right not to answer any particular questions, if you so decide. You can also stop participating in the study at any time, for any reason, if you so decide. Participants are eligible to receive the compensation offered even if they withdraw from the study without completion of the assessment activities and questionnaires. Your decision to stop participating or to refuse to answer particular questions, will not affect your relationship with agency you were recruited from (if applicable), the researchers, York University, or any other group associated with this project. In the event that you decide to withdraw from the study, all data generated as a consequence of your participation shall be immediately destroyed.

CONFIDENTIALITY: All information you supply during the research will be held in confidence, except in cases where the research team suspects that you or your child may be in imminent danger (e.g. suspected child abuse), in which case we are bound by law to contact the

appropriate authorities. If you have any questions about limits to confidentiality, please contact us.

Unless you specifically indicate your consent, your name will not appear in any report or publication of the research. Data will not be shared with anyone, and confidentiality will be provided to the fullest extent possible by law. Data will be collected and analyzed from questionnaires, the "word task", and videotaped sessions. Only the principal investigator, co-investigators, and research assistants will have access to this information. Questionnaires will be completed using Qualtrics[1] and the "word task" will be completed using Gorilla[1]. These are both secure 3rd party platforms, and the data you provide through them will only be linked your participant ID number. Zoom for Healthcare[1] will be used to collect video data. This platform has security safeguards and advanced settings to protect against sessions being eavesdropped on or tampered with, but there is always risk for virtual platforms to be hacked or compromised. Recordings of online sessions will be saved in a password protected file on encrypted USB drives, not the cloud-based service. Videos may then be uploaded to secure servers (i.e. OneDrive) with the correct safeguards in place.
Once videos have been analyzed, all resulting data will only be linked to participant ID numbers. The videos will be retained for five years following data collection, and will be destroyed immediately afterward, unless you provide permission to have your data used for additional studies. The information collected in this study will be presented in the form of doctoral research and/or scientific publication(s). These will describe the results of the study, implications, and recommendations for future researchers and clinicians involved in work with caregivers and their children.

QUESTIONS ABOUT THE RESEARCH? If you have questions about the research in general or about your role in the study, please feel free to contact Dr. Bohr at 416-736-2100 ext. 40561, bohry@yorku.ca, at the LaMarsh Centre for Child and Youth Research. This research has been reviewed and approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any ethical concerns, questions about this process, or about your rights as a participant in the study, please contact either the Graduate Psychology Program office (telephone 416-736-5115 ext. 66225) or the Senior Manager and Policy Advisor for the Office of Research Ethics, 5th Floor, York Research Tower, York University (telephone 416-736-5914 or e-mail ore@yorku.ca).

1. This study will use Zoom for Healthcare to conduct virtual sessions and Qualtrics/Gorilla to collect survey data. These are all externally hosted cloud-based services. When information is transmitted over the internet, privacy cannot be guaranteed. There is always a risk your responses may be intercepted by a third party (e.g., government agencies, hackers). Furthermore, while York University researchers will not collect or use IP addresses or other information which could link your participant ID to your computer or electronic devices without informing you, there is a small risk with any platform that data collected on external servers may fall outside the control of the research team. Please contact Yvonne Bohr (bohry@yorku.ca) for further information.
Video recordings will be saved onto an encrypted and password protected USB key, not the cloud-based services. Please note that it is the expectation that participants agree not to make any unauthorized recordings of the content of a meeting / data collection session.

Legal Rights and Signatures:

I_____, consent to participate in the research study "An investigation of caregiver sensitivity across diverse caregiving contexts" conducted by the Infant Mental Health Lab of the LaMarsh Centre for Child and Youth Research at York University. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

Signature_____ **Date**_____

(Participant)

Signature_____ **Date**_____

(Principal Investigator)

Substitute Consent for your Infant

I_____, consent to for my infant to participate in the research study "An investigation of caregiver sensitivity across diverse caregiving contexts" conducted by the Infant and Child Mental Health Lab (in association with the LaMarsh Centre for Child and Youth Research) at York University. I have understood the nature of this project and wish for my infant to participate. I am not waiving any of my infant's legal rights by signing this form. My signature below indicates my substitute consent for my infant.

Signature_____ **Date**_____

(Participant)

Signature_____ **Date**_____

(Principal Investigator)

Audio/Videotape Consent

☐ I _____, give my consent to be videotaped in an interaction with my child that is no more than 25 minutes in length. I understand that the purpose of the video is strictly for research, to be coded by the research team, and then destroyed 5 years after data collection has ended. My questions have been answered to my satisfaction and I agree to participate in this study. I understand that I can stop taping at any time.

☐ I _____, give my consent for the viewing of the videotaped tasks for the purpose of (please check to indicate consent): ☐ training and/or ☐ conference presentations.

Signature _____ **Date** _____

(Participant)

Re-Contact for Future Research Consent

Please check the appropriate box below and print your name:

I _____, give my consent to be contacted in the future for the purpose of (please check to indicate consent): ☐ follow-up to this study and/or ☐ future research studies conducted by the Infant Mental Health Lab of the LaMarsh Centre for Child and Youth Research at York University.

Appendix C: Demographic Survey

Predicting Resilience in Different Caregiving Contexts

DEMOGRAPHICS

In what year were you born? _____ Current age? _____

Age of first pregnancy? _____ Child's age? _____

Number of adults in household? _____ Number of children in household? _____

Total Annual Household Income? _____

Highest level of education completed? (1) Some High School _____ (2) High School _____

(3) Some College / University _____ (4) College / University _____ (5) Graduate _____ (6) Other _____

Country of birth? _____ Years resided in Canada (if not birthplace) _____

Your ethnicity:
- ☐ Aboriginal
- ☐ African
- ☐ South Asian
- ☐ European
- ☐ East Asian/Pacific Islander
- ☐ Middle Eastern
- ☐ Caribbean
- ☐ Latin, Central & South American
- ☐ Other (please specify): _____

Your partner's ethnicity (if applicable):
- ☐ Aboriginal
- ☐ African
- ☐ South Asian
- ☐ European
- ☐ East Asian/Pacific Islander
- ☐ Middle Eastern
- ☐ Caribbean
- ☐ Latin, Central & South American
- ☐ Other (please specify): _____

Generational status? By "generational status" I mean, are you the first, second, third, etc. generation of your family to live in this country? _____

Caregiver's parents' country of birth (and province/region) and first language?

_____

FAMILY STABILITY

1. What is your marital status?
   (1) Single _____ (2) Married _____ (3) Common Law _____ (4) Separated/Divorced _____

   (5) In a relationship but not living together _____
   (#months in relationship _____ / parent of participant's child: YES _____ NO _____

2. How many residences have you lived in over the last 5 years (i.e. since January 2003)? _____

3. What is your employment status?
   (1) F/T _____ (2) P/T _____ (3) Unemployed (*provide reason)* _____
   (4) Length of current employment _____ (months)

   What is the employment status of other adults living in your household?
   (1) Role of person in household _____
   (2) F/T _____ (3) P/T _____ (4) Length of current employment _____ (months)
   (5) Unemployed (*provide reason)* _____

4. How easy or comfortable is it for you and your family to live on your current family income?

   (1) Not at all _____ (2) Somewhat _____ (3) Moderately _____ (4) Very _____

CHILD DEVELOPMENTAL HISTORY

1. Is this your biological child? _____
If NO; at what age did the child come under your care? _____

2.) Has your child had any of the following developmental concerns:

☐ Auditory/Visual: _____

☐ Language: _____

☐ Motor: _____

☐ Cognitive: _____

☐ Social/emotional: _____

Appendix D: Resource List sent to all Caregivers

COMPILED BY:
THE INFANT AND CHILD MENTAL HEALTH LAB

YORK U

RESOURCES TO EXPLORE: CAREGIVER-INFANT INTERACTIONS

Online Resources

- Visit the **Circle of Security International** website to learn about Attachment and Attending to Children's Needs:
  - https://www.circleofsecurityinternational.com/circle-of-security-model/what-is-the-circle-of-security/
- Visit the **CDC Child Development** website for information on Developmental Milestones and a Positive Parenting Tip Sheet
  - https://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/infants.html
- Visit the **Strong Minds, Strong Kids** website for 7 Essential Parenting Strategies and information on how to connect with babies through music
  - https://strongmindsstrongkids.org/Public/Babies/Tips-and-Strategies/Public/Babies/Tips-and-_Strategies.aspx?hkey=0a39b023-8a15-487d-9356-a0838b7b1a8c
- Visit the **Harvard Centre on the Developing Child** website for a video on Building Babies' Brains Through Play
  - https://developingchild.harvard.edu/resources/building-babies-brains-through-play-mini-parenting-master-class/
- Visit the **Toronto Public Health** website for general information on your Baby's First Year
  - https://www.toronto.ca/community-people/children-parenting/pregnancy-and-parenting/parenting/babys-first-year/

Programs to Check Out

Parents located in Toronto can check out these free parenting programs:

- **Healthy Babies, Healthy Children Program**, offered by Toronto Public Health: https://www.toronto.ca/community-people/children-parenting/pregnancy-and-parenting/pregnancy/during-pregnancy/prenatal-programs/healthy-babies-healthy-children/
- **Babies' Best Start** offered by Strides Toronto (offered in multiple languages): https://stridestoronto.ca/programs/babies-best-start/
- **Infant Mental Health Program**, offered by Strides Toronto: https://stridestoronto.ca/programs/infant-mental-health/

Parents in Ontario can also search for services offered by their local **EarlyON Centre**: https://www.ontario.ca/page/find-earlyon-child-and-family-centre

If you are having trouble locating programs or services, please reach out to us and we will help connect you to resources in your area.

*note: all websites are hyperlinked for easy access

Appendix E: Resources sent to Caregivers with high EPDS scores

Child and Family Mental Health Support Services and Resources

IN CASE OF AN EMERGENCY:

Please go to your nearest hospital or call 911.

IF YOU ARE IN CRISIS, PLEASE CALL:

Crisis Services Canada: 1-833-456-4566 (Canada-wide)

By Province:

Ontario: 1-866-797-0000 (Telehealth Ontario)

Quebec: 514-935-1101 (Tel-Aide) or 1-800-361-5085 (Ligne Parents) **British Columbia:** 310-6789 (BC Mental Health Support Line) **Alberta:** 780-482-4357

Saskatchewan: 306-933-6200

Manitoba: 1-888-322-3019 (Klinic Crisis Line)

New Brunswick: 1-800-667-5005 (Chimo Helpline)

Nova Scotia: 1-888-429-8167

Prince Edward Island: 1-800-218-2885

Newfoundland & Labrador: 1-888-737-4668

Yukon: 1-844-533-3030

Northwest Territories: 1-800-661-0844

Nunavut: 1-800-265-3333

ONLINE RESOURCES FOR CHILD AND FAMILY MENTAL HEALTH:

Circle of Security International: https://www.circleofsecurityinternational.com/

Incredible Years Parenting Resources: https://incredibleyears.com/parents-teachers/

Harvard University Centre for the Developing Child: https://developingchild.harvard.edu/

Strong Minds, Strong Kids - Parenting Tips and Strategies:

https://strongmindsstrongkids.org/Public/Babies/Tips-and-_Strategies.aspx

By Province:

Ontario

Children's Mental Health Ontario (CMHO): https://cmho.org/ **Quebec**

AMI-Quebec: https://amiquebec.org/youth/

British Columbia

The Ministry of Children and Family Development – Child and Youth Mental Health (CYMH):

https://www2.gov.bc.ca/gov/content/health/managing-your-health/mental-health-substance-use/child-teen-mental-health

Alberta

Alberta Children's Mental Health:

https://www.alberta.ca/childrens-mental-health.aspx

Saskatchewan

Saskatchewan – Mental Health and Addiction Services:

https://www.saskatchewan.ca/residents/health/accessing-health-care-services/mental-health-and-addictions-support-services

Saskatchewan Health Authority – Children's Mental Health:

https://www.suncountry.sk.ca/service/76/88/children-s-mental-health.html

Manitoba

ManitobaParentZone – Mental Health:

http://www.manitobaparentzone.ca/parent-or-caregiver/teens/mental-health.html

New Brunswick

Addiction and Mental Health Support and Services for Children and Youth in New Brunswick:

https://www2.gnb.ca/content/gnb/en/corporate/promo/isd.html

Nova Scotia

Nova Scotia – Mental Health Services – Services for Children and Youth:

https://novascotia.ca/dhw/mental-health/children-and-youth.asp

Prince Edward Island

Prince Edward Island – Mental Health Services:

https://www.princeedwardisland.ca/en/information/health-pei/mental-health-services

Newfoundland & Labrador

Newfoundland Labrador – Mental Health and Addictions:

https://www.gov.nl.ca/hcs/mentalhealth-committee/mentalhealth/

Yukon

Yukon – Mental Wellness – Services in the communities:

https://yukon.ca/en/sartyukon/free-counselling-and-support-services

Northwest Territories

Treatment Resources for NWT Children, Youth and Families:

https://www.hss.gov.nt.ca/en/services/treatment-resources-nwt-children-youth-and-families

Nunavut

Nunavut – Mental Health:

https://www.gov.nu.ca/health/information/mental-health-0

Appendix F: Emotional Stroop Task Words

Neutral Words	Negative Words	Attachment-Related Negative Words
Actions	Anxiety	Abandon
Added	Ashamed	Abuse
Answers	Disgust	Betray
Bags	Disturb	Breakup
Cloud	Fail	Conflict
Columns	Guilt	Divorce
Common	Hatred	Grief
Estimate	Ignoring	Insecure
Gallery	Insulted	Jealousy
Password	Irritating	Lonely
Pencil	Outrage	Loss
References	Threaten	Neglect
Ribbon	Toxic	Reject
Statues	Unfair	Selfish
Triangle	Weapon	Separation

Appendix G: Zoom Session Infographic Sent to Caregivers

Appendix H: Tables

Table 1

Sample Demographic Characteristics

Variable	Sample Characteristics (N = 112)
Caregiver Age	M = 33.57 (SD = 4.09)
Caregiver Gender	
Mothers	109 (97.32%)
Fathers	3 (2.68%)
Infant Age	M = 197.33 days (SD = 67.22)
Infant Biological Sex	
Female	53 (47.32%)
Male	59 (52.68%)
Gestational Age at Birth	
Full Term	89 (79.46%)
Premature	5 (4.46%)
Missing	18 (16.07%)
Total # Children	
1	79 (70.54%)
2	23 (20.54%)
3	8 (7.14%)
4	2 (1.79%)
Caregiver Relationship Status	
Married	85 (75.89%)
Common Law	26 (23.21%)
Single	0 (0%)
In a relationship, not living together	1 (0.89%)

Parental Education Level Completed	
Some high school	1 (0.89%)
High school graduate	1 (0.89%)
Some college/university	3 (2.68%)
College/University graduate	38 (33.93%)
Some post-graduate training	10 (8.93%)
Post-graduate / Professional degree	59 (52.68%)
Household Income	
Less than $50,000	3 (2.68%)
$50,000 - $100,000	20 (17.86%)
$100,000 - $150,000	31 (27.68%)
More than $150,000	58 (51.79%)
Comfort with Income	
Not at all comfortable	5 (4.46%)
Somewhat comfortable	17 (15.18%)
Moderately comfortable	46 (41.07%)
Very comfortable	44 (39.29%)
Self-Reported Ethnicity	
Indigenous	2 (1.79%)
Middle Eastern	1 (0.89%)
Caribbean	1 (0.89%)
Latin, Central, or South American	4 (3.57%)
African	1 (0.89%)
South Asian	8 (7.14%)
European/Caucasian	77 (68.75%)
East Asian	8 (7.14%)
West Asian	0 (0%)
Mixed	6 (5.36%)
Prefer not to say	4 (3.57%)

First Language	
English only	87 (77.68%)
French	6 (5.36%)
Other language	19 (16.96%)
Missing	0 (0%)

Table 2

Descriptive Statistics for Study Variables

Variable	*n*	*M*	*SD*	Range	Skew	Kurtosis	α
1. CATS Total Score	112	0.89	0.60	0.11 – 2.86	1.09	0.83	.95
2. DERS Total Score	112	32.85	8.84	18 – 64	0.89	0.80	.87
Goals		7.59	3.14	3 – 15	0.59	-0.59	.92
Awareness		5.81	2.32	3 – 12	0.84	0.21	.81
Clarity		4.96	1.73	3 – 11	0.99	1.07	.70
Impulse		4.08	1.71	3 – 12	2.23	5.94	.87
Strategies		4.44	1.89	3 – 12	2.03	4.41	.79
Non-Acceptance		5.97	2.71	3 – 15	1.30	1.68	.85
3. Attention Bias Score (ms)*	107	-4.09	13.69	-46.19 – 28.83	0.01	0.20	N/A
4. EPDS Total Score	112	6.61	4.22	0 – 20	0.67	0.28	.83
5. MBQS Score	112	0.30	0.39	-0.47 – 0.87	-0.30	-1.09	N/A

Note: CATS = Childhood Abuse and Maltreatment Scale; *DERS* = Difficulties with Emotion Regulation Scale; *EPDS* = Edinburgh Postpartum Depression Scale; *MBQS* = Maternal Behaviour Q-sort

* Attention Bias Scores reported are based on the average interference scores across both negative and attachment-related negative words, neither of which were in the expected direction.

Table 3

Correlations Among Main Study Variables

Variable	1	2	3	4	5
1. CATS Total Score	1	-	-	-	-
2. DERS Total Score	.20*	1	-	-	-
3. Attention Bias Score (ms)	-.06	-.11	1	-	-
4. EPDS Total Score	.27**	.48***	-.05	1	-
5. MBQS Score	.02	.02	-.01	-.03	1

Note: CATS = Childhood Abuse and Maltreatment Scale; *DERS* = Difficulty with Emotion Regulation Scale; *EPDS* = Edinburgh Postpartum Depression Scale; *MBQS* = Maternal Behaviour Q-sort

** p < .05. ** p < .01. *** p < .001*

Table 4

Simple and Multiple Regression Models Predicting MBQS

Predictors	*N*	*F*	R^2	*B*	*t*	*p*
CATS	109	0.38	0.00	0.04	0.62	.537
CATS x DERS	109	0.12	0.00			.891
CATS				0.03	0.32	.752
DERS				0.00	-0.42	.678

Note: CATS = Childhood Abuse and Maltreatment Scale; *DERS* = Difficulty with Emotion Regulation Scale; *MBQS* = Maternal Behaviour Q-sort

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 5

Post-Hoc Mediation Model (estimated with 4981 successful bootstrap draws)

Effect	*B*	*β*	*z*	*p*	95% CI [LL, UL]
Direct effect of CATS on EPDS, controlling for DERS (c')	1.28	0.18	2.37	.019*	[0.19, 2.34]
Mediator Pathway					
Effect of CATS on DERS (a)	2.95	0.20	2.18	.029*	[0.62, 5.88]
Effect of DERS on EPDS (b)	0.21	0.44	5.17	.000***	[0.13, 0.29]
Indirect effect of CATS on EPDS through DERS (a x b)	0.62	0.09	1.93	N/A[+]	[0.13, 1.37]
Total effect of CATS on EPDS (c)	1.90	0.27	3.25	.001**	[0.78, 3.09]

Note: CATS = Childhood Abuse and Maltreatment Scale; *DERS* = Difficulty with Emotion Regulation Scale.

** p < .05. ** p < .01. *** p < .001*

[+]*Note*: Confidence intervals (CIs) were used to assess the significance of the indirect effect as standard errors and *p*-values can be biased in this context. CIs indicate the range within which the true indirect effect is likely to fall; if the CI does not include zero, the effect is considered statistically significant.

Table 6

Correlations Between DERS Subscales and MBQS Scores

DERS Subscale	*R*	*t*	*p*
Goals	0.11	1.13	.262
Awareness	-0.10	-1.02	.311
Clarity	0.02	0.23	.817
Impulse[+]	0.03	0.35	.729
Strategies[+]	0.04	0.38	.706
Non-Acceptance	-0.03	-0.29	.771

Note: *DERS* = Difficulties with Emotion Regulation Scale; *MBQS* = Maternal Behaviour Q-sort

[+]The distribution of scores for this subscale showed high levels of skew and kurtosis; results should be interpreted with caution.

** $p < .05$. ** $p < .01$. *** $p < .001$*

Table 7

Correlations Between DERS Subscales and CATS Total Scores

DERS Subscale	*R*	*t*	*p*
Goals	0.21	2.23	.028*
Awareness	-0.04	-0.45	.656
Clarity	0.09	-0.99	.323
Impulse[+]	0.16	1.73	.086
Strategies[+]	0.17	1.77	.080
Non-Acceptance	0.17	1.77	.080

Note: *DERS* = Difficulties with Emotion Regulation Scale; *CATS* = Childhood Abuse and Maltreatment Scale

[+]The distribution of scores for this subscale showed high levels of skew and kurtosis; results should be interpreted with caution.

** $p < .05$. ** $p < .01$. *** $p < .001$*

Table 8

Correlations Between DERS Subscales and EPDS Scores

DERS Subscale	*R*	*t*	*p*
Goals	0.29	3.14	.002**
Awareness	0.11	1.14	.257
Clarity	0.40	4.51	.000***
Impulse[+]	0.21	2.29	.023*
Strategies[+]	0.52	6.32	.000***
Non-Acceptance	0.38	4.34	.000***

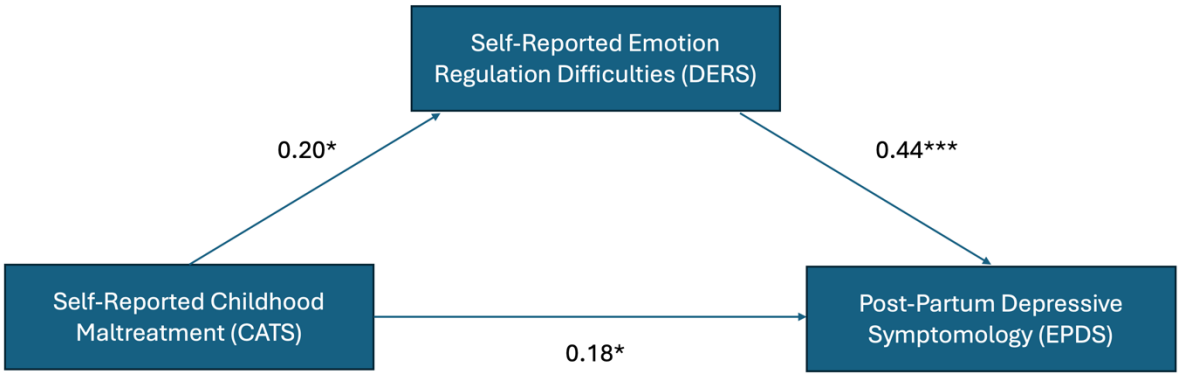
Note: *DERS* = Difficulties with Emotion Regulation Scale; *EPDS* = Edinburgh Postpartum Depression Scale

[+]The distribution of scores for this subscale showed high levels of skew and kurtosis; results should be interpreted with caution.

** $p < .05$. ** $p < .01$. *** $p < .001$*

Figure 1

Post-Hoc Mediation Model (estimated with 4981 successful bootstrap draws)



Note: Visual representation of the mediation model, with standardized estimates (β) reported for direct effects.

** p < .05. ** p < .01. *** p < .001*