EXPLORING MATERNAL PERSONAL AND INTERPERSONAL
FUNCTIONING TO EXPLAIN THE RELATION BETWEEN MATERNAL CHILDHOOD
MALTREATMENT HISTORY AND CHILD BEHAVIOUR PROBLEMS

by

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EXPLORING MATERNAL PERSONAL AND INTERPERSONAL FUNCTIONING TO EXPLAIN THE RELATION BETWEEN MATERNAL CHILDHOOD MALTREATMENT HISTORY AND CHILD BEHAVIOUR PROBLEMS

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Abstract

I investigated the association between maternal childhood maltreatment history and child behaviour problems in the next generation, and what maternal personal and interpersonal variables mediate this relation. I hypothesized that previously studied maternal variables (maternal depression, social support, and parenting) which have largely been tested in high-risk samples, would emerge as significant mediators in this study’s low-risk sample. The inclusion of two untested but theoretically important maternal constructs (adult attachment and parenting stress) were also examined. Examining these five maternal constructs in the same study using simple and parallel mediator models allowed for the opportunity to identify the unique variance contributed by these mediators.

Ninety-six mother-child dyads were assessed at two time points. When children were 16 months, mothers were given measures to assess childhood maltreatment history, adult attachment, depressive symptoms, parenting stress, and social support. Mothers were also observed with their children to assess maternal sensitivity. When children were 5-years old, an observational measure of compliance was completed and maternal reports of child behaviour were collected. Simple and parallel mediation models were constructed.
Results included a positive association between maternal childhood trauma and mother-reported child behaviour problems. Observed child compliance was excluded from the main analyses, as it was not significantly related to maternal study variables. In regards to child internalizing behaviour problems, maternal depressive symptoms and parenting stress emerged as significant mediators when assessed separately. When both simple mediators were examined in parallel, maternal depressive symptoms was the only significant mediator. Maternal sensitivity was found to have a significant suppressor effect. In regards to mother-reported child externalizing behaviour problems, adult avoidant attachment, maternal depressive symptoms, parenting stress, and social support, were all significant simple mediators when assessed individually. When these four mediators were examined in parallel, parenting stress emerged as the only significant mediator. These findings provide additional evidence that childhood trauma has far-reaching impact on functioning into adulthood and that adult personal and interpersonal dysfunction impact child behaviour in the next generation. Further, depending on the child outcome (i.e., internalizing or externalizing behaviour), different mediators explain unique variance in the relation between maternal childhood maltreatment history and child behaviour problems.
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Chapter 1: Introduction

Maltreatment has reached epidemic proportions, with millions of children being victimized yearly (Butchart, Phinney Harvey, Kahane, Mian, & Furniss, 2006). Childhood maltreatment has the potential to negatively impact children’s cognitive, affective, behavioural, and physiological development (Cicchetti & Toth, 2005; Cook et al., 2005; Glaser, 2000; Lansford et al., 2002; Neigh, Gillespie, Nemeroff, 2009; Stirling, Amaya-Jackson, & Amaya-Jackson, 2008; Streeck-Fischer & van der Kolk, 2000). Childhood maltreatment remains significant in the prediction of children’s emotional and behavioural challenges even when controlling for other important risk factors, such as, low socioeconomic status, single parenthood, family stress, and social support (Lansford et al., 2002). In addition to childhood dysfunction, research findings support the claim that childhood maltreatment is linked to a multitude of negative adult outcomes. For instance, adults who present with a history of childhood maltreatment are at greater risk for psychopathology (Kendler et al., 2000; Putnam, 2003; Springer, Sheridan, Kuo, & Carnes, 2007), victimization in adulthood (Schumm, Briggs-Phillips, & Hobfoll, 2006), disrupted romantic relationships (Colman & Widom, 2004), and negative physical health outcomes (Lang, Aarons, Gereity, Laffaye, & Satz, 2008; Springer et al., 2007; Wegman & Stetler, 2009; Widom, Czaja, Bentley, & Johnson, 2012). Maltreatment is also related to parenting difficulties (Egeland, Bosquet, & Chung, 2002; Pereira et al., 2012). A recent meta-analysis of 124 studies reported that childhood maltreatment increases an individual’s risk for depressive disorders, anxiety disorders, drug abuse, suicidal behaviour, and sexually transmitted diseases (Norman et al., 2012). The association between childhood maltreatment and negative mental health outcomes remains significant even when accounting for lifetime exposure to trauma (Edwards, Holden, Felitti, & Anda, 2003; Spertus, Yehuda, Wong, Halligan, & Seremetis, 2003). As a result of the many and far-reaching consequences of
maltreatment it is an important area of study. Given that the experience of childhood maltreatment has far reaching consequences, researchers have been interested in how the risks associated with childhood maltreatment may also transfer to an individual’s offspring. In this thesis I was specifically interested in further exploring the relation between a mother’s history of childhood maltreatment and child behaviour problems in her offspring, an association that has been empirically supported in the research literature (Lang, Gartstein, Rodgers, & Lebeck, 2010; Min, Singer, Minnes, Kim, & Short, 2012). Researchers have started uncovering mechanisms that mediate the relation between these two very distal constructs (Rijlaarsdam et al., 2014). Support has been found for the mediating role of depressive symptoms, social support, and parenting behaviours (Koverola et al., 2005; Min et al., 2012; Morrel, Dubowitz, Kerr, & Black, 2003; Roberts, O’Connor, Dunn, Golding, The ALSPAC Study Team, 2004; Thompson, 2007). The aim of my thesis was to examine these variables along with two other untested potential mediators (adult attachment and parenting stress) in simple and parallel mediator models to examine their shared and unique variance. I hypothesized that a mother’s history of childhood maltreatment would be related to child behaviour problems and that maternal personal (adult attachment, maternal depression, and parenting stress) and interpersonal (social support and parenting) dysfunction would mediate this relation. In the next two sections of this introduction, I provide a general overview of definitions, prevalence, and outcomes associated with childhood maltreatment and child behaviour problems. In the third section, I review research that examines the relation between maternal childhood maltreatment history and child behaviour problems, and significant mediators that have been uncovered to explain this relation. In the fourth and fifth sections I review maternal personal (adult attachment, depression, and parenting stress) and interpersonal variables (social support and parenting). Research on each of the aforementioned maternal variables is reviewed to demonstrate their significant association with both the study’s
independent (childhood maltreatment) and dependent (child behaviour) variables and to justify their inclusion as potential intervening variables. I conclude this introduction with a section on study objectives. In reviewing the research literature, a close examination of study methodology was undertaken. When possible, experimental and longitudinal studies were reviewed to discuss with more confidence the causal impact of childhood maltreatment history on maternal functioning and maternal functioning on child outcomes. The difficulty with interpreting cross-sectional data that are collected from a single informant and/or collected at one time point is discussed throughout this review where relevant.

**Child Maltreatment**

Society’s understanding, definitions, and reported rates of childhood maltreatment have gone through many changes over the decades. These transformations represent society’s changing understanding of child development, awareness of maltreatment, child welfare practices, and legislation regarding child rights (Scannapieco & Connell-Carrick, 2005). While there has been a growing consensus among mental health professions, legal professionals, medical professionals, and educators on what constitutes childhood maltreatment (Portwood, 1999), there is no one agreed upon definition of maltreatment. Cicchetti and Toth (2005) discuss maltreatment using the following subtypes:

- Physical abuse, which involves the infliction of bodily injury on a child by non-accidental means;
- sexual abuse, which includes sexual contact or attempted contact between a child and a caregiver or other adult for the purposes of the caregiver’s sexual gratification or financial gain;
- neglect, which pertains to both the failure to provide minimum care and the lack of supervision;
- and emotional maltreatment, which involves persistent and extreme thwarting of a child’s basic emotional
needs. (p. 410)

The Canadian Incidence Study (CIS) of Reported Child Abuse and Neglect-2008 (CIS-2008) examined 36 forms of maltreatment that were identified under these four maltreatment subtypes and one additional subtype: exposure to intimate partner violence, which includes a child being present (seeing or hearing) while intimate partners are being physically or verbally violent towards each other (Public Health Agency of Canada, 2010). These definitions of maltreatment demonstrate that researchers who investigate outcomes of maltreatment history need to examine a variety of abuse and neglect experiences.

While maltreatment is a significant problem in society that affects many children, the reported rate of maltreatment varies depending on how information is collected. Child welfare statistics can be used to evaluate prevalence of child maltreatment. According to the CIS-2008, child welfare agencies in Canada conducted 235,842 child maltreatment investigations or 39.16 investigations per 1,000 children. Of the substantiated cases ($N = 85,440$), the most frequent types of maltreatment identified were exposure to intimate partner violence (34% of cases) and child neglect (34% of cases). The remaining cases involved physical abuse (20%), emotional maltreatment (9%), and sexual maltreatment (3%). More than one type of maltreatment was identified in 18% of substantiated cases (Public Health Agency of Canada, 2010). It should be noted that these incidence rates are most certainly an underestimation of child maltreatment, as they do not include cases that did not come to the attention of child welfare agencies.

Maltreatment rates are higher when examining retrospective reports (Smith, Ireland, Thronberry, & Elwyn, 2008). Within a study that examined retrospective reports of child physical and sexual abuse in a large sample of Ontario residents, less than 10% of respondents who endorsed maltreatment had contact with a child welfare agency (MacMillan, Jamieson, & Walsh, 2003).
Researchers very often utilize retrospective reports of childhood experiences to determine rates of childhood maltreatment and to investigate adolescent and adult outcomes. Collecting retrospective reports is more cost-effective than prospective investigations, requiring less time and resources. In addition, collecting maltreatment information using retrospective reports allows for the inclusion of individuals who were never in contact with a child welfare agency. Data collected in a 2000-2001 Ontario Health Study found that 31% of respondents reported physical abuse in childhood and 15% reported sexual abuse in childhood (MacMillan, Tanaka, Duku, Vaillancourt, & Boyle, 2013). In a large North American sample ($N = 967$) of men and women, retrospective reports of child maltreatment revealed that 35% of the sample had experienced at least one type of maltreatment and 13.5% of the sample had experienced multiple types of childhood maltreatment (Scher, Forde, McQuaid, & Stein, 2004). When maltreatment subtypes were examined separately, physical abuse was the highest reported maltreatment subtype experienced for both men and women, at 22.1% and 17.1%, respectively (Scher et al., 2004).

**Childhood Maltreatment: Negative Outcomes.** Childhood maltreatment has the potential to negatively impact many areas of child development and adult functioning. In particular, maltreated children have been found to exhibit higher levels of internalizing and externalizing behaviour problems (Appleyard, Yang, & Runyan, 2010; Manly, Kim, Rogosch, & Cicchetti, 2001; Tyler, 2002), greater social dysfunction (Luke & Banerjee, 2013), and poorer cognitive and academic functioning (Kendall-Tackett & Eckenrode, 1996; Mills et al., 2011; Zolotor et al., 1999). Results of the CIS-2008 showed that among substantiated cases, 46% of children were identified as presenting with difficulty in at least one of the following areas: academics, depression, anxiety, aggression, attachment, and intellectual or developmental disability (Public Health Agency of Canada, 2010). Childhood maltreatment has also been found to impact neurobiological development (Neigh et al., 2009). For example, using both animal and human
models, early adversity related to maternal care have been shown to alter optimal functioning of
the hypothalamic-pituitary-adrenal (HPA) axis (Caldji et al., 1998; Sanchez, 2006; Tarullo &
Gunnar, 2006). The dysregulation of the HPA axis has been found to still be evident in adults
with a childhood maltreatment history (Brand et al., 2010; Carpenter et al., 2007; Gonzalez,
Jenkins, Steiner, & Fleming, 2009).

Researchers who have examined samples prospectively using longitudinal designs
provide valuable insight into the trajectories of maltreated children compared to children who
have not experienced maltreatment. Of relevance to this thesis, childhood maltreatment has been
found to be predictive of a host of personal and interpersonal challenges. A high-risk sample of
children with a childhood history of sexual abuse was assessed into adulthood and was reported
to be more likely than non-abused comparison participants to experience physical victimization,
have at least one psychiatric disorder, become dependent on substances and alcohol, and
experience domestic violence (Noll, Trickett, Harris, & Putnam, 2009). Widom and White
(1997) examined a group of maltreated children and matched non-maltreated controls
prospectively into adulthood and, at follow-up twenty years later, maltreated females had
significantly higher rates of substance abuse diagnoses, and violent and non-violent criminal
arrests than controls. In addition, in a large community sample \(N = 585\) of children followed
prospectively over childhood, physical abuse by age 5 predicted psychological and behavioural
problems in adolescence (Lansford et al., 2002). In a more recent study, a large low-income
sample \(N = 5994\) of maltreated and control children were followed from childhood into
adulthood and chronic exposure of maltreatment in childhood was found to be related to greater
adult mental health challenges (Jonson-Reid, Kohl, & Drake, 2012). Taken together, longitudinal
studies that compare the trajectories of maltreated children to non-maltreated control children
provide convincing evidence of the risk that is attributable to adverse family environments.
Child Behaviour Problems

Early child behaviour problems are a commonly occurring phenomenon (Bakoula, Kolaitis, Veltsista, Gika, & Chrousos, 2009; Campbell & Ewing, 1990; Fanti & Henrich, 2010; Lacourse et al., 2006; Miller-Lewis et al., 2006; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004). Child behaviour problems have been categorized into two global categories: internalizing behaviour problems and externalizing behaviour problems (Achenbach & Rescorla, 2000). Internalizing behaviour problems include challenges with emotional reactivity, anxiety, depression, somatic complaints, and withdrawal from social contacts. Internalizing symptoms are challenging to identify in children, as symptoms are sometimes not visible to others, with varied expressions in young children. Children with internalizing behaviour challenges tend to present as behaviourally inhibited and possess high levels of effortful control (Tandon, Cardeli, & Luby, 2009). Externalizing behaviour problems involve behaviours that are related to conflicts with the child’s external environment and include attention problems and aggressive behaviour (Achenbach & Rescorla, 2000).

The prevalence of teacher-rated child behaviour problems in a large sample of Canadian children in kindergarten across three provinces (N = 152,786; British Columbia, Manitoba, Ontario) was found to be 8.0% for aggression, 2.4% for anxiety, and 5.2% for hyperactivity (Raos & Janus, 2011). Child behaviour problems are an important area of inquiry and are predictive of more negative outcomes, psychopathology, and higher mortality rates in adulthood (Aronen & Soininen, 2000; Burke, Rowe, & Boylan, 2014; Champion, Goodall, & Rutter, 1995; Jokela, Ferrie, & Kivimaki, 2009; Reef, Diamantopoulou, van Meurs, Verhulst, & van der Ende, 2011). In their meta-analysis of 10 studies, Loth, Drabick, Leibenluft, and Hulvershorn (2014) reported a significant association between child externalizing behaviour problems and depression in adulthood. In a large longitudinal study spanning 10 years (ages 2 to 12 years old), children
with chronic internalizing or externalizing symptoms, experienced more social difficulties in adolescence (Fanti & Henrich, 2010).

A variety of risk factors are associated with child behaviour problems. For instance, child behaviour problems are more frequently reported in males (Blatt-Eisengart, Drabick, Monahan, & Steinberg, 2009; Boyle et al., 2004; Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Lavigne et al., 1996; Sprott, Doob, & Jenkins, 2001). This gender difference is most apparent when examining aggression and/or externalizing behaviour problems (Rubin, Burgess, Dwyer, & Hastings, 2003). In a Canadian sample of kindergarten students, males were rated as more aggressive and hyperactive by their teachers (Raos and Janus, 2011). In a large prospective longitudinal study of children assessed over 10 years, there were significantly more boys in the chronic externalizing behaviour group (Fanti & Henrich, 2010). In her review, Campbell (2006) advises that less aggression in females is related to females’ greater fear-inhibition; a finding that is consistent across cultures. In an experimental study of very young children, males imitated more physical aggression; however, males and females did not differ in their imitation of verbal aggression (Bandura, Ross, & Ross, 1961). Further, in a large meta-analysis, male children and adolescents were found to display more direct aggression (e.g., physical aggression) and males and females were considered comparable on their rates of indirect aggression (e.g., excluding and rejecting behaviours; Card, Stucky, Sawalani, & Little, 2008). Compared to males, females tend to show greater increases in internalizing symptoms over childhood and adolescence (Bongers, Koot, van der Ende, & Verhulst, 2003; Cleverly, Bennett, & Duku, 2013; Fanti & Henrich, 2010; Leve, Kim, Pears, 2005; Weeks et al., 2014). Single parenthood, lower education, and low socioeconomic status have also been found to be associated with the emergence of child behaviour problems (Ashford, Smit, van Lier, Cuijpers, & Koot, 2008; Campbell, 1995; Côté et al., 2006; Fanti & Henrich, 2010; Fox, Platz, Bentley 1995; Prince, Chiapa, & Walsh, 2013).
Children’s ethnicities were not found to be related to child externalizing or internalizing behaviour problems in a large longitudinal study (Fanti & Henrich, 2010).

**Impact of Maternal History of Childhood Maltreatment on Child Behaviour Problems**

Researchers have also reported that a mother’s history of maltreatment is associated with child behaviour problems (Collishaw, Dunn, O’Connor, Golding, & The Avon Longitudinal Study of Parents and Child Study Team (ALSPAC), 2007; Koverola et al., 2005; Lang, et al., 2010; Min, et al., 2012; Miranda, de la Osa, Granero, & Ezpeleta, 2011; Miranda, de la Osa, Granero, & Ezpeleta, 2013; Myhre, Dyb, Wentzel-Larsen, Grogaard, & Thoresen, 2013; Rijlaarsdam et al., 2014; Roberts, et al., 2004; Thompson, 2007). In only one study, a direct association between sexual abuse history and child behaviour problems in offspring was not found (Alexander, Teti, & Anderson, 2000). In addition to establishing an association between maternal childhood maltreatment history and behaviour problems in offspring, researchers have tried to uncover mechanisms that are responsible for this association; these studies are reviewed next.

In a large longitudinal study (ALSPAC), Roberts and colleagues (2004) found that mothers who reported a history of childhood sexual abuse were more likely to have children who exhibited more problem behaviours at age 4. Assessment of child behaviour was based on a parental inventory that assessed child conduct problems, hyperactivity, emotional symptoms, and peer relationship problems (*Strengths and Difficulties Questionnaire, SDQ*; Goodman, 1997). Roberts et al. (2004) found that the link between maternal childhood sexual abuse and child behaviour problems was partially mediated by maternal teenage pregnancy, maternal anxiety, and parenting behaviour. Following this study, researchers examined another subsample of participants (*N* = 5,619) from the ALSPAC study at two time points, 4 and 7 years old (Collishaw et al., 2007). In addition to maternal childhood sexual abuse history, presence of
physical and emotional abuse was also assessed (Collishaw et al., 2007). A maternal history of childhood maltreatment was related to parent and teacher ratings of childhood adjustment, based on the SDQ at 4 and 7 years old. In addition, multiple types of abuse were related to increased adjustment problems in children. Child exposure to frightening and abusive events and changes to family composition between ages 5 and 7, along with maternal psychopathology, negative parenting, and single-parent or step-parent family at age 4 mediated the association between maternal childhood maltreatment and child adjustment.

As indicated above, parenting difficulties have been identified in mothers with a childhood maltreatment history and have been found to be one of the mediators explaining the transmission of maternal childhood maltreatment to child behaviour problems. In a high-risk sample ($N = 203$) of mothers and children, maternal reports of victimization (maternal childhood maltreatment and adult victimization) were predictive of maternal reports of child internalizing and externalizing behaviour problems when children were 6 years old, and this relation was mediated by parenting (Morrel, et al., 2003). While a significant relation was found between mothers’ victimization history (childhood and adult) and their children’s behaviour problems, a study which examined these victimization experiences separately found that maternal adult victimization history did not contribute any unique variance to the prediction of child behaviour problems when taking childhood maltreatment history into account (Thompson, 2007). Further, Thompson (2007) reported that maternal psychological aggression when children were infants mediated the relation between maternal childhood victimization history and their children’s behaviour problems at age 4. In a large population-based study, maternal maltreatment history was indirectly related to parent reported and child reported child externalizing behaviour problems assessed at age 6 through maternal hostility and harsh discipline evaluated when children were 3 years of age (Rijlaarsdam et al., 2014).
In addition to parenting difficulties, maternal psychopathology and social support have also been found to be important variables in the transmission of maternal childhood maltreatment to child behaviour problems. In their high risk sample, Morrel et al. (2003) found that maternal depression mediated the relation between maternal victimization history and child behaviour problems. Koverola and colleagues (2005) followed up the Morrel et al. (2003) sample when children were 8 years old and found that maternal victimization history still predicted decreased child socialization skills, greater child internalizing, and greater child externalizing behaviour problems. Maternal depression mediated the relation between maternal victimization history and child internalizing behaviour problems. Maternal social support mediated the relation between maternal victimization history and child externalizing behaviour problems (Koverola et al., 2005). Min and colleagues (2012) also found that maternal social support assessed when children were age 6 mediated the relation between maternal childhood maltreatment history and child-reported child behaviour problems assessed at age 9. In the same study, maternal psychological distress assessed when children were age 6 was found to mediate the relation between maternal childhood maltreatment history and parent-reported child behaviour problems assessed at age 9 (Min et al., 2012). More recently, in a sample of psychiatric outpatient children and adolescents, mothers’ childhood maltreatment histories were related to their child’s disruptive disorders, but parents’ psychopathology and parental physical punishment were not found to mediate this relation (Miranda et al., 2011). Miranda and colleagues (2011) suggested that the mental health questionnaire used to assess 15 DSM-IV diagnoses may have lacked the specificity needed to capture psychopathology for a true mediation effect. When Miranda et al. (2013) published a second study using a similar population and a more complete assessment of depressive symptoms; they found that maternal depressive symptoms mediated the relation between maternal childhood maltreatment and child externalizing behaviour problems. In a large
population-based study of mother-child dyads ($N = 25,452$), childhood maltreatment (emotional, physical, and sexual abuse) was associated with child externalizing behaviour problems assessed when children were 36 months and this relation was mediated by maternal distress assessed at 18 months (Myhre et al., 2013). These findings are in line with the hypotheses of this thesis, i.e., children who are parented by a caregiver with a maltreatment history are at increased risk for experiencing problem behaviours and maternal personal and interpersonal functioning mediate the relation. In the present study, I attempt to examine these maternal variables (maternal psychopathology, social support, and parenting) along with other maternal variables that have not been tested (adult attachment and parenting stress).

Secondary to the main goals of the study, I attempted to address methodological shortcomings that are present in research examining the relation between maternal childhood maltreatment and child behaviour problems. Most notably, the majority of investigations have relied on parent reports of parenting and child behaviour problems. Only one study observed parent-child interactions (Morrel et al., 2003) and no studies observed child behaviour. While Collishaw et al. (2007) and Morrel et al. (2003) utilized teacher reports of child behaviour, and Rijlaarsdam et al. (2014), Koverola et al. (2005), Min et al. (2012), used child interviews (a noted strength of their studies), the research literature would benefit from studies that employ observational measures of parenting and child behaviour. Behavioural observations reduce the impact of systematic bias related to individuals reporting on their own behaviour. For example, parents’ reports of their own parenting may be inaccurate due to the possibility of respondents reporting in a socially desirable manner, threatening the validity of study findings (Bennett, Sullivan, & Lewis, 2006; Miller-Perrin & Perrin, 2007). Also, behavioural observations avoid error attributed to common-method variance, which is the result of collecting reports from a single informant to examine research constructs. The concern is that common method variance
may inflate relations between research constructs and reduce validity of study findings. For the present study, observational measures of parenting and child behaviour were used. To assess child behaviour, an observational measure of child compliance was used. Child compliance is regarded as a “keystone” behaviour, which is predictive of behaviour problems and, further, improvements in child compliance have been found to correspond with reductions in both child internalizing and externalizing behaviour problems (Ducharme, Atkinson, & Poulton, 2000).

In addition, much of this research have utilized low-income, high-risk, or clinical samples (Koverola et al., 2005; Min et al., 2012; Miranda et al., 2013; Morrel et al., 2003; Thompson et al., 2007). Similar findings have been found in the few large population-based studies (Collishaw et al., 2007; Myhre et al., 2013 Roberts et al., 2004; Rijlaarsdam et al., 2014). I examine the mediating influences of maternal childhood maltreatment history on child behaviour problems in a low-risk sample and propose that results will be comparable to the aforementioned research. That is, a history of childhood maltreatment will be related to offspring behaviour problems and mediated by maternal personal and interpersonal variables. I now review research literature related to maternal personal (adult attachment, maternal depression, and parenting stress) and interpersonal variables (social support and parenting) and their associations with maternal childhood maltreatment history and child behaviour problems.

**Maternal Personal Variables as Mediators**

**Adult attachment**

The possible mediating influence of adult attachment between maternal childhood maltreatment history and child behaviour problems has not yet been assessed. However, given what has been uncovered about early attachment relationships and their enduring impact on personal and interpersonal functioning, it has the potential to explain the relation between maternal childhood maltreatment history and child behaviour problems. A review of early
attachment relationships and internal working models is reviewed to provide a rationale for testing adult attachment as a mediator in the present study.

**Early attachment relationships.** Bowlby (1979) defined attachment behaviour as, “any form of behaviour that results in a person attaining or retaining proximity to some other differentiated and preferred individual, who is usually conceived as stronger and/or wiser” (p. 129). Mary Ainsworth was influential in testing Bowlby’s theories with intensive observations of mother-infant interactions. Ainsworth and colleagues developed attachment classifications to describe how infants organize their behaviour in the presence of their caregiver when under stress (Ainsworth, Blehar, Waters, & Wall, 1978). Ainsworth classified infant attachment in the presence of their caregiver as being either secure or insecure (avoidant or ambivalent).

Ainsworth also developed the concept of maternal sensitivity, a mother’s ability to perceive her infant’s signals, and then provide her infant with an appropriate and timely response (Ainsworth et al., 1978). Ainsworth identified maternal sensitivity as a major determinant of infants forming secure attachments (Bretherton, 1992). Specifically, Ainsworth et al. (1978) claimed that a mother’s ability to respond to her infant in a sensitive manner was related to a child exhibiting more secure attachment behaviours in his/her relationship with the mother, such as, being easily soothed and being able to appropriately explore their environment. It is through these repeated experiences with their attachment figure that a child is believed to develop beliefs about themselves and expectations regarding future relationships (Ainsworth et al., 1978). In addition, researchers have found evidence that attachment is moderately stable from infancy to adulthood (Fraley, 2002; Pinquart, Feußner, Ahnert, 2013).

**Internal working models.** A negative attachment experience related to early caregiving is believed to make future significant relationships more difficult (Ainsworth et al., 1978). It is believed that early relationship experiences affect how individuals attend and remember
relationship information in their environment (Feeney, 2008). It has been hypothesized that attachment behaviours developed in infancy carry over into subsequent relationships through Internal Working Models (IWMs; Berlin & Cassidy, 1999; Hazan & Shaver, 1987). Bowlby (1973) used the term IWMs to describe mental representations people unconsciously form about their experiences in early relationships. These IWMs are thought to reflect attachment security and influence what people come to expect from relationships and how they will be treated. That is, individuals who experienced their main attachment figure as unavailable or rejecting may see themselves as unworthy of love and untrusting of others to protect them (Bowlby, 1969).

Following this line of thought, Feeney (1999) proposed that IWMs may act as self-fulfilling prophecies. For example, an individual who has formed schemas of people being unavailable based on early caregiving experiences, will then approach others defensively, increasing the likelihood that they will be rejected and have their negative representation of relationships confirmed.

It has been postulated that early attachment relationships continue to influence an individual’s relational behavioural strategies of maintaining proximity and protection in adult relationships (Bowlby, 1988); including romantic relationships (Feeney, 1999). Bowlby proposed that IWMs could change with new experiences; however, he also discussed how the organization of attachment behaviours based on early significant attachment relationships can be resistant to change (Bretherton & Munholland, 2008; Goldberg, 2000). The continuity of infant attachment classifications into adulthood was effectively demonstrated in a study in which individuals were followed prospectively and assessed in infancy, childhood, adolescence, and adulthood. Individuals who were found to be securely attached infants were rated as more socially competent as children; more securely attached to their friends in adolescence; and
reported more positive romantic relationships in adulthood (Simpson, Collins, Tran, & Haydon, 2007).

Bowlby discussed the development of attachment relationships throughout the lifespan and suggested that all people of all ages function more optimally when they are involved in one or more healthy attachment relationships, in which a trusted person operates as their secure base (Bowlby, 1979). The concept of a secure base was described by Bowlby (1988) as a role an individual (usually a parent or spouse) plays for another significant person (child or spouse, respectively), explaining the role as, “one of being available, ready to respond when called upon to encourage and perhaps assist, but to intervene actively only when clearly necessary” (p. 11). Internal working models have the potential to influence an adult’s ability to successfully seek out supports in adulthood, in that individuals with an insecure attachment history may view others as not trusting and themselves as not worthy of support (Ptacek, 1996). The concept of a secure base is important for mothers who may have not developed a secure attachment with a caregiver in childhood and, therefore, lack secure base behaviours with significant others, or may struggle to provide their own child with a secure base.

Developmental and social/personality psychologists can largely be credited for the vast literature on adult attachment. However, while both disciplines have based their work on Bowlby’s (1969) theory of attachment, their work differs. As outlined in the special issue of *Attachment and Human Development (2002)*, these two disciplines have largely disregarded each other’s contributions and have contrasting views regarding the conceptualization and measurement of adult attachment (Fraley, 2002). Developmental psychologists have used individuals’ accounts of their relationship with their parents to determine their adult attachment style and have generally been interested in the impact of adult attachment on offspring attachment security. Developmental psychologists interested in adult unconscious mental
processes have relied on semi-structured interviews (Roisman et al., 2007). The Adult Attachment Interview (AAI), developed by George, Kaplan, and Main (1985), is a widely used semi-structured interview of adult attachment, which codes attachment security by examining the consistency and coherency of childhood narratives that involve attachment figures. In contrast, social and personality psychologists have largely related the study of adult attachment to adults' present functioning in romantic relationships and have developed self-report inventories that assess an individual’s conscious thoughts and feelings regarding close relationships. A widely-used inventory, the Experience in Close Relationships (ECR; Brennan, Clark, Shaver, 1998), was developed by researchers who pooled non-duplicate items from available self-report adult attachment questionnaires, which resulted in 323 items and 60 attachment constructs (Brennan et al., 1998). These questions were administered to undergraduate students ($N = 1,086$) and factor analyses of these items resulted in the development of two orthogonal higher-order attachment dimensions; anxiety and avoidance (Brennan et al., 1998). The anxiety dimension is related to an individual’s anxiety related to rejection and abandonment in adult relationships (Fraley & Shaver, 2000). Individuals who present with high anxiety scores require more closeness, acceptance, support, and reassurance in close relationships (Shaver & Mikulincer, 2002). The avoidance dimension is related to an individual’s difficulty with becoming close and dependent on a significant other (Fraley & Shaver, 2000). Adults who endorse greater avoidance in romantic relationships also avoid closeness and do not feel comfortable with self-disclosures and being emotionally vulnerable in close relationships (Shaver & Mikulincer, 2002). In their large meta-analysis, including 118 independent samples, Li and Chan (2012) found that avoidant adult attachment was related to greater dissatisfaction in relationships and anxious adult attachment was related to more conflict in relationships.
More recently, researchers have been interested in comparing the AAI to self-report measures of adult attachment to determine if they are measuring the same phenomenon. After conducting a meta-analysis of 10 empirical studies and a cross-sectional study of 50 engaged couples, researchers reported a weak correlation existed between the AAI and self-report inventories of adult romantic attachment (Roisman et al., 2007). Similarly, in a recent longitudinal study of 59 families, a revised version of the ECR was found to not be related to the AAI (Bernier & Matte-Gagné, 2011). Further, adult romantic attachment scores were predictive of marital functioning, while the AAI was associated with a mother’s relationship with her offspring (Bernier & Matte-Gagné, 2011). However, other researchers have claimed that self-report measures of adult romantic attachment are predictive of adult functioning outside of romantic relationships, including the parent-child relationship (Shaver & Mikulincer, 2002). Edelstein and colleagues (2004) found that self-reported adult attachment significantly predicted children’s and parents’ reactions during a stressful routine child inoculation procedure. Parents who self-reported more avoidance in romantic attachment relationships had children who were more distressed during the inoculation procedure and, they themselves, were less responsive to their children (Edelstein et al., 2004). The debate regarding the predictive validity of inventory and self-report measures of adult attachment continues within the literature, as researchers attempt to understand when best to employ each measure to their research question. For the present study, a self-report measure of attachment was used to capture mothers’ conscious feelings and perceptions of themselves in close relationships.

The association between childhood maltreatment and adult attachment. As previously discussed, early caregiving relationships impact subsequent functioning in relationships with significant others. Researchers have suggested that disrupted interpersonal relationships in childhood cause individuals to not trust that their needs will be met within future relationships.
(DiLillo et al., 2009). Regrettably, parents are most often identified as the perpetrator in a majority of substantiated maltreatment cases (Cort, Toth, Cerulli, & Rogosch, 2011; Trocmé et al., 2005). Indeed, childhood maltreatment has been found to negatively influence adult relationships (Bailey, Moran, & Pederson, 2007; DiLillo & Long, 1999; Nelson & Wampler, 2000; Whisman, 2006). In a college sample, women who reported experiencing childhood maltreatment rated their psychological distress and difficulties in their dating relationships as being higher than women who did not endorse a history of childhood maltreatment (DiLillo, Lewis, & Di Loreto-Colgan, 2007). In a prospective longitudinal study that took place over 25 years, children identified as experiencing maltreatment, compared to matched controls, were found to experience more difficulties in adult relationships (Colman & Widom, 2004). Further, childhood maltreatment history has been found to be associated with greater adult anxious and avoidant attachment (Caldwell, Shaver, Li, & Minzenberg, 2011; Cort et al., 2011). In a recent longitudinal study of over 700 mother-child dyads, children were assessed through infancy, childhood, and adolescence, and those children who experienced decreases in maternal sensitivity, decreases in social competence, and less high-quality friendships, were found to present with an avoidant attachment style in adulthood (Fraley, Roisman, Booth-LaForce, Owen, & Holland, 2013). In this thesis, I am interested in how a mother’s adult attachment may influence her children; this literature is reviewed next.

**Impact of adult attachment on child outcomes.** Researchers have reported on a significant concordance between adults’ and their children’s attachment classifications (DeKlyen, 1996; Madigan, Moran, & Pederson, 2006; Madigan, Moran, Schuengel, Pederson, & Otten, 2007; van IJzendoorn, 1992). In addition, mothers who were classified as insecure on AAI had children who displayed greater avoidance behaviour in a separation and reunion task, compared to children of mothers who were classified as secure (Crowell & Feldman, 1991).
Researchers have also found that mothers classified as either insecure or unresolved have children who present with greater problem behaviour (Cowan, Cohn, Cowan, & Pearson, 1996; Madigan et al., 2007; Zajac & Kobak, 2009). In addition, children’s referral to an outpatient psychiatric clinic was related to their mothers’ insecure adult attachment classification (DeKlyen, 1996). Further, in a community sample of 66 mothers and fathers, increased maternal and paternal anxiety related to abandonment and rejection in relationships was related to greater internalizing and externalizing behaviour problems in their 6- to 8-year-old children (Marchand, Schedler, & Wagstaff, 2004). Alternatively, maternal autonomous/secure attachment classifications on the AAI have also been found to be related to their children’s greater social competence in infancy and adolescence (Dickstein, Seifer, & Albus 2009; Kouvo & Silvén, 2010). In this thesis I examined if childhood maltreatment is associated with adult functioning, and whether maladaptive functioning is transferred to offspring in childhood. No study has yet examined the mediating role of adult romantic attachment between maternal childhood maltreatment history and child behaviour problems.

**Depression**

*The association between childhood maltreatment and depression in adulthood.* A substantial amount of research has identified that childhood maltreatment is a risk factor for depression in adulthood (Brown, Cohen, Johnson, & Smailes, 1999; Putnam, 2003). In a large sample of US Health Maintenance Organization (HMO) patients (N = 5,673), a history of maltreatment was associated with depression (Arnow, Blasey, Hunkeler, Lee, & Hayward, 2011). In addition, in a recent meta-analysis including 16 studies (N = 23,544), childhood maltreatment was associated with greater likelihood of experiencing recurrent and chronic depressive episodes (Nanni, Uher, & Danese, 2012). Researchers examining non-clinical samples have also noted that childhood maltreatment is related to an increase in depressive
symptoms in adulthood (Powers, Ressler, & Bradley, 2009; Springer, et al., 2007). Risk for depression has also been found in individuals who report low paternal care (Alloy, Abramson, Smith, Gibb, & Neeren, 2006; Oakley-Browne, Joyce, Wells, Bushnell, & Hornblow, 1995). This finding was also reported in a large community sample (Parker, Hadzi-Pavlovic, Greenwald, & Weissman, 1995). Taken together, research findings demonstrate the critical influence of suboptimal to abusive parenting on the development of depressive symptoms in adulthood.

It has been suggested that childhood maltreatment alters neurobiological functioning and, as a result, impacts the development of an individual’s emotional functioning. Experimental researchers who have used animal models to randomly assign subjects to abuse and non-abuse conditions provide evidence for the detrimental impact that early adversity has on emotional functioning (Sanchez, Ladd, & Plotsky, 2001; Dettling, Schnell, Maier, Feldon, & Pryce, 2007). For example, Raineki, Cortés, Belnoue, and Sullivan (2012) compared the social-emotional development of rat pups exposed to abuse paradigms with controls. Within this experimental study, researchers were able to manipulate maternal rats’ environment which altered their behaviour, causing them to be neglectful and abusive to their rat pups. These researchers reported that rat pups exposed to early-life abuse initially exhibited social behaviour deficits, and in adolescence, they demonstrated increased neural activity of the amygdala and depressive behaviours (Raineki et al., 2012). It has also been postulated that vulnerability to depression is related to early trauma through the altering of an individuals’ neurobiological stress response, which makes an individual more vulnerable to depression in the face of stressful challenges (Hammen, Henry, & Daley, 2000; Heim, Newport, Mletzko, Miller, & Nermeroff, 2008; Weiss, Longhurst, Mazure, 1999).
Many of the studies linking childhood maltreatment and depression are cross-sectional and rely on individuals’ retrospective reports of childhood maltreatment (Caldwell et al., 2011); therefore, researchers need to interpret these findings with caution, due to the potential of memory bias. That is, individuals’ accounts of maltreatment could be influenced by present undesirable life circumstances or negative mood (Alloy et al., 2006; Widom, Raphael, & DuMont, 2004). However, using a prospective, double-blind study design, Widom, DuMont, and Czaja (2007) compared the trajectories of individuals with substantiated childhood maltreatment histories with matched non-maltreated individuals and found evidence for the causal relation between maltreatment in childhood and depression in adulthood. The relation between maternal depression and child outcomes is reviewed next.

**Impact of maternal depression on child outcomes.** Women appear to be most at risk for depression during the reproductive stage of their life and therefore, the potential for young children to be exposed and impacted by their mother’s depressive symptoms is great. Indeed, researchers have found that a significant association exists between maternal depression and negative child outcomes (Downey & Coyne, 1990; Lyons-Ruth, Wolfe, & Lyubchik, 2000; Thompson, 2007). Even in a sample of non-depressed community-recruited mothers, self-reported depressive symptoms were found to be related to internalizing and externalizing behaviour problems in their children (Malcarne, Hamilton, Ingram, & Taylor, 2000). In her review, Goodman (2007) found that the rate of depression in children and adolescents of depressed mothers was between 20% and 41%. Also, depressed children of depressed mothers present with an earlier age of illness onset, longer illness duration, and greater impairment in functioning, compared to depressed children of non-depressed mothers (Goodman, 2007). In a meta-analysis representative of over 60,000 parent-child dyads, maternal psychopathology was found to be significantly associated with greater child behaviour problems (Connell & Goodman,
2002). Also, large prospective studies provide support for the causal association between maternal depression and child behaviour problems. In a sample of women with and without a history of depression, maternal reports of child behaviour were assessed several times between children’s 4th and 7th years and a reciprocal association was found. That is, maternal depressive symptoms predicted future child behaviour problems and an increase in child behaviour problems was associated with increase in future depressive symptoms (Bagner, Pettit, Lewinsohn, Seeley, & Jaccard, 2013). In another large longitudinal sample \( (N = 1,232 \text{ children}) \), children were assessed several times over a 10 year period (ages 2 to 12 years) and mothers who reported post-partum depression had children who presented with greater co-occurrence of chronic internalizing and externalizing symptoms (Fanti & Henrich, 2010). While both of these longitudinal studies, examined maternal and child variables over different time points, use of a single informant could have inflated study results (maternal report). Reducing error that is related to shared method variance is ideal when assessing relations between maternal depression and child behaviour. In a study assessing mother-child dyads at several time points over 15 years (between child ages 1.5 and 16.5 years), researchers reported that maternal-reported psychopathology assessed when children were young was associated with adolescent-reported depressive symptoms (Nilsen, Gustavson, Roysamb, Kjeldsen, & Karevold, 2013).

There is compelling evidence linking maternal childhood maltreatment with adult depression, and even more convincing is the research that outlines the negative influence of maternal depressive symptoms on child functioning. In addition, researchers have reported on the mediating role of maternal depressive symptoms between maternal childhood maltreatment and child internalizing behaviour problems (Koverola et al., 2005; Morrel et al., 2003), and child behaviour problems (Min et al., 2012). Given that the aforementioned associations have been found in high-risk samples (Koverola et al., 2005; Min et al., 2012; Morrel et al., 2003; Myhre et
al., 2013) and in large population-based studies (Collishaw et al., 2007; Myhre et al., 2013), I expected that maternal depression would mediate the relation between maternal childhood maltreatment and child behaviour problems in the present low-risk sample. Maternal depression was one of six maternal variables assessed as a potential mediator to explain the relation between childhood maltreatment history and child behaviour problems.

**Parenting stress**

Parenting stress is viewed as a perceived discrepancy between parenting demands and the resources needed to fulfill those demands (Abidin, 1995). Parenting stress can lead to a parent feeling unhappy, overwhelmed, or incompetent in the parent role (Deater-Deckard, 2004). Theoretical models of parenting stress incorporate many areas of functioning related to the parent, child, and the environment. Abidin’s (1995) model of parenting stress incorporates personal variables (e.g., depression, perceived parental competence), child variables (e.g., child behaviour, child temperament, and the reinforcing quality of the parent-child relationship as perceived by the parent), and situational variables (e.g., marital support, social support, health, and perceived role restrictions due to the parental role).

Before reviewing parenting stress research, important issues in the literature need to be addressed: study design, construct overlap, and rater bias. Much of the research examining parenting stress and child behaviour problems has been cross-sectional and, therefore, causality cannot be assumed. However, even with those studies that employ longitudinal designs, complex interchanges between genetic and environmental factors are challenging to partial out (Deater-Deckard, 2004). For instances, the relation between parenting stress and child behaviour problems appears to be bidirectional: parents’ stress influences their children’s behaviour and children’s behaviour impacts parenting stress (Deater-Deckard, 2004). Researchers have suggested that child behaviour is impacted through parenting practices, which are negatively
altered due to external and interpersonal parental stressors (Deater-Deckard, Dodge, Bates, & Pettit, 1998; Pianta & Egeland, 1990; Webster-Stratton, 1990). More recently, researchers have argued for the direct effect that parenting stress has on child outcomes, postulating that parenting stress may directly influence a child’s own stress response, which is then displayed in child behaviour problems (Crnic, Gaze, & Hoffman, 2005; Huth-Bocks & Hughes, 2008).

The other issues related to parenting stress are construct overlap and rater bias. Parenting stress as a construct is largely conceptualized using Abidin’s (1995) model. As described above, Abidin’s (1995) model incorporates many areas of functioning, such as, parental depressive symptoms, parent perception of child behaviour, and social support. As a result, the issue of shared construct variance needs to be considered when the association between parenting stress and child behavior is being measured as these constructs may be highly interrelated. Further, if parenting stress and child behaviour is being measured by the same rater, shared method variance also needs to be considered. Consequently, a careful examination of study methodology needs to be considered in the literature discussed next.

Many factors have been found to be related to parenting stress. For instance, researchers have reported on the relation between parenting and parenting stress (Abidin, 1992; Alexander et al., 2000; Crnic & Low, 2002; Crnic et al., 2005). Pereira et al. (2012) found that mother-reported parenting stress was significantly related to observed maternal insensitivity. In addition to parenting, researchers have also identified other important factors related to parenting stress. For example, in a large sample (N = 1,081) of mothers with young children, examined through infancy (6 months to 3 years), maternal reported high work load, low social support, child fussiness, negative life events, greater number of children, and maternal age were all predictive of mother-reported parenting stress (Ostberg & Hagekull, 2000). In a low-income sample, Chang and Fine (2007) examined parenting stress at three time points over the second and third year of
a child’s life and found that while most mothers’ parenting stress decreased over time, there was a small percentage that either stayed chronically stressed (7%) or whose parenting stress increased over time (7%). Chang and Fine (2007) reported that maternal depression, infant temperament, and not attending a family support program predicted mothers’ being in the chronically stressed group. In their longitudinal study, Mulsow, Caldera, Pursley, Reifman, and Huston (2002) showed that self-reported maternal negative personality and less social support were significantly related to chronic maternal reported parenting stress in a child’s first three years of life.

**Childhood maltreatment and subsequent parenting stress.** Few studies have explored the relation between maternal childhood maltreatment history and parenting stress in a low-risk community sample. Pereira and colleagues (2012) found that mothers who endorsed a history of maltreatment also reported greater parenting stress in relation to parenting their 16-month-old infants. Of important note, this finding came from the larger low-risk sample from which the current study sample was derived. In a high-risk sample, a significant association was found between early childhood adversity (related to growing up in a neglectful and negative home environment) and higher levels of parenting stress in adulthood (Harmer, Sanderson, & Mertin, 1999). In a sample of mothers considered to be at moderate social risk, maltreatment history was related to greater parenting stress (Bailey, DeOliveira, Wolfe, Evans, & Hartwick, 2012). In contrast, Leigh and Milgrom (2008) did not find that childhood sexual abuse history significantly predicted parenting stress in adulthood. As, already discussed, study methodology is important to consider. For instance, all the above mentioned studies in this section relied on maternal self-report for maltreatment history and parenting stress. As well, information was collected at the same time point or in close proximity. The literature on the relation between maltreatment
history and parenting stress require more investigations that use a multi-method and/or multi-informant design, as well as, longitudinal and experimental designs to better determine causality.

**Impact of parenting stress on child outcomes.** Stress generally, and parenting stress specifically, has been found to be an important consideration when examining child behaviour (Crnic & Greenberg, 1990; Deater-Deckard, 2004). Deater-Deckard (2004) reported that parenting stress is more commonly associated with child externalizing behaviour problems; however, less research has examined the relation between parenting stress and child internalizing behaviour problems. Using cross-sectional study designs, parenting stress has been shown to be related to children’s internalizing (Rodriguez, 2011) and externalizing symptoms (Barry, Dunlap, Cotten, Lochman, & Wells, 2005). Many other studies have reported on the relation between parent-reported parenting stress and child behaviour problems assessed at the same time point (Costa, Weems, Pellerin, & Dalton, 2006; Creasey & Reese, 1996; Huth-Bocks & Hughes, 2008; Ostberg & Hagekull, 2013; Renk, Roddenberry, Oliveros, & Sieger, 2007). In these studies, some researchers attempted to control for shared method variance by having a teacher known to the child report on the child’s behaviour (Creasey & Reese, 1996). However, findings have been inconsistent, with researchers not finding a significant association between teacher-reported child behaviour and parent-reported stress in one study (Barry et al., 2005). In a low-income sample studied at one time point, children (2 to 5 years old) whose mothers reported higher parenting stress were rated by their teachers as displaying lower social competence and higher internalizing and externalizing behaviour problems in the classroom (Anthony et al., 2005). Researchers have also utilized observational measures to limit the impact of parents’ emotional states on reports of child behaviour. Crnic and colleagues (2005) found that parenting stress measured when children were between ages 3 and 5, was associated child observed negativity at age 5.
Studies that employ longitudinal designs at least meet minimal standards for inferring causality due to temporal sequencing. However, as discussed above, inferring causality should still be done with caution, given that, in most instances, researchers have not controlled for the outcome measure (i.e., child behaviour) at earlier time points and some third variable(s) may account for both predictor and outcome. Using a longitudinal study design, Anhalt, Telzrow, and Brown (2007) found that maternal depression and parenting stress measured when children were one month old were associated with internalizing symptoms when children were in Grade 1. In another longitudinal study, children and their families \( (N = 96) \) were assessed when children were infants (4-11 weeks), toddlers (age 2), and at age 5. Family violence in infancy, along with parenting stress at age 2, predicted child internalizing behaviour problems at age 5 (Mantymaa et al., 2012). Parenting stress did not significantly predict child externalizing behaviour problems (Mantymaa et al., 2012).

As reviewed above, there is evidence to suggest that parenting stress is related to maternal maltreatment history and child behaviour. It was expected that in the present study, parenting stress assessed when children were 16 months old would be related to child behaviour problems when children were age 5 and that, parenting stress would mediate the relation between a mother’s history of maltreatment and child behaviour problems. This is currently an unexplored research question; however, there has been research on how childhood maltreatment is related to greater perceived stress and maladaptive coping strategies in adults (Hager & Runtz, 2012; Hyman, Paliwal, & Sinha, 2007; Pereira et al., 2012) and dysregulation of the biological stress system in adults (Gunnar & Quevedo, 2007). Following from this research, it is conceivable that parents who experienced maltreatment in their childhood are more vulnerable to stressors that are related to the demands of parenting, which may impact child outcomes. Parenting stress and child behaviour were assessed over two time points and maternal report and
an observational measure of child behaviour were used in the present study in an attempt to increase validity of study findings.

**Maternal Interpersonal Variables as Mediators**

**Social support**

While researchers have reported on the protective influence of social support against psychopathology and physical health problems (Holt-Lunstad, Smith, Layton, 2010; Langford, Bowsher, Maloney, & Lillis, 1997), there is not one clear definition or method of measurement to study social support. Langford and colleagues (1997) reviewed the social support literature, which has frequently used four categories to study social support: emotional, instrumental, informational, and appraisal. Emotional support involves caring, empathy, love and trust. Instrumental support may encompass emotional support, but it also includes providing goods and services. Informational support is given to assist an individual with problem-solving. Appraisal support also involves communicating information, but for the purpose of helping someone with their own self-evaluation (Langford et al., 1997). Armstrong, Birnie-Lefcovitch and Ungar (2005) discussed the construct of social support as either having a direct effect on well-being regardless of the presence of stress (direct effects hypothesis), or its influence being protective, in that it hinders the negative impact of stress on an individual (buffering hypothesis).

**The link between childhood maltreatment and social support in adulthood.** The ability to connect socially and trust others is an important component of developing social supports. However, as I reviewed in earlier sections of this thesis, difficulty in interpersonal relationships is a consequence of childhood maltreatment. Indeed adults who endorse childhood maltreatment typically also perceive themselves as receiving less social support, and/or actually receive less social support (Bender, Cook, & Kaslow, 2003; Golding, Wilsnack, & Cooper, 2002; Koverola et al., 2005; Min et al., 2012; Muller, Grgatmans, & Baker, 2008; Powers et al., 2009; Schumm
et al., 2006; Vranceanu, Hobfoll, & Johnson, 2007). An association between maltreatment history and less social support has been found in Canadian and US undergraduate student samples (Muller et al., 2008; Pepin & Banyard, 2006). A maltreated sample, along with matched controls, was followed prospectively from childhood until adulthood, and the maltreated sample was found to have significantly fewer social supports (Sperry & Widom, 2013). Further, less social support has been found to mediate the relation between childhood maltreatment and psychopathology in adulthood (Sperry & Widom, 2013) and childhood maltreatment and poorer psychosocial development in an undergraduate sample (Pepin & Banyard, 2006).

A direct association between childhood maltreatment and less social support in adulthood has been found in low-risk samples (Pepin & Banyard, 2006; Muller et al., 2008) and high-risk samples (Sperry & Widom, 2013; Vranceanu et al., 2007). In line with the buffering hypothesis for social support, there has been evidence for the protective function of social support with individuals who have experienced childhood maltreatment. In a large European population cohort study, social support was found to be a protective factor for ending the intergenerational transmission of child abuse (Dixon, Browne, & Hamilton-Giachritsis, 2009). Social support has also been found to moderate the impact of childhood maltreatment on trauma symptoms in adulthood (Evans, Steel, & DiLillo, 2013; Schumm, et al., 2006). Further, social support has been found to moderate the relation between childhood maltreatment and psychological adjustment in adulthood (Folger & Wright, 2013; Runtz & Schallow, 1997). In an at-risk sample of women, those with a history of childhood maltreatment who had a “confidante” in adulthood presented with fewer depressive symptoms than did those women who did not have any support (Banyard, 1997).

Impact of maternal supportive relationships on child outcomes. Researchers have postulated that children are directly and indirectly impacted by their parents’ social supports. In
terms of direct impact, researchers have suggested that through social networks, parents directly provide their children with modeling of positive social behaviour (Homel, Burns, & Goodnow, 1987). Also, Cochran and Brassard (1979) suggested that children are directly and positively influenced by having access to more social models, from which to acquire more skills in interacting. Through direct exposure to parents’ social support, they will learn how to acquire their own social supports through social skill building (Cochran & Brassard, 1979). In a sample of Australian families \(N = 305\), parents’ number of dependable friends and organizational affiliations was related to their children’s happiness and social skills (Homel et al., 1987). In a sample of Canadian mothers \(N = 450\), mothers’ self-rated social support and their child’s externalizing behaviour problems were significantly related (Cabaj, McDonald, & Tough, 2014). In addition, children generally benefit from direct access to their parents’ social support, by having access to more supportive adults (McCarty & McMahon, 2003).

In addition to direct benefits, children are indirectly impacted by their parents’ social networks, as they may derive benefit from their parents being provided with emotional support, material assistance, and parenting instruction through observation (Cochran & Brassard, 1979). Assistance with parenting and opportunities to observe the parenting behaviours of others has the potential to enhance an individual’s parenting skills, and therefore, their child’s functioning. In a high-risk sample of mothers, a larger social support network was associated with observed positive parenting behaviour (Burchinal, Follmer, & Bryant, 1996). It has also been suggested that social support improves parenting by reducing parenting stress (Belsky, 1984). Social support has also been found to moderate the impact of maternal depression on child externalizing behaviour problems (Li-Chung, Halpern, Hertz-Picciotto, Martin, & Suchindran, 2006).

Researchers have further reported that social support mediates the relation between maternal childhood maltreatment history and problem behaviour in offspring (Koverola et al.,
These studies examined these relations in a low-income sample. In the current study, I examined whether the mediating role of social support is generalizable to a low-risk sample. Koverola et al. (2005) did not find that social support mediated the relation between maternal childhood maltreatment and child internalizing behaviour problems, and Min et al. (2012) did not test internalizing and externalizing behaviour problems separately. I examined the mediating role of social support between maternal childhood maltreatment and both internalizing and externalizing behaviour problems. The mediating role of social support was examined with other important maternal personal and interpersonal variables to determine its unique role as a mediator. Given that the literature reviewed suggests that in some instances social support functions as a moderator to protect against the impact of maltreatment on later functioning, moderation models were also examined in this thesis.

**Parenting**

Barrett and Fleming (2011) eloquently discuss the parent-child relationships as a “dance,” explaining,

> A mother must learn to be an adept partner, being sensitive to the needs of her offspring while ultimately guiding the quality and nature of care to ensure normal growth and development. This dance can be beautiful, it can be tender, it can be awkward, it can be difficult. And sometimes it just does not occur. (p. 368)

As outlined in the above passage, there is much variability in parenting behaviours. Parenting that is characterized as abusive or neglectful represents a maladaptive extreme of parenting and negatively influence child outcomes. The impact of more subtle forms of negative parenting that are not considered abusive, such as inconsistent responding, unresponsive parenting, harsh discipline, low acceptance, over-involved/protective, and low warm-engaged
parenting have also been found to have a negative impact on child development (Bayer, Sanson, Hemphill, 2006; Bensen, Buehler, Gerard, 2008; McKee et al., 2007; Michalcio & Solomon, 2002; Turner & Muller, 2004). It is important to consider all forms of caregiving and how they are transmitted across generations. In this study, I examined the mediating influence of maternal insensitivity between maternal childhood maltreatment history and child behaviour problems. Mary Ainsworth was influential in outlining important parenting practices related to maternal sensitivity. Ainsworth’s sensitivity scales were developed to rate maternal sensitivity, cooperation, acceptance, and physical and psychological availability in mother-infant interactions. Maternal sensitivity has been found to be associated with attachment security in young infants (Crittenden & Ainsworth, 1989; McElwain & Booth-LaForce, 2006). As outlined in other sections of this thesis, infant security is related to a plethora of child outcomes, including child behaviour problems; a finding that has been demonstrated in recent meta-analyses (Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; Hoeve et al., 2012; Madigan, Atkinson, Laurin, & Benoit, 2013).

An important determinant of parenting is related to parents’ own experience of being parented. Researchers have demonstrated that parenting behaviours tend to be stable across generations (Barrett & Fleming, 2011). Using a prospective longitudinal research design and observational measures of parenting in two generations, Neppl, Conger, Scaramella, and Ontai (2009) found support for the stability of harsh and positive parenting behaviours across generations ($r = .21$ and $r = .17$, respectively). The intergenerational transmission of parenting behaviours is most convincing in experimental studies employing cross-fostering animal models using rats or rhesus monkeys, in which maternal caregiving traits are most similar to those of the mother who provided care, whether they were genetically related or not (Champagne & Meaney, 2001; Maestripieri, 2005). In human studies, parenting difficulties transmitted across generations
have also been found (Alexander et al., 2000; Grietens & Hellinckx, 2003; Harmer et al., 1999; Kim, Trickett, & Putnam, 2010). The intergenerational transmission of maltreatment and parenting difficulties are discussed next.

**The relation between maltreatment in childhood and later parenting.** Researchers have reported on the continuity of maltreatment across generations (Berlin, Appleyard, & Dodge, 2011). In a large sample of families (\(N = 4351\)) with newborns, 3.1% of families had a parent with a maltreatment history. All families were followed prospectively by a community nurse and 6.7% of families with a parent with a maltreatment history were found to have maltreated their newborn by 13 months old, compared to 0.4% of families with parents without a maltreatment history (Dixon, Browne, & Hamilton-Giachritsis, 2005). In a meta-analysis examining the intergenerational transmission of maltreatment among five studies, maltreatment in one generation was related to maltreatment in the next generation and the effect size was found to be moderate (\(r = .31\)) (Schofield, Lee, & Merrick, 2013).

As implied by the aforementioned literature, not all individuals maltreated in childhood go on to maltreat their own children. However, it is also important to examine the proportion of parents maltreated as children who exhibit difficult parenting behaviours not considered abusive. Egeland and colleagues (2002) found that mothers with a childhood maltreatment history were at greater risk of maltreating their own offspring, but an even greater proportion of woman were experiencing parenting difficulties. Parenting difficulties have also been found to be associated with caregivers who retrospectively endorse a childhood maltreatment history (DiLillo & Damashek, 2003; DiLillo, Tremblay, & Peterson, 2000; Grietens & Hellinckx, 2003; Harmer et al., 1999; Pereira et al., 2012; Spieker, Bensley, McMahon, Fung, & Ossiander, 1996). Parenting difficulties related to hostile and intrusive interactions with young infants were found in a high-risk sample of mothers who were physically abused as children (Lyons-Ruth & Block, 1996).
Lyons-Ruth and Block (1996) also observed more maternal withdrawal behaviours in mothers who were sexually abused as children. Mothers with a history of childhood maltreatment have reported more verbal aggression in relation to parenting their own offspring (Morrel et al., 2003). In addition, greater use of physical punishment (Banyard, 1997) and more aggressive, rejecting, and neglectful behaviour have been identified in mothers with a maltreatment history (Newcomb & Locke, 2001). In a low-risk sample, mothers who endorsed more childhood trauma presented with more insensitive parenting behaviours when observed interacting with their 16-month old infants (Pereira et al., 2012). Bailey and colleagues (2012) found that mothers who reported a history of emotional abuse and neglect expressed more hostility when observed interacting with their child; this relation was not found for mothers who endorsed a physical or sexual abuse history. In addition to parenting behaviours, mothers with a childhood maltreatment history have also been found to endorse lower parenting confidence and self-efficacy (Bailey et al., 2012; Caldwell et al., 2011).

Prospective investigations of individuals examined from infancy to parenthood demonstrate the importance of early caregiving on future parenting. Chen and Kaplan (2001) followed a group of adolescents into adulthood and reported that positive experiences in their family of origin were related to more constructive parenting when they were followed up approximately twenty years later as parents, with marital satisfaction and educational attainment mediating this relation. In another study, participants were assessed on many occasions, from the time they were age three until they were a parent of a three-year-old child. Researchers reported that women with positive parenting experiences in childhood and adolescence were found to be more sensitive when interacting with their own child (Belsky, Jaffee, Sligo, Woodward, & Silva, 2005). Based on the research literature, there is considerable evidence for the significant impact
that parenting experiences in childhood have on future parenting. I now examine the research literature that examines the link between parenting and child outcomes.

**Impact of parenting on child outcomes.**

A consistently reported determinant of child behaviour is parenting (Smith, 2010). The influence that parents have on children’s behaviour is believed to start in infancy. In particular, researchers have reported on the significant association between insecure attachment in infancy and child behaviour problems (Smeekens, Riksen-Walraven, & van Bakel, 2007). This finding was supported in recent meta-analyses (Fearon, et al., 2010; Madigan et al., 2013). Moreover, numerous investigations have demonstrated the beneficial impact of positive parenting on child functioning (e.g., social competence, less aggression, greater child compliance, fewer child behaviour problems; Alink et al., 2009; Baker & Heller, 1996; Criss, Shaw, & Ingoldsby, 2003; Deater-Deckard & Petrill, 2004; Hakvoort, Bos, van Balen, & Hermanns, 2010; Harrist, Pettit, Dodge, & Bates, 1994; Harrist & Waugh, 2002; Healey, Gopin, Grossman, Campbell, & Halperin, 2010; Landry, Smith, Swank, Assel, & Vellet, 2001; Lindsey, Mize, & Pettit, 1997; Lunkenheimer, Olson, Hollenstein, Sameroff, & Winter, 2011; Madigan et al., 2007).

The significant association between parenting and child behaviour problems has also been found in studies in which parent-child dyads have been followed prospectively. Schmid and colleagues (2011) observed a large sample of mothers \(N = 384\) interacting with their infants at 3 months old and continued to assess infants’ emotional presentation until age 19. Less vocal, facial, or motor stimulation from mothers at 3 months was associated with more anxious and depressive symptoms in childhood, adolescence, and adulthood (Schmid et al., 2011). Maternal insensitivity has also been associated with negative child outcomes. Maternal sensitivity observed when children were 6 months was significantly related to mother-reported child-behaviour problems at 36 months (Leerkes, Blankson, & O’Brien, 2009). Kemppinen,
Kumpulainen, Raita-Hasu, Moilanen, and Ebeling (2006) also found that observed maternal sensitivity in infancy was associated with observed child cooperation in toddlerhood. Moreover, in a large prospective study, mother-child dyads were assessed several times over the preschool years and a significant negative association was found between observed maternal sensitivity and parent-rated child internalizing behaviour problems (Kok et al., 2013). Further support for the association between parenting and child behaviour was demonstrated in a recent meta-analysis of 48 studies, in which harsh and uninvolved parenting was related to more child relational aggression and positive parenting was associated with less relational aggression (Kawabata, Alink, Tseng, van IJzendoorn, & Crick, 2011). The aforementioned research shows that not only abusive parenting impacts child functioning, but that, harsh and insensitive parenting is also related to child behaviour problems.

In this thesis I follow up a sample of mother-child dyads who were assessed when children were 16 months old (Pereira et al., 2012). Pereira and colleagues (2012) found that a maternal childhood maltreatment history was related to lower levels of maternal sensitivity, which was assessed through observing mother-child interactions. In this follow-up study, I hypothesize that maternal sensitivity mediates the relation between maternal childhood maltreatment history and child internalizing and externalizing behaviour problems. Other researchers have reported on the mediating influence of parenting between maternal childhood maltreatment and child behaviour problems (Roberts et al., 2004). Morrel et al. (2003) reported that maternal self-reports of discipline involving verbal aggression significantly mediated the relation between maternal victimization history and child internalizing and externalizing behaviour problems. Morrel et al. (2003) observed mother-child interactions and coded mothers on warmth, structure, and engagement; however, this measure of parenting was not found to be a significant mediator, as it was not significantly related to maternal victimization. Other
researchers examining mediators between maternal childhood maltreatment history and child behaviour problems have not assessed parenting (Koverola et al., 2005; Min et al., 2012) or have completed a very narrow assessment of parenting (Miranda et al., 2013). Parenting is an important construct to examine, as researchers have theorized that the deleterious impact of external and interpersonal stressors influence child behaviour through parenting practices (Pianta & Egeland, 1990; Webster-Stratton, 1990).

**Study Objectives**

Researchers have found that there is an association between a maternal history of childhood maltreatment and negative child outcomes in their offspring. However, the mechanisms responsible for this transmission are less understood. I reviewed the association between childhood maltreatment history and personal and interpersonal difficulties in adulthood; specifically, adult attachment, maternal depressive symptoms, parenting stress, social support, and parenting. As reviewed in this introduction, these maternal variables are also associated with child behaviour problems. It is of interest to understand which of these variables significantly mediate the relation between maternal childhood maltreatment history and child behaviour problems in a low-risk sample. Researchers have found support for the mediating role of depressive symptoms, social support, and parenting (Koverola et al., 2005; Min et al., 2012; Morrel et al., 2003; Roberts et al., 2004; Thompson, 2007).

A significant and unique contribution that this thesis offers the current research literature is the inclusion of 5 maternal constructs as potential mediators, examined in simple and parallel mediation models. Only a few researchers have identified parenting, maternal depression, and social support as significant mediators between maternal childhood maltreatment and child behaviour problems. I examined these maternal variables as potential mediators, along with two other maternal variables (adult attachment and parenting stress). The majority of research studies
examining the relation between maternal maltreatment history and child behaviour problems
have relied on only parent report of parenting and child behaviour problems. The concern is that
common method variance may inflate relations between research constructs and impact the
validity of findings. A multi-method approach to examining the relation between maternal
maltreatment history and child behaviour problems was attempted in this thesis. Further, a
majority of the research examining the relation between maternal childhood maltreatment history
and child behaviour problems has examined this association in low-income, high-risk, clinical
samples (Koverola et al., 2005; Min et al., 2012; Miranda et al., 2013; Morrel et al., 2003;
Thompson et al., 2007), and large population-based studies (Collishaw et al., 2007; Roberts et
al., 2004; Rijlaarsdam et al., 2014). This study will extend the present research literatures with
the inclusion of a low-risk community sample. Taken together, the examination of multiple
mediators examined in simple and parallel mediation models; inclusion of mediators not yet
assessed but theoretically important; observational measures of parenting behaviour and child
behaviour; and inclusion of a low-risk sample are important contributions to the research
literature. These aspects of the study are very much underrepresented in the research literature
that examines the relation between maternal childhood maltreatment history and child behaviour
problems.

Based on previous research, I expected that mothers who report more trauma in their
childhood would have children who present with higher internalizing and externalizing
behaviour problems. Given the large research literature that provides support for the significant
associations between maternal childhood maltreatment history and maternal depression, and the
negative impact of maternal depression on child outcomes, I hypothesized that higher maternal
depressive symptoms would mediate the relation between maternal maltreatment history and
child internalizing and externalizing behaviour problems. There has also been much research on
the mediating role of parenting between parental psychosocial factors and child outcomes; therefore, I expected that maternal insensitivity would significantly mediate the relation between childhood maltreatment history and child internalizing and externalizing behaviour. Social support has also been found to significantly mediate the relation between maternal maltreatment history and child behaviour problems in low-income and high-risk samples, and I hypothesized that this relation would generalize to a low-risk sample in the current study. As for adult attachment and parenting stress, these variables have both been found to be related to child outcomes; however, their mediating influence between maternal maltreatment history and child behaviour problems has not yet been tested. No other study has examined these maternal variables together to determine which would emerge as unique mediators to explain the relation between maternal childhood maltreatment history and child behaviour problems.
Chapter 2: Method

Participants

This study used a subsample of mother-child dyads ($n = 98$) who participated in a larger longitudinal study ($N = 297$; Atkinson et al., 2013; Pereira et al., 2012). The larger study examined environmental and genetic factors that influence the development of the hypothalamic-pituitary-adrenal (HPA) axis. Mothers were 18 years or older at childbirth and had sufficient English to complete study questionnaires. Mother-child dyads were a community sample recruited when children were 16 months old. For the initial study, mother-child dyads participated in a two-part study; a home visit when children were 16 months old and a lab visit when children were 17 months old. A subsample of mother-child dyads were later invited to participate in a follow-up study when children were approximately 5 years old. The current study included data collected at two time points: when children were 16 months old and when children were approximately 5 years old.

Participant demographics

Of the 98 children included in the study, just over half were male (54%) and children’s ages ranged from 4.01 to 6.20 years. Mothers’ ages ranged from 28 to 49 years ($M = 37.42$; $SD = 3.97$). Mothers’ and children’s ethnicities are presented in Table 1.

Participant demographics – Children at 16 months. Of the 98 mothers who participated in the follow-up study, a majority reported being in a relationship (married, common-law, or remarried: 93.9%) when their infants were 16 months old. At that time, 95.9% had completed at least some post-secondary education. Income information was not collected at the onset of the study; therefore, income data are only available for just over half of the sample (57%). Of these participants ($n = 56$), approximately 36% of mothers were earning yearly incomes between $35,000 and $70,000 and approximately 20% of mothers were earning yearly incomes between
$70,001 and $92,000. About 27% of fathers were earning yearly incomes between $35,000 and $70,000 and 30% of fathers were earning yearly incomes between $70,001 and $92,000. Table 2 provides total salary information for mothers and fathers when children were 16 months old. As for siblings, the majority of children (77.6%) had none at 16 months old.

**Participant demographics – Children at 5 years.** At follow-up, fewer mothers reported being in a relationship (married, common-law, or remarried: 90.8%). Educational status of the sample remained unchanged, with the same proportion of mothers reporting a post-secondary education (95.9%). A larger proportion of participants provided a salary range for themselves and their spouses when children were 5 years old ($n = 91, n = 84$, respectively). A majority of mothers and fathers earned a yearly income between $35,000 and $92,000 (48.4% and 44%, respectively). Table 3 provides total salary information for mothers and fathers when children were 5 years old. When children were 5 years old, the majority had siblings (79.5%). Table 4 reports the distribution of siblings when children were 16 months and 5 years old.

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Mothers %</th>
<th>Children %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>75.5</td>
<td>67.3</td>
</tr>
<tr>
<td>Asian</td>
<td>14.3</td>
<td>7.1</td>
</tr>
<tr>
<td>East Indian</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>African American/African Decent</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mixed</td>
<td>4.1</td>
<td>22.4</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 2

_Distribution of Maternal and Paternal Salaries When Children Were 16 Months Old_

<table>
<thead>
<tr>
<th>Salary Range</th>
<th>Mothers (n = 56)</th>
<th>Fathers (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>&lt; $20,000</td>
<td>14 (25)</td>
<td>2 (3.6)</td>
</tr>
<tr>
<td>$20,001 – $35,000</td>
<td>4 (7.1)</td>
<td>2 (3.6)</td>
</tr>
<tr>
<td>$35,001 – $70,000</td>
<td>20 (35.7)</td>
<td>15 (26.8)</td>
</tr>
<tr>
<td>$70,001 – $92,000</td>
<td>11 (19.6)</td>
<td>17 (30.4)</td>
</tr>
<tr>
<td>$92,001 - $114,000</td>
<td>2 (3.6)</td>
<td>7 (12.5)</td>
</tr>
<tr>
<td>$114,001 – 150,000</td>
<td>5 (9.0)</td>
<td>5 (9.0)</td>
</tr>
<tr>
<td>$150,001 - $200,000</td>
<td>0</td>
<td>5 (8.6)</td>
</tr>
<tr>
<td>&gt; $200,000</td>
<td>0</td>
<td>3 (5.4)</td>
</tr>
</tbody>
</table>

Table 3

_Distribution of Maternal and Paternal Salaries When Children Were 5 Years Old_

<table>
<thead>
<tr>
<th>Salary Range</th>
<th>Mothers (n = 91)</th>
<th>Fathers (n = 84)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>&lt; $20,000</td>
<td>22 (22.4)</td>
<td>6 (7.1)</td>
</tr>
<tr>
<td>$20,001 – $35,000</td>
<td>9 (9.9)</td>
<td>4 (4.8)</td>
</tr>
<tr>
<td>$35,001 – $70,000</td>
<td>22 (22.4)</td>
<td>21 (25)</td>
</tr>
<tr>
<td>$70,001 – $92,000</td>
<td>22 (22.4)</td>
<td>16 (19)</td>
</tr>
<tr>
<td>$92,001 - $114,000</td>
<td>8 (8.2)</td>
<td>16 (19)</td>
</tr>
<tr>
<td>$114,001 – 150,000</td>
<td>6 (6.1)</td>
<td>10 (11.9)</td>
</tr>
<tr>
<td>$150,001 - $200,000</td>
<td>1 (1.0)</td>
<td>3 (3.6)</td>
</tr>
<tr>
<td>&gt; $200,000</td>
<td>1 (1.0)</td>
<td>8 (9.5)</td>
</tr>
</tbody>
</table>

Table 4

_Number of Siblings When Children Were 16 Months and 5 Years Old_

<table>
<thead>
<tr>
<th>Number of Siblings</th>
<th>Children - 16 months n (%)</th>
<th>Children - 5 years n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>76 (77.6)</td>
<td>20 (20.4)</td>
</tr>
<tr>
<td>1</td>
<td>17 (17.3)</td>
<td>61 (62.2)</td>
</tr>
<tr>
<td>2 or more</td>
<td>5 (5.1)</td>
<td>17 (17.3)</td>
</tr>
</tbody>
</table>
Materials

Background Information

A Background Information questionnaire was developed for the study and was administered to mothers when children were age 16 months and 5 years old. Mothers were asked their marital and educational status. Mothers identified a salary range for themselves and their spouse. Mothers were also asked to identify the study child’s number of siblings.

Materials Administered When Children Were 16 Months Old

Childhood trauma

Maternal Childhood trauma was assessed with The Childhood Trauma Questionnaire – Short Form (CTQ-SF; Bernstein & Fink, 1998). The CTQ-SF is a brief 28-item screener examining retrospective reports of childhood abuse and neglect. Respondents answer questions regarding childhood experiences related to five types of maltreatment: Emotional abuse (e.g., I felt that someone in my family hated me), physical abuse (e.g., People in my family hit me so hard that it left me with bruises or marks), sexual abuse (e.g., Someone tried to make me do sexual things or watch sexual things), emotional neglect (e.g., People in my family looked out for each other, reverse scored), and physical neglect (e.g., I didn’t have enough to eat; Bernstein & Fink, 1998). Respondents’ answers are based on a five-point Likert scale capturing frequency of abuse (1 = Never True to 5 = Very Often True). The CTQ produces classification severity scores for each type of abuse (none, low, moderate, and severe). A total CTQ-SF score can also be generated, in which higher scores signify greater severity of childhood trauma.

Internal reliability of the CTQ-SF has been found to be high in community samples (Paivio & Cramer, 2004; Scher, Stein, Asmundson, McCreary, & Forde, 2001) and adequate test-retest reliability has also been shown over an 8-10 week period in a community sample ($r = .85$; Paivio & Cramer, 2004). The CTQ-SF items for the current study sample had satisfactory
internal reliability ($n = 96; \alpha = .86$) and therefore, I used the CTQ-SF total score for statistical analyses. In addition, Scher and colleagues (2001) examined the factor structure of the CTQ-SF and determined that a total score is valid for research and clinical use.

The CTQ-SF was derived from the 70-item Childhood Trauma Questionnaire, which assessed the same five abuse and neglect subtypes (Bernstein et al., 1994). The CTQ-SF was examined across diverse clinical and community samples and it was determined that the same original Childhood Trauma Questionnaire constructs of abuse and neglect were being measured across groups (Bernstein et al., 2003). In addition, the CTQ-SF demonstrated good criterion validity when compared with therapists’ ratings of abuse for a clinical sample of adolescents (Bernstein et al., 2003). The CTQ-SF has been found to be a valid measure of maltreatment in a Canadian community sample of undergraduate students (Paivio & Cramer, 2004).

Adult attachment

Adult attachment was examined with the Experience in Close Relationships inventory (ECR; Brennan et al., 1998). The ECR is a self-report inventory of adult romantic attachment, which examines two attachment dimensions: anxiety and avoidance (Brennan et al., 1998). The anxiety dimension is related to an individual’s anxiety related to rejection and abandonment in adult relationships (Fraley & Shaver, 2000). The avoidance dimension is related to an individual’s difficulty with becoming close and dependent on a significant other (Fraley & Shaver, 2000). The ECR inventory included 36 questions about how a person feels in romantic relationships (e.g., I worry about being abandoned) and responses are based on a 7-point Likert scale (1 = Disagree Strongly to 7 = Strongly Agree).

The ECR has good internal reliability amongst university student samples, with Cronbach alphas between .91 and .94 (Alonso-Arbiol, Balluerka, Shaver, & Gillath, 2008; Brennan et al., 1998). Good internal reliability ($\alpha = .90$) of the ECR has also been demonstrated in a clinical
sample (Parker, Johnson, & Ketring, 2011). Internal consistency estimates were computed for completed inventories \((n = 89)\) for the present sample and coefficient alphas for both anxiety and avoidance scales had good reliability (.94 and .92, respectively). Picardi, Caroppo, Toni, Biltetti, and Di Maria (2005) administered the ECR twice to a sample of undergraduate and graduate students \((n = 115)\) one month apart and found adequate retest reliability (anxiety scale, \(r = .82\) and avoidance scale, \(r = .79\)). Retest reliability was assessed with an inpatient sample who was administered the ECR at admission and discharge and interclass correlations were significant for anxiety and avoidance scales (Picardi, Martinotti, Paci, Simi, & Caroppo, 2011).

The ECR correlates only modestly with measures of psychological distress, demonstrating its discriminant validity (Picardi et al., 2005). In addition, factor validity of the anxiety and avoidance dimensions of the ECR was demonstrated with a university student sample (Alonso-Arbiol et al., 2008).

**Maternal depression**

Maternal depression was assessed with the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item self-report inventory. The BDI-II assesses affective (e.g., sadness and crying), cognitive (e.g., pessimism and suicidal thoughts or wishes), and physical depressive symptoms (e.g., loss of energy and tiredness or fatigue). The targeted symptoms correspond with diagnostic criteria for depression outlined in the DSM-IV (American Psychiatric Association, 2000). Respondents are given four statements for each symptom and are asked to choose which statement best describes how they have been feeling over the past two weeks. For example, for the symptom ‘sadness’ the respondent can choose one of the following: I do not feel sad, I feel sad much of the time, I am sad all of the time, and I am so sad or unhappy that I can’t stand it. The BDI-II provides cutoff scores for symptom severity, with greater scores
signifying greater symptom severity (0-13 = minimal; 14-19 = mild; 20-28 = moderate; and 29-63 = severe; Beck et al., 1996).

The reliability and validity of earlier versions of the Beck Depression Inventory are well established in clinical and non-clinical populations (Beck, Steer, & Garbin, 1988). Beck and colleagues (1996) administered the BDI-II to clinical \( (n = 500) \) and undergraduate samples \( (n = 120) \) and the internal consistency for both groups was high \( (\alpha = .92 \text{ and } .93, \text{ respectively}) \). Internal consistency has also been demonstrated in another community sample of adults \( (\alpha = .90; \text{ Segal, Collidge, Cahill, & O’Riley, 2008}) \) and other clinical samples \( (\alpha \text{ between } .90 \text{ and } .94; \text{ Arnau, Meagher, Norris, & Bramson, 2001; Grothe et al., 2005}) \). The alpha coefficient indicated good internal reliability for the BDI-II in the study sample \( (n = 93; \alpha = .91) \). Test-retest reliability was found to be high in a subsample of outpatients who were administered the BDI-II one week apart \( (r = .93; \text{ Beck et al., 1996}) \).

The correlation between the BDI-II and an earlier version of the Beck Depression Inventory administered to a subsample of outpatients \( (n = 191) \) was high, \( r = .93 \), demonstrating adequate construct validity (Beck et al., 1996). The BDI-II was shown to have convergent validity, as it was significantly correlated with measures that assess psychological constructs that are related to depression (e.g., Scale for Suicidal Ideation, Hamilton Psychiatric Rating Scale for Depression; Beck et al., 1996). Segal et al., (2008) found that the BDI-II was significantly correlated with other measures of depression: the Centre for Epidemiological Studies Depression Scale (CES-D) \( r = .68 \) and the Coolidge Axis II Inventory (CATI), \( r = .58 \).

**Parenting stress**

Parenting stress was assessed with The Parenting Stress Index-Short Form (PSI-SF; Abidin, 1995). The PSI-SF is a 36-item self-report inventory that examines stress in the parent-child system (Abidin, 1995). The PSI-SF was developed from the earlier 120-item Parenting
Stress Index (Abidin, 1995). The PSI-SF assesses three domains of parenting: 1) The Parental Distress subscale examines perception of parenting competence, restriction of personal activities, depressive symptoms, and social support; 2) The Parent-Child Dysfunctional Interaction subscale examines the parent-child bond related to parent’s expectations of child behaviour and level of reinforcement derived from child interaction; 3) The Difficult Child subscale examines child behavioural characteristics which impact parenting (Abidin, 1995). All subscales are made up of 12 items and responses are based on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). A higher total stress score indicates greater parenting stress.

The PSI-SF has adequate reliability. Internal reliability of the normative sample ($N = 800$) was found to be very good ($\alpha = .91$; Abidin, 1995). Adequate internal reliability of the PSI-SF has also been demonstrated in other samples (Anthony et al., 2005; Reitman, Currier, & Stickle, 2002). Test-retest reliability with a subsample of the normative sample ($n = 270$) was found to be good for the total stress score over a 6-month interval, with $r = .84$ (Abidin, 1995). Further, in a sample of 21 abusive parents, the PSI-SF was found to be stable over a 1 year period, with $r = .75$ (Haskett, Ahern, Ward, & Allaire, 2006). The total PSI-SF items for the current study sample had adequate internal reliability ($N = 98; \alpha = .88$) and therefore, the total PSI-SF score was used for statistical analyses.

The PSI-SF correlates highly with the original long version of the Parenting Stress Index ($r = .94$; Abidin, 1995). Construct validity has been demonstrated between the parental distress scale and a measure of emotional health, the SCL-90-R: $r = .54, p < .001$ (Haskett et al., 2006). In addition, Haskett and colleagues (2006) found that the child scale was related to a self-report of parents’ ratings of child behaviour, as well as observations of child behaviour. Similarly, in a low-income sample, the parental distress scale was associated with maternal reports of
psychological symptoms and the difficult child scale was associated with maternal self-reports of their children’s oppositional behaviour (Reitman et al., 2002).

**Social support**

Social support was examined with the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS is a 12-item self-report inventory that assess three different sources of support: family, friends, and special person. The items were designed to assess respondents’ perceptions of their social support (e.g., There is a special person in my life who cares about my feelings). Responses are based on a 7-point Likert scale (1 = Very Strongly Disagree to 7 = Very Strongly Agree). A higher score on the MSPSS signifies greater perceived social support. It should be noted that in a subsample of participants \( n = 210 \) asked to identify who they considered their 'special person' when answering the MSPSS, married participants usually (86.5%) identified their spouse (Prezza & Pacilli, 2002).

The MSPSS has been found to be a reliable measure of social support. A sub-sample of undergraduate students \( n = 69 \) completed the MSPSS a second time after a 2-3 month interval and test-retest reliability for the total scale was adequate \( (r = .85; \text{Zimet et al., 1988}) \). The MSPSS was administered to a large sample of undergraduates \( N = 275 \) and internal reliability was found to be high for the total scale \( (\alpha = .88; \text{Zimet et al., 1988}) \). High internal reliability has also been found when assessing samples of pregnant women, adolescents, and pediatric residents (Zimet, Powell, Farley, Werkman, & Berkoff, 1990), youth (Edwards, 2004), and clinical outpatients with schizophrenia or an affective disorder (Cecil, Stanley, Carrion, & Swann, 1995). The total MSPSS items for the current study sample had excellent internal reliability \( n = 90; \alpha = .96 \) and therefore, I used the total MSPSS score for statistical analyses. The MSPSS is moderately correlated \( (r = .31) \) with another perceived social support measure (Network Orientation Scale (NOS); Cecil et al., 1995). In another study, researchers found that the family
subscale was significantly associated with an inventory rating of family support and satisfaction ($r = .53$; Edwards, 2004).

**Maternal sensitivity**

Maternal sensitivity was assessed with the Maternal Behaviour Q-Sort (MBQS; Pederson et al., 1990; Pederson, Moran, & Bento, 1999) when children were 16 months. The MBQS is an observational coding instrument consisting of 90 cards with statements that describe maternal behaviour (e.g., Interactions with baby are characterized by conflict; Mother speaks to baby directly; and Mother notices when baby smiles and vocalizes). The 90 cards are sorted as either being like or unlike the mother (for complete list of 90 Q-sort items, sorting and analysis instructions see Pederson et al., 1999). A completed 90 card sort is correlated with a sort of prototypically sensitive mother; it yields a single maternal sensitivity score, ranging from -1.0 to +1.0 (Pederson et al., 1999). These behavioural items were derived from Ainsworth’s Sensitivity Scales: acceptance, cooperation, accessibility, and sensitivity (Ainsworth, Bell, & Stayton, 1971, Pederson et al., 1990). The MBQS is significantly related to infant attachment security (de Wolff & van IJzendoorn, 1997; Moran, Forbes, Evans, Tarabulsy, & Madigan, 2008; Pederson & Moran, 1995; Pederson, Gleason, Moran, & Bento, 1998). In their meta-analysis examining how to best measure sensitivity, Atkinson and colleagues (2000) found that the MBQS generated the largest effect sizes, when compared to other observation-based measures. An intra-class correlation between two coders for the larger study was good ($N = 297; r = .88$; Pereira et al., 2012). For the present study, 93 observations coded by two independent observers also had high inter-rater reliability ($r = .94$). The remainder of the observations were coded by a reliable coder.
Materials Administered When Children Were 5 Years Old

Child behaviour

Child behaviour was assessed by maternal report and observation. Maternal report of child behaviour was obtained on the Child Behavior Checklist for ages 1.5-5 (CBCL/1.5-5; Achenbach & Rescorla, 2000). The CBCL/1.5-5 examines emotional and behaviour problems in children ages 1.5 to 5. The CBCL/1.5-5 was normed using a representative national probability sample (1999 National Survey of Children, Youth, and Adults; Achenbach & Rescorla, 2000). The CBCL/1.5-5 is made up of 99 problem items (e.g., cries a lot and doesn’t want to sleep alone). On each item, parents respond with either 0 = not true, 1 = somewhat true/sometimes true, and 2 = very true/often true. The CBCL/1.5-5 responses generate scores for two broad symptom scales: internalizing and externalizing behaviour problems. The internalizing symptom scale includes the following 4 syndrome scales: emotionally reactive, anxious depressed, somatic complaints, and withdrawn (Achenbach & Rescorla, 2000). The externalizing symptom scale includes two syndrome scales: attention problems and aggressive behaviour (Achenbach & Rescorla, 2000). T-scores are computed to determine level of child behaviour problem. T-scores between 60 and 63 are considered to be in the borderline clinical range and T-scores above 63 are considered to be in the clinical range (Achenbach & Rescorla, 2000).

The CBCL/1.5-5 has good test-retest reliability. Mothers rated their non-referred children’s internalizing and externalizing behaviours on two occasions with an interval of eight days and Pearson’s correlations were high ($r = .90, p < .01$ and $r = .87, p < .01$, respectively; Achenbach & Rescorla, 2000). Internal consistency estimates for the CBCL/1.5-5 were computed for the present sample and coefficient alphas for the internalizing and externalizing scales demonstrated adequate reliability (.76 and .81, respectively).
The CBCL/1.5-5 is a valid measure of child behaviour problems. Achenbach and Rescorla (2000) reported that almost all items on the CBCL/1.5-5 discriminated between referred and non-referred children. The preschool forms of the CBCL have been widely used in research studies (Rescorla, 2005). Ivanova and colleagues (2010) demonstrated taxonomic generalizability across 23 different societies around the world, as the syndrome scales that make up the internalizing and externalizing scales were found to be a good fit.

In the present study, child behaviour, and more specifically, child compliance was also assessed by observing mother-child interactions in a play and clean-up task. A toy bag and 131 toys were used for the play and clean-up task. After a brief play session, mothers were instructed to have their children return all 131 toys to the toy bag. Number of toys not returned to the bag was recorded and used as a measure of non-compliance. The play and clean-up task was videotaped for later coding. I utilized selected child codes from the Coding System for Mother-Child Interactions (CSMCI; Healey et al., 2010). Healey and colleagues (2010) used this system to code a play and clean-up observation with 3-4 year olds and their caregivers. The CSMCI was constructed using, primarily, the NICHD Study of Early Child Care and then was extended with other valid and reliable coding instruments (Healey et al., 2010). I contacted D. Healey directly, and she provided me with the coding materials for the CSMCI. I extracted two child codes from the CSMCI for the present study: child cooperation-compliance and child negativity and hostility. Child cooperation-compliance assesses the child’s ability to obey parents’ directions and was coded using a 5-point Likert scale (1 = Very Low, 2 = Low, 3 = Moderate, 4 = High, and 5 = Very High). Child negativity and hostility assesses the degree to which the child rejects parental directions and the child’s demandingness. Child negativity and hostility is coded using the same 5-point Likert scale. I coded all 98 video-taped clean-up tasks. An independent rater was trained to use the codes and then independently viewed and coded 22% (n = 20) of the
videos. Inter-rater reliability between two independent coders was very good for both the compliance-cooperation and negativity and hostility codes (Cronbach’s $\alpha = .91$ and .92, respectively).

**Procedures**

For the initial part of the study, mother-child dyads participated in a 16-month visit in their homes and a 17-month lab visit. A follow-up study was conducted when children were 5 years old. I will outline relevant procedures at 16 months and 5 years.

**Study procedures – Children at 16 months**

Mother-infant dyads were recruited in person through community centers and consumer baby shows across a large urban and suburban area. First, mother-child dyads completed a home observation when children were approximately 16 months old. Informed verbal and written consent was obtained from mothers at their home before commencing with the study. Two female research assistants were present at the home visit. At the home visit, mothers were instructed to go about their daily routine with their infant while the research assistants took detailed notes on mother-infant interactions and maternal behaviour. Toward the end of the visit, mothers were administered a set of questionnaires (Background Information, CTQ-SF, BDI-II, ECR, MSPSS, PSI-SF). Administering questionnaires not only served the purpose of collecting study-relevant information, it also gave research assistants the opportunity to observe maternal behaviour when mothers’ attention was divided between infant cues and the task of filling out the questionnaires. This manipulation in the observation allowed observers to see how a mother would respond to her infant’s cues when additional demands were placed on her. The researchers used their detailed notes of mother-infant interactions and maternal behaviour to independently complete the MBQS. Home visits were approximately 2 hours.
Procedures – Children at 5 years

Participants who participated in the larger study when children were 16 months old were contacted via telephone and invited to participate in a follow-up study. Participants were contacted in order of their initial study date and if the study child was between 4 and 5 years old. Participants were contacted until 98 participants were recruited. If they agreed to participate, mother-child dyads were visited in their homes by 1 or 2 research assistants. First, a verbal and written consent regarding study participation was completed. As part of the visit, mother-child dyads completed a play and clean-up task. A research assistant took a bag of 131 toys and emptied it onto the floor. The research assistant explained to the dyad that she removed all the toys from the bag so they could play together. The research assistant removed herself from the interaction. After five minutes, the research assistant handed the mother a set of written instructions, which read, “Have your child put all the toys in the bag. Do not put any of the toys in the bag yourself – you can only help with your words. Your child will have 5 minutes.” The research assistant again removed herself from the interaction. If the child was still cleaning the toys after 4 minutes, the research assistant alerted the mother that there was one minute remaining. After 5 minutes, the child was instructed to discontinue cleaning. A research assistant counted and recorded the number of toys not returned to the toy bag. Following the play and clean-up task, mothers completed study-relevant questionnaires (Background Information, CBCL/1.5-5). Home visits were approximately 2 hours in length.

Statistical Analyses: Mediation and Moderation

Mediation. In the present research, I proposed that mothers with a childhood trauma history would have children who exhibit more behaviour problems. Further, I proposed that maternal personal and interpersonal variables would explain, or would mediate, the relation between maternal childhood trauma and child behaviour problems. A mediator variable explains
how an independent variable influences a dependent variable. Associations between constructs can work through one or more mediators (Preacher & Hayes, 2008). A simple mediation model is illustrated in Figure 1. In a mediation model there are several paths to consider: Path c is the total effect, which is the sum of c’ and the product of paths a and b; path a, the effect of the independent variable (X) on the mediator variable (M); path b, the effect of the mediator variable (M) on the dependent variable (Y), accounting for the effect of the independent variable (X); path c’ is the direct effect of the independent variable (X) on the dependent variable (Y), while holding the mediator constant (M). As one example, in this thesis I was interested in determining whether the relation between maternal childhood trauma history and childhood behaviour problems is transmitted through maternal depressive symptoms. In this thesis I also constructed multiple mediator models, to examine the simultaneous impact of mediators on the relation between maternal childhood maltreatment history and child behaviour problems. It is most certainly the case that the relation between these two variables operates through multiple mediators, rather than through a single mediator.

Figure 1. A simple mediation model adapted from Baron and Kenny (1976). X = Independent Variable, M = Mediator, Y = Dependent Variable. Path a: the effect of X on M; Path b: the effect of M on Y, accounting for the effect of X; Path c: the direct effect of X on Y; Path c prime (c’): the total difference between path c and the product of paths a and b.
Moderation. While I predicted that maternal personal and interpersonal variables would mediate the relation between maternal childhood trauma history and child behaviour problems, I also examined whether these maternal variables moderated the aforementioned association. Researchers have reported on competing theories related to how maternal behaviour is transmitted to child behaviour and therefore, it is important to test the validity of mediators by discounting their role as moderators. A moderator variable is a third variable which affects the direction or strength of the association between an independent and dependent variable (Baron & Kenny, 1986). As explained by Frazier, Tix, and Barron (2004), a moderator variable determines “when” or “for whom” an independent variable influences a dependent variable (p. 116). A moderator can determine if an association between two variables is more or less likely to occur. A moderator is typically proposed when there is a weak or inconsistent link between the independent and dependent variable (Baron & Kenny, 1986). A simple moderation model is depicted in Figure 2. In a moderation model there are three causal paths that influence the dependent variable (Y): the independent variable (path a), the moderator variable (path b), and the interaction between the independent and moderator variables (path c) (Baron & Kenny, 1986). For example, in relation to the research questions in this study, I examine whether the association between maternal childhood trauma and childhood behaviour problems is dependent on the presence of maternal variables, such as maternal depressive symptoms. The presence of a significant moderator can be examined in a multiple linear regression analyses; the independent variable, moderator variable, and interaction term (independent variable x moderator variable) are entered into a regression analyses to predict to the dependent variable. The presence of the moderator variable is recognized when the interaction term is significant.
Figure 2. A simple moderation model adapted from Baron and Kenny (1986). X = Independent variable, M = Moderator, Y = Dependent variable. In a moderation model there are three causal paths that influence (i): X (path a), M (path b), and the interaction between X and M (path c).
Chapter 3: Results

Follow-up Sample Participants versus Nonparticipants

Analyses were conducted to determine whether the follow-up sample \((N = 98)\) differed from those participants who could not be contacted to participate for various reasons \((n = 95)\); dropped out of the initial study, could not be reached, changed contact information and could not be contacted, participant deceased) or were invited to participate, but declined because they were too busy or not interested in participating \((n = 14)\). Follow-up participants and nonparticipants were compared on demographic variables, childhood trauma history scores (CTQ-SF), and depressive symptom scores (BDI-II). Chi-square analyses were conducted to compare categorical data. Infant sex did not differ between groups, \(\chi^2 (1, N = 207) = .15, p = .70\). Due to the small size of some of the marital status groups, follow-up participants and nonparticipants were divided into two groups: in a relationship (married, common-law, remarried) and not in a relationship (single or separated). Even with combining groups, two cells in the 2x2 Chi-square had expected counts less than 5 (follow-up participants and nonparticipants not in a relationship); therefore, Fisher’s Exact test was used and relationship status was not found to differ between the follow-up participants and nonparticipants \((p = .88)\). To examine whether differences existed between the follow-up participants and nonparticipants in regards to maternal educational attainment, mothers were placed in one of two groups for comparison: 1) high school education and less and 2) at least a post-secondary education. The results of the test were significant, \(\chi^2 (1, N = 207) = 4.21, p = .04\). A greater proportion of follow-up participant women had at least a post-secondary education. Maternal low income (< $35,000) versus high income (> $35,000) did not differ between the follow-up participants and nonparticipants, \(\chi^2 (1, N = 112) = 3.01, p = .08\). Paternal low income (< $35,000) versus high income (> $35,000) between follow-up participants and nonparticipants was significant, \(\chi^2 (1, N = 117) = 3.88, p = .05\). A greater
proportion of follow-up fathers were earning higher incomes. Follow-up participants’ CTQ-SF scores \((Mdn = 31.00)\) did not significantly differ from nonparticipants CTQ-SF scores \((Mdn = 32.50)\), \(U = 4005.00, p = .12\). Maternal depression scores also did not differ significantly between follow-up participants \((Mdn = 6.00)\) and nonparticipants \((Mdn = 7.00)\), \(U = 3305.00, p = .33\).

**Study Variables – Descriptive Statistics**

Of the mothers who completed the CTQ-SF \((n = 96)\), childhood trauma scores ranged from 25 to 112 \((M = 35.24, SD = 14.29)\), with higher scores indicating more trauma. The majority of the participants who completed the CTQ were classified as “none” for experiencing emotional abuse \((68.8\%)\), physical abuse \((83.5\%)\), sexual abuse \((89.6\%)\), emotional neglect \((71\%)\), and physical neglect \((83.5\%)\). The results for all trauma categories of abuse and neglect are presented in Table 5. Maternal scores on the ECR inventory \((n = 89)\) ranged from 18 to 100 \((M = 35.56; SD = 16.30)\) for avoidance and 18 to 125 \((M = 49.16; SD = 19.78)\) for anxiety. Mothers who completed the BDI-II \((n = 94)\) had total depression scores that ranged from 0 to 33 \((M = 7.29; SD = 6.27)\), with higher scores representing more depressive symptoms. Only 4% of mothers had BDI-II scores that were considered to be in the moderate to severe depression symptom range. Parenting stress scores on the PSI-SF \((N = 98)\) ranged from 38 to 105 \((M = 64.52; SD = 14.4)\), with higher scores indicating more parenting stress. Only 4% of mothers had total stress scores in the clinical range \((\geq 90^{th} \text{ percentile}; \text{Abidin, 1995})\). Mothers’ social support scores on the MSPSS \((n = 91)\) ranged from 12 to 84, with higher scores signifying more support. The average score for maternal social support was 69.5 \((SD = 13.9)\). Maternal sensitivity scores on the MBQS \((N = 98)\) ranged from -.51 to .88 \((M = .47, SD = .36)\), with higher scores indicating more sensitive caregiving. All mothers and children \((N = 98 \text{ dyads})\) in the follow-up study
Table 5

*Distribution of Maternal Experiences of Childhood Trauma across Abuse and Neglect Subtypes*

<table>
<thead>
<tr>
<th>Type of Abuse</th>
<th>None</th>
<th>Low</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Abuse</td>
<td>66 (68.8%)</td>
<td>20 (20.8%)</td>
<td>3 (3.1%)</td>
<td>7 (7.3%)</td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>81 (83.5%)</td>
<td>10 (10.3%)</td>
<td>2 (2.1%)</td>
<td>4 (4.1%)</td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>86 (89.6%)</td>
<td>4 (4.2%)</td>
<td>1 (1.0%)</td>
<td>5 (5.2%)</td>
</tr>
<tr>
<td>Emotional Neglect</td>
<td>69 (71.1%)</td>
<td>19 (19.6%)</td>
<td>4 (4.1%)</td>
<td>5 (5.2%)</td>
</tr>
<tr>
<td>Physical Neglect</td>
<td>81 (83.5%)</td>
<td>11 (11.3%)</td>
<td>3 (3.1%)</td>
<td>2 (2.1%)</td>
</tr>
</tbody>
</table>

*Note.* Number of participants and % of participants both represented.

completed the child behaviour measures – the CBCL/1.5-5 and the play and clean-up task. A very small proportion of mothers reported clinically elevated scores (T-scores > 63) for child internalizing and externalizing problem behaviours on the CBCL/1.5-5 (6% and 5%, respectively). Distribution parameters (range, mean, standard deviation) for the CBCL/1.5-5 are presented in Table 6. In the clean-up task, the number of toys children did not return to the toy bag ranged from 0 to 131 ($M = 71; SD = 34$). Children’s observed cooperation-compliance during the clean-up task was coded using a Likert scale, ranging from 1 to 5; a higher number indicated greater compliance ($M = 3.44; SD = 1.23$). Children’s negativity and hostility during the clean-up task was coded using a Likert scale, ranging from 1 to 5, with higher scores representing higher negativity and hostility ($M = 2.58; SD = 1.35$). A composite score (total behavioural coding) was created by combining all observation z-scores (number of toys left out of the bag, reverse scored cooperation-compliance, and negativity and hostility score). Children’s total behaviour coding scores ranged from 2 to 141 ($M = 76.43; SD = 35.33$), with higher scores signifying more problematic behaviour. The total behaviour coding score for the study sample had good internal reliability ($n = 98; \alpha = .83$). Children’s total behavioural coding score was used for subsequent analyses.
Table 6

Descriptive Statistics for Child Behavior Checklist (CBCL/1.5-5) Scores

<table>
<thead>
<tr>
<th></th>
<th>T-scores (Range)</th>
<th>T-scores [M (SD)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBCL – Internalizing</td>
<td>29 – 71</td>
<td>48.34 (9.85)</td>
</tr>
<tr>
<td>CBCL – Externalizing</td>
<td>27 – 74</td>
<td>45.28 (9.84)</td>
</tr>
<tr>
<td>CBCL – Total Score</td>
<td>28-76</td>
<td>46.57 (10.40)</td>
</tr>
</tbody>
</table>

Note. M = mean, SD = standard deviation

Preliminary Analyses

The main analyses for my dissertation were conducted on 96 participants\(^1\) who participated in home visits when children were 16 months and 5 years old. Using a statistical software program, SPSS, I identified that 2.5% of data were missing. Little’s (1988) missing completely at random (MCAR) test was not significant, \(\chi^2 (42, N = 96) = 33.011, p = .84\), which supports the use of imputation methods. I used the SPSS Expectation-Maximization technique to estimate missing values\(^2\). Two hundred iterations were run to perform a single imputation.

Prior to principal analyses, study variable scores were examined to determine the shape of the distribution and the presence of outliers. According to Hayes (2013), it is not known how outliers impact bootstrap inferences. Therefore, I removed outliers to minimize their potential impact. I examined z-scores to identify outliers in the data and z-score values above 3.29 (\(p < .001\)) were considered outliers. Based on Field (2009), the impact of outliers can be removed by using a transformation. Log transformations removed outliers from the following study variables: maternal avoidance (ECR), maternal depression (BDI-II), and social support (MSPSS). Despite the transformation, the independent variable maternal childhood trauma (CTQ-SF) contained outliers. Field (2009) recommends replacing scores for outliers if the log transformation fails.

---

\(^1\) Due to scheduling challenges, four children turned six years old between recruitment and the day they participated in the study. Of the four children, two children turned six within a week of participation, and therefore, their data were retained for the main analyses. The other two children participated in the study many months following their sixth birthday, and as a result, their data were not included in the main analyses.

\(^2\) A single imputation was used instead of multiple imputation, as multiple imputation is not compatible with the bootstrapping macros used in the main analyses.
This involved replacing outlier scores with scores that were three standard deviations above the mean score (Field, 2009). I changed two extreme scores for the CTQ-SF and then computed a log transformation, which resulted in no remaining outliers.

**Correlations among Study Variables**

I computed correlation coefficients among study variables using nonparametric statistics (Spearman Rho). The results of correlational analyses are presented in Table 7. As predicted, maternal childhood trauma history scores on the CTQ-SF were significantly associated with maternal anxious and avoidant attachment, maternal depression, parenting stress, social support, maternal sensitivity, and child internalizing and externalizing behaviour problems, all in the predicted direction. Maternal variables were associated with child internalizing and externalizing behaviour problems. Children who were rated as having higher internalizing behaviour problems on the CBCL/1.5-5 had mothers who rated their anxious and avoidant attachment, depressive symptoms, and parenting stress as being higher and reported less social support. Child externalizing behaviour problems on the CBCL/1.5-5 were associated with maternal reports of greater maternal anxious and avoidant attachment, greater depressive symptoms, greater parenting stress, and lower social support. Child internalizing and externalizing behaviour problems were not significantly correlated with maternal sensitivity and the positive direction of the non-significant association between maternal sensitivity and behaviour problems was unexpected. Child internalizing and externalizing behaviour problems were significantly positively correlated with each other. The total behaviour coding score was not significantly related to any of the maternal variables or maternal report of child behaviour. As a result, the total behaviour coding score was not further explored in subsequent analyses.
As discussed in the introduction of this thesis, the parenting stress construct measured by the PSI-SF presents with potentially significant overlap with other study variables. In particular, it was of interest to determine how highly correlated the parental distress subscale on the PSI-SF was to the BDI-II used to assess depressive symptoms and how closely associated the difficult child subscale on the PSI-SF was to the outcome measures of child behaviour problems (CBCL/1.5-5) and Total Behaviour Coding score. Correlations for the PSI-SF subscales with all maternal variables were computed to make comparisons. The PSI-SF parental distress subscale was significantly correlated with depressive symptoms, $r_s(96) = .45, p < .01$ and the PSI-SF difficult child subscale was significantly correlated with internalizing and externalizing child behaviour problems [$r_s(96) = .43, p < .01$ and $r_s(96) = .47, p < .01$, respectively]. All other correlations were also examined. The PSI-SF parental distress subscale was significantly correlated with several other maternal variables in the moderate to high range ($r_s = .42$ to $61, p$
The same was found for the relation between the PSI-SF difficult child subscale and several other maternal variables ($rs = .35$ to $.63, p < .01$). As a result, it was concluded that the relation of the PSI-SF subscales with maternal depressive symptoms and difficult child were similar to relations with other maternal variables being measured and, therefore, the PSI-SF total score was retained for the remainder of the study analyses. The results of correlational analyses for the PSI-SF with other maternal variables are presented in Table 8.

Table 8.

<table>
<thead>
<tr>
<th>Covariates</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PSI-SF: Parental Distress</td>
<td>.33**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. PSI-SF: Dysfunctional Interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. PSI-SF: Difficult Child</td>
<td>.63**</td>
<td>.36**</td>
<td></td>
</tr>
<tr>
<td>4. Maternal Childhood Trauma</td>
<td>.43**</td>
<td>.12</td>
<td>.31*</td>
</tr>
<tr>
<td>5. Maternal Anxiety</td>
<td>.61**</td>
<td>.37**</td>
<td>.48**</td>
</tr>
<tr>
<td>6. Maternal Avoidance</td>
<td>.49**</td>
<td>.33**</td>
<td>.34**</td>
</tr>
<tr>
<td>7. Maternal Depression</td>
<td>.45**</td>
<td>.16</td>
<td>.33**</td>
</tr>
<tr>
<td>8. Social Support</td>
<td>.44**</td>
<td>.05</td>
<td>.22*</td>
</tr>
<tr>
<td>9. Maternal Sensitivity</td>
<td>-.11</td>
<td>.04</td>
<td>-.07</td>
</tr>
<tr>
<td>10. Internalizing Behaviour</td>
<td>.36**</td>
<td>.08</td>
<td>.43**</td>
</tr>
<tr>
<td>11. Externalizing Behaviour</td>
<td>.53**</td>
<td>.10</td>
<td>.47**</td>
</tr>
<tr>
<td>12. Total Behavioural</td>
<td>.05</td>
<td>.02</td>
<td>-.07</td>
</tr>
</tbody>
</table>

*p ≤ .05, ** p ≤ .01

**Covariates**

According to the research literature, the following demographic variables are potential covariates: Child gender, maternal relationship status, maternal education, and family income
(Boyle et al., 2004; Campbell, 1995; Côté et al., 2006; Fox et al., 1995). I also included number of siblings as a potential covariate. There is scarce research literature on the relation between number of children in a family and child behaviour problems. Two studies have found no relation between number of siblings in the home and parent-reported child behaviour (Fox et al., 1995; Lagerberg & Magnusson, 2013). However, proponents of the resource dilution model claim that as more children enter a family system, each child has fewer resources and time allotted to them (Downey, 2001). Researchers have found a negative relation between number of children in the home and child intelligence (Heer, 1985) and a positive relation between number of siblings in the home and child externalizing behaviour problems (Deater-Deckard et al., 1998).

One-way analysis of variance (ANOVA) was used to assess relations between internalizing behaviour problems and the abovementioned demographic variables (gender, maternal relationship status, maternal education, maternal salary, paternal salary, and number of siblings) and maternal relationship status when children were 16 months was significant, $F(1, 94) = 4.35, p = .04$. Mothers who were not in a relationship when children were 16 months old rated their children as exhibiting more internalizing behaviour problems (Mean T-score = 56.0, $SD = 8.15$), compared to mothers in a relationship (Mean T-score = 47.58, $SD = 9.64$). Number of siblings when children were 5 years old was also significant, $F(2, 93) = 4.50, p = .01$. Mothers of children with no siblings rated their children as exhibiting greater internalizing behaviour problems (Mean T-score = 53.35, $SD = 10.72$), compared to children with one sibling (Mean T-score = 47.32, $SD = 9.37$) or two or more siblings (Mean T-score = 44.50, $SD = 7.54$). The mean score difference between internalizing scores for children with one sibling and children with two or more siblings was not significant, $p = .29$.

For externalizing behaviour problems, child gender emerged as a significant covariate,
$F(1, 94) = 5.52, p = .02$. That is, mothers rated male children as exhibiting greater externalizing behaviour problems (Mean T-score = 47.00, $SD = 9.89$), compared to female children (Mean T-score = 42.56, $SD = 8.47$). Maternal relationship status when children were 16 months was also found to be a significant covariate, $F(1, 94) = 3.87, p = .05$. Similar to the results of internalizing behaviour problems, mothers who were not in a relationship when children were 16 months old rated their children as exhibiting more externalizing behaviour problems when children were 5 years old (Mean T-score = 52.17, $SD = 9.58$), compared to mothers in a relationship (Mean T-score = 44.43, $SD = 9.31$). Number of siblings when children were 5 years old also emerged as a significant covariate, $F(2, 93) = 5.31, p < .01$. As with internalizing behaviour problems, children with no siblings were rated by their mothers as exhibiting greater externalizing behaviour problems (Mean T-score = 49.90, $SD = 9.61$), compared to children with one sibling (Mean T-score = 44.53, $SD = 9.18$) or two or more siblings (Mean T-score = 40.13, $SD = 7.80$). The mean score difference between externalizing scores for children with one sibling and children with two or more siblings was not significant, $p = .09$.

**Mediation Analyses**

I conducted a series of mediation analyses to determine what mediates the relation between maternal childhood trauma and child behaviour problems. Hayes (2013) recommends using bootstrapping to identify mediators. Bootstrapping is a statistical procedure that entails estimating the sampling distribution of the indirect effect by utilizing a resampling procedure (Preacher, Rucker, & Hayes, 2007). Standard errors and confidence intervals are derived from a probability distribution of the estimates of the total and indirect effects, which have been derived by randomly sampling from $n$ observations and estimating indirect effects $k$ times. Hayes (2013) recommends that the resampling procedure be repeated 5,000 to 10,000 times. Bias-corrected (BC) bootstrap confidence intervals (CI) are recommended for mediational analyses (Hayes,
2013). As outlined by Hayes (2013), bootstrapping offers the advantage of not assuming normality of the sampling distribution and it offers greater power than other methods, such as the normal theory approach. To determine significant indirect effects, I utilized Hayes’s (2013) simple mediation and parallel multiple mediation PROCESS macros.

For the study analyses, I created 10,000 bootstrap samples and used 95% BC CIs to determine significant mediators. All mediation analyses included the independent variable childhood trauma (CTQ) and the dependent variable child behaviour problems (CBCL/1.5-5); internalizing behaviour problems and externalizing behaviour problems were assessed separately. In addition, child internalizing behaviour problem covariates (maternal relationship status when children were 16 months and number of siblings when children were 5 years old) and child externalizing behaviour problem covariates (child gender, maternal relationship status when children were 16 months, and number of siblings when children were 5 years old) were entered into the analyses. I first constructed simple mediator models. I examined the mediating influence of maternal personal variables (anxious attachment, avoidant attachment, depression, and parenting stress) and interpersonal variables (social support and maternal sensitivity) individually. This allowed me to identify significant independent mediators. I then constructed parallel multiple mediator models to examine simple indirect effects, while controlling for the impact of other simple indirect effects. Significant mediators were identified when the BC CI did not include 0. Hayes (2013) recommends reporting unstandardized coefficients.3

**Child internalizing behaviour problems – Simple mediation**

First, the total effect of maternal childhood trauma on child internalizing behaviour problems was significant (path c = 29.12, SE = 8.08, t = 3.61, p < .01). Single mediators were

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3 Standardized coefficients for all mediation models are presented in Appendix 1 and 2 for comparison purposes.
entered into simple mediation models to identify whether the association between maternal childhood trauma and child internalizing behaviour problems could be explained by an indirect effect. Results are presented in Table 9. Only maternal depression and parenting stress emerged as significant mediators. Maternal sensitivity was found to be a significant suppressor variable. These are described in turn.

Table 9.

The Indirect Effect of Maternal Childhood Trauma on Child Internalizing Behaviour Problems: Test of Simple Mediators

<table>
<thead>
<tr>
<th>Mediating Variable (M)</th>
<th>Bootstrap Point Estimate of Indirect Effect</th>
<th>Bias-Corrected Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxious Attachment</td>
<td>4.35 (3.43)</td>
<td>-.30 to 13.51</td>
</tr>
<tr>
<td>Avoidant Attachment</td>
<td>3.21 (2.77)</td>
<td>-.23 to 12.13</td>
</tr>
<tr>
<td>Maternal Depression</td>
<td>6.0 (3.91)</td>
<td>.54 to 16.95</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>6.92 (4.44)</td>
<td>.87 to 18.35</td>
</tr>
<tr>
<td>Social Support</td>
<td>3.82 (2.80)</td>
<td>-.85 to 10.36</td>
</tr>
<tr>
<td>Maternal Sensitivity</td>
<td>-6.30 (3.44)</td>
<td>-15.67 to -1.24</td>
</tr>
</tbody>
</table>

Bootstrap estimates are based on 10,000 resamples. Unstandardized coefficients and (standard errors) are reported. Significant effect is determined by a 95% confidence interval that does not include zero. *Note:* Significant mediators are shaded

Maternal childhood trauma was related to greater maternal depressive symptoms \((a = .63, SE = .29, t = 2.20, p = .03)\) and maternal depressive symptoms were related to greater child internalizing behaviour problems \((b = 9.54, SE = 2.79, t = 3.42, p = <.01)\). Maternal depression was a significant mediator \((ab = 6.00, SE = 3.91; BC CI = .54 to 16.95)\). The direct effect of maternal trauma history on child internalizing behaviour problems continued to be significant \((c' = 23.12, SE = 7.84, t = 2.95, p < .01)\). Maternal childhood trauma was related to greater parenting stress \((a = 35.48, SE = 9.68, t = 3.67, p = <.01)\) and mothers who endorsed more parenting stress reported more internalizing behaviour problems in their child \((b = .20, SE = .09, t = 2.29, p = .02)\). Maternal childhood trauma was found to be associated
with child internalizing behaviour problems, indirectly through parenting stress (path ab = 6.92, 
$SE = 4.44$; BC CI = .87 to 18.35). The direct effect of maternal trauma history on child
internalizing behaviour problems continued to be significant (path $c' = 22.21$, $SE = 8.46$, $t = 2.63$, 
$p = .01$). As for maternal sensitivity, mothers who endorsed greater childhood trauma were
observed to be more insensitive when interacting with their children (path $a = -.88$, $SE = .33$, $t = -
2.70$, $p = .01$) and greater maternal sensitivity was related to greater internalizing behaviour
problems (path $b = 7.15$, $SE = 2.49$, $t = 2.88$, $p = .01$). The confidence interval for maternal
sensitivity (path ab = -6.30, $SE = 3.44$) was entirely below 0 (BC CI = -15.67 to -1.24) and the
strength of the association between maternal trauma history and internalizing child behaviour
problems increased with the inclusion of maternal sensitivity as an intervening variable (path $c' 
= 35.42$, $SE = 8.08$, $t = 4.38$, $p < .01$). The emergence of maternal sensitivity as a suppressor
variable was an unexpected finding. In the case of suppressor effects, Thompson and Levine
(1997) advise assessing for data inadequacies. I checked statistical assumptions and determined
that the data were homoscedastic using graphical and statistical analyses\(^4\) and predictors were not
highly correlated (i.e. collinearly statistics of tolerance were above .90). Also, maternal
sensitivity scores were adequately distributed across CTQ scores, $\chi^2 (1, N = 96) = 2.07$, $p = .12$.
Graphic representations of the two simple mediator models and suppression model are depicted
in Figure 3, Figure 4, and Figure 5, respectively.

\(^4\) The Koenker test was not significant ($p = .82$) and therefore the null hypothesis was accepted (Ho: homoscedasticity).
Figure 3. A simple mediation model, examining the mediating impact of maternal depression between maternal childhood trauma and child internalizing behaviour problems.

Note: Numbers in the figure are unstandardized effects and numbers in brackets are standard errors.

*p < .05, **p < .01

Figure 4. A simple mediation model, examining the mediating impact of parenting stress between maternal childhood trauma and child internalizing behaviour problems.

Note: Numbers in the figures are unstandardized path coefficients and numbers in brackets are standard errors.

*p < .05, **p < .01
Child internalizing behaviour problems – Parallel multiple mediation

Maternal depression and parenting stress were the only mediators identified in simple mediation models when exploring what mediates the relation between maternal childhood trauma and child internalizing behaviour problems. Maternal depression and parenting stress were entered into a parallel multiple mediator model to determine if each contributed unique mediating variance to the equation. Maternal depression (path ab = 5.19, SE = 3.58; BC CI = .45 to 15.45) emerged as the only significant mediator when examined in a parallel mediator model. Parenting stress was not a significant mediator when controlling for the effects of maternal depression (path ab = 4.02, SE = 3.92; BC CI: -1.30 to 14.30). The direct effect of maternal trauma history on internalizing child behaviour problems continued to be significant (path c’ = 19.92, SE = 8.20, t = 2.43, p = .02). Figure 6 presents a graphic representation of the results of this multiple mediator model. Thirty-two percent of the variance was explained by this model.\footnote{All mediation analyses for child internalizing behaviour problems were also run on non-transformed data and results for the simple and the multiple mediation models did not differ.}
analyzed an additional model in which both the significant mediator (maternal depression) and suppressor variable (also known as an inconsistent mediator; maternal sensitivity) were included to determine the impact of the suppressor in the model and the variance explained by the model increased by 8%.

Child externalizing behaviour problems – Simple mediation

First, the total effect of maternal childhood trauma on child externalizing behaviour problems was significant (path c = 14.90, SE = 7.61, 1.96, p = .05). Single mediator models were analyzed to investigate what variables mediate the relation between maternal childhood trauma and child externalizing behaviour problems. The same maternal variables that were examined for child internalizing behaviour problems were analyzed. Results for all mediators are presented in Table 10. The variables which were found to mediate the relation between maternal maltreatment history and child externalizing behaviour problems were avoidant attachment, maternal
depression, parenting stress, and social support. These variables are discussed next.

Table 10.

<table>
<thead>
<tr>
<th>Mediating Variable (M)</th>
<th>Bootstrap Point Estimate of Indirect Effect</th>
<th>Bias-Corrected Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxious Attachment</td>
<td>6.93 (4.36)</td>
<td>-0.83 to 16.45</td>
</tr>
<tr>
<td>Avoidant Attachment</td>
<td>6.61 (3.96)</td>
<td>0.54 to 16.34</td>
</tr>
<tr>
<td>Maternal Depression</td>
<td>4.22 (3.05)</td>
<td>0.12 to 12.98</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>11.90 (4.94)</td>
<td>4.12 to 24.11</td>
</tr>
<tr>
<td>Social Support</td>
<td>6.96 (2.79)</td>
<td>2.51 to 13.77</td>
</tr>
<tr>
<td>Maternal Sensitivity</td>
<td>-2.44 (2.51)</td>
<td>-9.74 to 0.90</td>
</tr>
</tbody>
</table>

Bootstrap estimates are based on 10,000 resamples. Unstandardized coefficients and (standard errors) are reported. Significant effect is determined by a 95% confidence interval that does not include zero. Note: Significant mediators are shaded.

Mothers who experienced childhood trauma had higher avoidance scores on a measure that assessed attachment style in close relationships (path a = 0.37, SE = 0.15, t = 2.52, p = .01) and greater avoidant attachment was related to greater externalizing behaviour problems in children (path b = 17.80, SE = 5.12, t = 3.48, p < .01). Maternal maltreatment history was found to affect child externalizing behaviour problems through avoidant attachment (path ab = 6.61, SE = 3.96; BC CI = 0.54 to 16.34). The direct effect of maternal childhood trauma to child externalizing behaviour problems was significantly reduced after accounting for avoidant attachment (path c’ = 8.29, SE = 7.43, t = 1.12, p = .27). Maternal childhood trauma was related to greater maternal depressive symptoms, but the association was not significant (path a = 0.52, SE = 0.28, t = 1.85, p = .07) and mothers who reported greater depressive symptoms had children who exhibited significantly more externalizing behaviour problems (path b = 8.06, SE = 2.71, t = 2.98, p < .01). Maternal depression was found to be a significant mediator (path ab = 4.22, SE = 3.05; BC CI:
When accounting for the influence of maternal depression, the direct effect of maternal childhood trauma to child externalizing behaviour problems was not significant (path $c' = 10.68, SE = 7.44, t = 1.44, p = .15$). Greater maternal childhood trauma was related to greater parenting stress (path $a = 36.75, SE = 9.82, t = 3.74, p < .01$) and greater parenting stress was related to greater child externalizing behaviour problems (path $b = .32, SE = .07, t = 4.36, p < .01$). Maternal childhood trauma is associated with child externalizing behaviour problems indirectly through parenting stress (path $ab = 11.90, SE = 4.94; BC CI = 4.12$ to 24.11). The direct effect of maternal trauma history to child externalizing behaviour problems became non-significant when accounting for the influence of parenting stress ($c' = 3.00, SE = 7.47, t = .40, p = .69$). Mothers who experienced childhood trauma reported less social support (path $a = -1.07, SE = .37, t = -2.91, p < .01$) and greater social support was related to fewer child externalizing behaviour problems (path $b = -6.51, SE = 2.08, t = -3.13, p < .01$). Social support was found to be a significant mediator (ab = $6.96, SE = 2.79; BC CI = 2.51$ to 13.77). The direct effect of maternal trauma history to internalizing child behaviour problems, when accounting for social support, was not significant (path $c' = 7.94, SE = 7.60, t = 1.05, p = .30$). Simple mediation models for avoidant attachment maternal depression, parenting stress, and social support are represented in Figures 7, 8, 9, and 10.
Figure 7. A simple mediation model, examining the mediating impact of maternal avoidance between maternal childhood trauma and child externalizing behaviour problems.

Note: Numbers in the figure are unstandardized coefficients and numbers in brackets are standard errors.

\*p < .05, \**p < .01

Figure 8. A simple mediation model, examining the mediating impact of maternal depressive symptoms between maternal childhood trauma and child externalizing behaviour problems.

Note: Numbers in the figure are unstandardized coefficients and numbers in brackets are standard errors.

\*p < .05, \**p < .01
Child externalizing behaviour problems – Parallel multiple mediation

A parallel multiple mediation model was conducted using all significant mediators derived from simple mediation models: maternal avoidance, maternal depression, parenting stress and social support. Using 95% BC CI based on 10, 000 bootstrapped samples, parenting
stress emerged as the only significant mediator, when controlling for all other simple mediators. Indirect effects, standard errors, and BC CIs for all mediators are presented in Table 11. When accounting for paths a and b, the direct association between maternal trauma history and externalizing behaviour problems was non-significant when all four mediators were examined in parallel ($c' = -.55$, $SE = 7.39$, $t = -.07$, $p = .94$). This model was found to explain 47% of the variance in predicting child externalizing behaviour problems. Figure 11 presents a graphic representation of the results of this multiple mediator model.

Table 11.

<table>
<thead>
<tr>
<th>Mediating Variable (M)</th>
<th>Bootstrap Point Estimate of Indirect Effect</th>
<th>Bias-Corrected Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidant Attachment</td>
<td>2.52 (2.55)</td>
<td>-.80 to 10.47</td>
</tr>
<tr>
<td>Maternal Depression</td>
<td>2.16 (2.30)</td>
<td>-.48 to 9.39</td>
</tr>
<tr>
<td>Parenting Stress</td>
<td>7.37 (4.05)</td>
<td>1.59 to 18.67</td>
</tr>
<tr>
<td>Social Support</td>
<td>3.40 (2.23)</td>
<td>-.02 to 9.08</td>
</tr>
</tbody>
</table>

Bootstrap estimates are based on 10,000 resamples. Unstandardized coefficients and (standard errors) are reported. Significant effect is determined by a 95% confidence interval that does not include zero. 

Note: Significant mediators are shaded.

6 All mediation analyses for child externalizing behaviour problems were also run on non-transformed data and results for simple mediators were different. Avoidant attachment and social support were not significant mediators. The parallel mediation model was not different, with parenting stress as the only significant mediator.
**Moderation Analyses**

All maternal variables (anxious attachment, avoidant attachment, maternal depressive symptoms, social support, maternal sensitivity, and parenting stress) were assessed individually to determine if they moderated the relation between maternal childhood trauma and child behaviour problems (internalizing and externalizing behaviour problems). These analyses revealed no significant moderators (See Appendix 3 and Appendix 4).

**Post Hoc Analyses – Number of Siblings**

The study child’s number of siblings at age 5 was negatively associated with both internalizing and externalizing behaviour problems. This finding was not expected and runs counter to what has been theorized and found in the scant literature that has examined this association. I performed post hoc analyses to understand this finding within the present study sample. I conducted one-way ANOVAs to determine whether any of the maternal personal or interpersonal variables in the present study differed by number of children in the home. Mothers
with children at age 5 who had no siblings scored significantly higher on a measure of depression when children were 16 months (Mean = 11.29, SD = 9.23) than mothers with children who had one sibling (Mean = 6.43, SD = 4.60) or two or more siblings (Mean = 4.88, SD = 4.60), \( F(2, 93) = 6.66, p < .01 \). Maternal depression scores did not differ significantly between the last two groups: 1 sibling and 2 or more siblings. Additionally, parenting stress assessed when children were 16 months significantly differed with respect to number of child’s siblings at age 5, \( F(2, 93) = 5.33, p < .01 \). All groups (0 siblings, 1 sibling, 2 or more siblings) scored significantly differently from each other, with fewer child siblings related to greater parenting stress: Mean = 71.95, SD = 17.61; Mean = 63.92, SD = 11.40; Mean = 57.00, SD = 16.43, respectively. Of note, is that a larger proportion of mothers not in a relationship only had one child (67%) versus women in a relationship (18%). However, this is based on a very small sample of women not in a relationship (\( n = 6 \)). A Chi-square statistic cannot be generated to examine whether there is a difference between the two relationship groups (in a relationship and not in a relationship) and number of children (1 child and 2 or more), as the two “not in a relationship” cells have counts less than 5. However, Fisher’s Exact Test demonstrated that mothers in a relationship did have more children than mothers not in a relationship, and the difference was significant (\( p < .05 \)).
Chapter 4: Discussion

Researchers have uncovered much support for the claim that childhood maltreatment is associated with risk for maladjustment in childhood and adulthood (Briere & Jordan, 2009; Briere & Runtz, 1990; Cicchetti & Toth, 2005; Herrenkohl, Hong, Klika, Herrenkohl, & Russo, 2013). Less understood is how the impact of childhood maltreatment exerts its influence on the next generation. This study examined what maternal constructs mediate the relation between maternal childhood maltreatment history and child behaviour problems. This is the first study to examine these specific maternal personal (adult attachment, maternal depressive symptoms, and parenting stress) and interpersonal (social support and maternal sensitivity) variables together. I will first review main findings: simple and parallel mediator models that emerged for both internalizing and externalizing child behaviour problems. Maternal variables were also examined to determine if they moderated the impact of maltreatment history on child behavior, and no moderators were identified, thereby supporting mediation findings. I will also examine methodological considerations related to contributions to the research literature and important limitations to consider. Study implications are also reviewed.

Main Findings: Simple Mediation and Parallel Mediation

The main objective of this study was to uncover mechanisms responsible for the relation between maternal childhood trauma and child behaviour problems. Maternal psychopathology, parenting, and social support have already been identified as mediators in the research literature (Koverola et al., 2005; Min et al., 2012; Miranda et al., 2011; Morrel et al., 2003; Roberts et al., 2004). I examined these maternal variables, along with additional maternal constructs: adult attachment and parenting stress. I will first review both simple and parallel mediator models for internalizing and externalizing behaviour problems. Maternal and child demographic variables that were found to be related to child behaviour problems in this study are also reviewed.
**Child internalizing behaviour problems – Simple mediator models.** Mothers in the present study who reported greater childhood trauma were found to present with greater challenges in their personal and interpersonal functioning, and also reported greater child internalizing behaviour problems. In simple mediation models, maternal depressive symptoms and parenting stress assessed when children were 15 months old were found to individually mediate the relation between maternal childhood trauma history and child internalizing behaviour problems when children were 5 years old. Maternal sensitivity was found to be a significant suppressor variable.

The findings support my hypothesis that maternal depressive symptoms partially explain the relation between maternal maltreatment history and child internalizing behaviour problems. An abundance of literature has found that childhood trauma is a significant risk factor for depressive symptoms in adulthood (Powers et al., 2009; Springer et al., 2007) and the association between maternal depressive symptoms and child behaviour problems has also been extensively supported in the literature (Goodman, 2007; Goodman et al., 2011; Malcarne et al., 2000). In addition, researchers have found support for the mediating influence of maternal depressive symptoms between maternal victimization and mother-reported child internalizing problems in a high-risk sample (Koverola et al., 2005). These researchers have suggested that mothers who experience psychological distress themselves may be more sensitive to their child’s distress. I hypothesized further that the mediating influence of maternal depressive symptoms suggests that children are directly impacted by their parent’s affect. Using the still-face paradigm (SFP), Tronick, Als, Adamsoon, Wise, and Brazelton (1978) showed that a young infant’s negative affect increased when exposed to their mother’s negative affect. Researchers have suggested that chronic exposure to maternal negative affect can be detrimental to a young child’s emotional development (Cohn & Tronick, 1983). In their review, Downey and Coyne (1990) noted that
depressed mothers display more negative parenting behaviours, such as flat affect and fewer vocalizations. Similarly, in their meta-analysis of 46 studies, Lovejoy, Graczyk, O’Hare, and Neuman (2000) found that maternal depression was associated with irritability, hostility, and disengagement from the child. Further, meta-analytic findings showed that parental negative affect is associated with harsh negative parenting in low risk samples (Rueger, Katz, Risser, & Lovejoy, 2011).

The mediating influence of parenting stress between maternal childhood trauma and internalizing behaviour problems has not been previously tested. However, parenting stress has been found to be higher in mothers with childhood trauma histories (Bailey et al., 2012; Harmer et al., 1999; Pereira et al., 2012) and to be associated with child behaviour problems (Anhalt et al., 2007; Barry et al., 2005; Crnic & Greenberg, 1990; Morgan, Robinson, & Alridge, 2002; Rodriguez, 2011). As predicted, parenting stress in the present study partially mediated the relation between maternal childhood maltreatment history and child internalizing behaviour problems. Mothers with a maltreatment history may be more vulnerable to the demands inherent in parenting a young child. A sample of mothers with an early trauma history reported that their child was a significant source of stress (Schechter et al., 2004).

Childhood maltreatment has been linked with subsequent parenting difficulties (Banyard, 1997; Egeland et al., 2002; Lang et al., 2010; Morrel et al., 2003). In addition, researchers note the important influence of parenting on child outcomes (Bayer et al., 2006). A main hypothesis of this thesis was that maternal sensitivity mediates the relation between maternal childhood trauma and child internalizing behaviour problems. Researchers have shown that disruptive parenting is transmitted across generations (Barrett & Fleming, 2011) and negative parenting is associated with child behaviour problems (Anthony et al., 2005). In addition, maternal sensitive responding is related to attachment security (Ainsworth et al., 1978) and insecure attachments
are associated with child internalizing symptoms (Groh, Roisman, van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012). In the present study, maternal sensitivity was found to work as a suppressor variable; its introduction augmenting the relation between maternal childhood trauma and childhood internalizing behaviour problems. Possibly, this unexpected finding reflects more sensitive mothers’ ability to better perceive the internal emotional states of their children, whose behaviour represents normal variations of internalizing behaviour. Before a mother can provide her child with a sensitive response, she first needs to attend to and notice her child’s behavioural and emotional presentation. In the present sample, perhaps very sensitive mothers were better able to identify very subtle social-emotional difficulties displayed by their children. Researchers have found that mothers who present as secure are more attuned to their child’s emotions during times of distress (Milligan, Atkinson, Trehub, Benoit & Poulton, 2003).

Also hypothesized, and an important consideration for the study findings, is that while the MBQS used for the study may identify sensitive and warm parenting, it does not distinguish between two parenting styles that are characterized by responsive parenting, but differ on parental demandingness and child outcomes: authoritative and permissive parenting (A. Gonzalez, personal communication, June 9, 2014). Baumrind (1966) conceptualized three different parenting styles: Authoritative, authoritarian, and permissive. Baumrind (1966) explained that these parenting styles can be categorized using two dimensions of parenting: 1) acceptance and responsiveness and 2) demandingness and control. Authoritarian parents are highly demanding, but not responsive; permissive parents are highly responsive, but not demanding; and authoritative parents are both responsive and demanding (Baumrind, 1966). Authoritative parents value their children’s autonomy, but also have expectations for their child’s behaviour that is not negotiated with the child. In contrast, a permissive parent makes few demands regarding their child’s responsibilities and behaviour and allows their child to make
his/her own decisions (Baumrind, 1966). Conceivably, authoritative and permissive parents’ responsive parenting style would both be captured as sensitive on the MBQS, but their ability to set expectations and limits on their child’s behaviour is not taken into consideration. According to researchers, authoritative parenting is related to positive child outcomes and permissive parenting has been found to be related to negative child outcomes, including child internalizing behaviour problems (Williams et al., 2009). Baumrind, Larzelere, and Owens (2010) studied 87 families over a decade and found that observational and interview measures of authoritarian and permissive parenting in toddlerhood were related to more negative adolescent outcomes, as opposed to authoritative parenting in toddlerhood, which was related to more positive adolescent outcomes. The researchers hypothesized that permissive parents do not allow for children to learn adequate coping strategies, provide sufficient structure, or instill shared responsibility (Baumrind et al., 2010) In addition, Baumrind and colleagues (2010) further suggested that responsive parenting by permissive parents is “indiscriminate (not logically connected to the child’s behavior or contingent on its consequences)...it is likely to be experienced by the child as unrealistic and overinvolved, rather than as supportive and caring” (p. 161). Also relevant to this proposed explanation of the results, researchers have reported that mother’s with a sexual abuse history are more likely to present with a permissive parenting style (DiLillo & Damashek, 2003; Rusico, 2001). Future studies, examining the mediating influence of parenting between maternal childhood trauma and child behaviour problems, should utilize a parenting instrument that takes both parents’ level of responsiveness and demandingness into account. Further, different aspects of childhood maltreatment (e.g., subtype, perpetrator, duration) should be analyzed to determine if they are associated with parenting styles that put children in the next generation at-risk for child behaviour problems (i.e., permissive parenting).
Child internalizing behaviour problems - Parallel mediator model. When maternal depression and parenting stress were examined in parallel, only maternal depression emerged as a significant mediator. I can only speculate on why parenting stress was a significant mediator in a simple mediation model, but not in the parallel mediation model; it is not possible to answer this question conclusively. According to Hayes (2013), including multiple mediators helps to discern whether findings are causal associations versus spurious ones, or an epiphenomenon. In addition, there is potential for a single mediator to become non-significant in a parallel model due to the shared variance between variables. The parenting stress measure used assessed for depressive symptoms (Abidin, 1995); therefore, parenting stress may have been excluded from the equation due to its failure to explain unique variance. However, given the shared variance between parenting stress and maternal depressive symptoms, it may be possible that in other instances parenting stress could emerge as significant mediator and not maternal depressive symptoms. More research is needed to better understand the role of maternal depression and parenting stress in explaining the relation between maternal childhood trauma and child internalizing behaviour problems.

Child externalizing behaviour problems – Simple mediator models. Mothers in the present study who reported greater childhood maltreatment also reported greater externalizing behaviour problems in their children. In separate simple mediation models, maternal avoidance, maternal depression, parenting stress, and social support were all found to mediate the relation between maternal maltreatment history and child externalizing behaviour problems.

The mediating role of maternal adult attachment to explain the relation between maternal childhood maltreatment and child externalizing behaviour problems has not been previously examined. However, adult insecure attachment appears to be a worthwhile explanatory variable, given its association with childhood trauma (Caldwell, 2011; Cort et al., 2011) and child
behaviour problems (Cowan et al., 1996; Madigan et al., 2007; Marchand et al., 2004; Zajac & Kobak, 2009). Also important is the high concordance between parent and child attachment patterns (DeKlyen, 1996; Roskam, Meunier, & Stievenart, 2011; van IJzendoorn, 1995) and support for the association between infant avoidant attachment and child externalizing behaviour problems (Goldberg, 2000; Groh et al., 2012). Of important note, adult attachment in the literature has been measured using two different methods, which have typically resulted in different outcomes: 1) Assessment of adult unconscious thoughts and feeling regarding childhood parent-child relationship experiences, which is largely related to offspring functioning 2) Self-report of adult conscious thoughts and feelings regarding present relationships, which is related to functioning in romantic relationships. However, researchers have argued that adult attachment assessed through self-report is also associated with the parent-child relationship (Shaver & Mikulincer, 2002). In this study, maternal feelings regarding close adult relationships were assessed to determine adult attachment; however, it is postulated that adult attachment behaviours related to proximity and protection in close relationships may be rooted in childhood attachment relationships (Bowlby, 1988). The study finding suggests that mothers’ perceptions of close relationships (and possibly representations of early relationships) may be transmitted to their young children and influence their behavioural adjustment. Groh and colleagues (2012) hypothesized that the emotion regulation strategies of insecure children and their inability to approach their attachment figure for support puts them at risk for externalizing symptoms. Conversely, securely attached infants who approach their caregiver and are easily soothed have developed strategies that help them regulate their emotions and behaviours. Perhaps, children of parents who present with avoidant attachment behaviours learn to employ less optimal strategies for coping with difficult feeling and situations.
In the present study, maternal depression was found to be a significant mediator between maternal childhood trauma and child externalizing behaviour problems. Some researchers have found support for this finding with high-risk samples (Miranda et al., 2013), while other researchers have not (Koverola et al., 2005). It is unclear why Koverola and colleagues (2005) did not find support for maternal depression as a mediator between maternal childhood trauma and child externalizing behaviour problems. Other researchers have found support for parental psychopathology as a mediator between maternal childhood maltreatment history and child behaviour problems (internalizing and externalizing not assessed separately; Collishaw et al., 2007; Min et al., 2012). It has been proposed that the relation between children’s externalizing behaviour problems and maternal depression may be related to interactional skill deficits that are transferred from mothers to their children (Miranda et al., 2013). For example, mothers endorsing depressive symptoms presented with less positive behaviour and more negative behaviour during a problem-solving task with their children (Ewell Foster, Garber, & Durlak, 2008). Ewell Foster and colleagues (2008) suggested that depressed mothers’ inability to help their children problem-solve during the structured task may generalize to mothers’ inability to help their children problem-solve or model problem-solving strategies in everyday situations.

Another significant simple mediator found when examining the relation between maternal maltreatment history and child externalizing behaviour problems was parenting stress. While parenting stress has been found to be predictive of child externalizing behaviour problems (Anthony et al., 2005; Williford, Calkins, & Keane, 2007), this is the first study to examine parenting stress as a mediator between maternal maltreatment history and child externalizing behaviour problems. As already reviewed, parenting stress has been found to be a risk factor for parents who have experienced childhood maltreatment. This may be due to the detrimental impact that childhood trauma has on the biological stress system (Danese & McEwen, 2012;
Heim & Nemeroff, 2001; Heim, Meinlschmidt, & Nemeroff, 2003; Tarullo & Gunnar, 2006). This line of research suggests that mothers with a maltreatment history may be more vulnerable to feeling stressed with parenting demands.

In the present study, social support was also found to mediate the relation between childhood maltreatment and child externalizing behaviour problems in a simple mediator model. The mediating influence of social support between maternal childhood maltreatment history and child behaviour problems has been found in high-risk samples (Koverola et al., 2005; Min et al., 2012). It has been suggested that having a trauma history makes it more difficult to form trusting close relationships (Bender et al., 2003; Powers et al., 2009). Closely related, child maltreatment has been found to be associated with impaired social competence (Shields, Cicchetti, & Ryan, 1994). Social competence is a critical component of social support, in that a person’s ability to interact appropriately with their environment is needed to prevent social isolation (Langford et al., 1997). Difficulties with forming social relationships and social competence may transfer to children, as researchers have reported on the significant association between a mother’s social skills and her children’s social competence (Prinstein & La Greca, 1999). It may be that the impact of maternal social supports on child behaviour works through modeling. Even in very young children, researchers have demonstrated that children who observe pro-social behaviour are able to then apply these behaviours in other social situations (Williamson, Donohue, & Tully, 2013).

Maternal sensitivity was not found to mediate the relation between maternal maltreatment history and child externalizing behaviour problems. This was not expected, given that associations have been found between maternal childhood maltreatment history and subsequent parenting difficulties (Banyard, 1997; Egeland et al., 2002; Morrel et al., 2003). In addition, much research has supported a link between difficult parenting and child externalizing behaviour
problems (Benson et al., 2008; Turner & Muller, 2004). Researchers have also found that parental negativity and maternal aggression towards the child mediates the relation between childhood maltreatment and child behaviour problems (Morrel et al., 2003; Roberts et al., 2004). It may be that the measure of parenting used in the present study did not capture behaviours that have been found to be typically associated with child externalizing behaviour problems, such as physical punishment and harsh discipline (Deater-Deckard, Dodge, Bates, & Pettit, 1996; Gershoff, 2002; Larzelere, 2000; Stormshak, Bierman, McMahon, & Lengua, 2000). In addition, genetic influences were not examined, but are important in understanding child behaviour problems (Schmidt, Fox, & Hamer, 2007; Schmidt, Fox, Rubin, Hu, & Hamer, 2002).

Bakermans-Kranenburg and van IJzendoorn (2006) found that maternal insensitivity was related to greater externalizing behaviour problems, but only in children with a gene related to child maladjustment, the 7-repeat DRD4. Other researchers have reported on significant gene-environment interactions when examining the impact of parenting on child behaviour (Boutwell, Beaver, Barnes, & Vaske, 2012; DiLalla, Elam, & Smolen, 2009; Smith et al., 2012; Sullivan, Neale, & Kendler, 2000; Thompson, Hammen, Starr, & Najman, 2014). This research literature provides ample evidence regarding the need to examine the moderating impact of genes implicated in the vulnerability of child maladjustment.

Another variable not studied in this dissertation, but appears to be of key importance in the relation between parenting and child problem behaviours is child temperament. Researchers have found evidence that temperament and parenting practices interact to predict child externalizing behaviour problems (Prinzie et al., 2003). In a nonclinical sample of children assessed from 10 to 37 months, those children who were found to present with a difficult temperament were found to be more vulnerable to their parents’ negative parenting and more likely to be identified as presenting with problem behaviours (Belsky, Hsieh, & Crnic, 1998). A
meta-analysis examining 56 twin and adoption studies concluded that children’s characteristics play a role in determining parent behaviour (Klahr and Burt, 2014). Of important note, researchers have also reported that “child effects” (e.g., temperament, personality) identified as predicting child behaviour problems are mediated by parenting (Paulussen-Hoogeboom, Stams, Hermanns, Peetsma, & van den Wittenboer, 2008; Prinzie, van der Sluis, de Haan, & Dekovic, 2010). Other researchers have reported on the moderating influence of parenting on child effects (Bates, Pettit, Dodge, & Ridge, 1998; Stoolmiller, 2001).

**Child externalizing behaviour problems – Parallel mediator model.** When simple mediators were examined in parallel, only parenting stress emerged as a significant mediator. This could be due to the overlapping variance between constructs measured. In particular, the parenting stress construct was assessed with a measure that evaluated many areas of parent functioning, such as, presence of depressive symptoms and social support (Abidin, 1995). Researchers have suggested that social support and parenting stress are closely connected, as social support acts as a buffer to protect against parenting stress (Belsky, 1984; Mulsow et al., 2002; Ostberg & Hagekull, 2000). In addition, Ostberg and Hagekull (2013) assessed parenting stress and social support to predict child outcomes, and parenting stress accounted for most of the variance.

Of particular importance in the present study, maternal report of child behaviour was a significant outcome variable in the mediator models and observed child behaviour was not. While researchers have predominately used parent report to assess child behaviour, there has been some criticism regarding this approach. The validity of parent reports of child behaviour has been questioned (Seifer, 2002); with claims that parent reports may be more a reflection of maternal characteristics than actual child behaviour (Vaughn, Taraldson, Crichton, & Egeland, 1981). However, it is also important to consider that the observational measure of child
behaviour used in the present study may have not been sensitive enough to pick up child
behaviours of interest, which may have been better achieved though the parent-report. The 10-
minute observation used to assess child behaviour in the present study may have been too short
in length to capture the intended problem behaviours. As suggested by Achenbach and Edelbrock
(1981), while parents may present with biases in reporting child behaviour, they have more
opportunities to observe a variety of child behaviours. Valid and reliable measurement of
observed child behaviour are influenced by many factors, such as location of observation, tasks
administered, observer and tape-recording effects, duration and frequency of the observation
(Gardner, 2000). The task presented to the mother and child in the present study may have been
too structured, causing an artificial environment which deterred the dyad from acting naturally,
and therefore not capturing reliable behaviours. Parents have also been found to inhibit their
behaviours while under structured observations (Russell, Russell, & Midwinter, 1992). The
present study findings need to be replicated with studies that utilize a multi-method and multi-
informant approach.

Taken together, study results provide further support that women who endorse a
childhood maltreatment history also present with more difficulties in their personal and
interpersonal functioning in adulthood. Moreover, mothers with a maltreatment history are more
likely to identify greater child behaviour problems in their offspring, and this relation is mediated
by maternal personal and interpersonal functioning. Identifying maternal depressive symptoms
and parenting stress in mothers with a maltreatment history may be essential for understanding
child behaviour problems in offspring. These study findings suggest essential targets for
interventions when working with mothers who report behaviour problems in their children.
Further, implications of these research findings will be discussed, after an examination of
covariates, research contributions, and study limitations.
Covariates: Marital Status, Gender, Siblings

Maternal marital status was a significant covariate for internalizing and externalizing behaviour problems at age 5. That is, mothers not in a relationship when the study child was 16 months were more likely to rate their child as exhibiting more child behaviour problems at 5 years old. This is in line with other researchers’ findings regarding a significant association between single parenthood and child behaviour problems (Fox et al., 1995; Javo, Ronning, Heyerdahl, & Rudmin, 2004; Mesman & Koot, 2000; Rydell, 2010). Mothers also rated male children in the study as exhibiting greater child externalizing behaviour problems. This finding was expected, given the amount of literature that has reported the same result (Card et al., 2008; Rubin et al., 2003).

An unanticipated finding in this thesis was that children with fewer siblings at 5 years old exhibited more child internalizing and externalizing behaviour problems. Researchers have postulated that more people in a household is related to greater risk for children in the household, due to children having fewer resources available to them. For example, having more siblings in a household has been found to be related to more parenting and economic stress (Lavee, Sharlin, & Katz, 1996; Ostberg & Hagekull, 2000), less social support, fewer supportive contacts with child health services (Lagerberg & Magnusson, 2013), and greater child externalizing behaviour problems (Deater-Deckard et al., 1998). However, in contrast, in their large population-based study, Lagerberg and Magnusson (2013) reported no differences between mothers with one child and those with multiple children on maternal reports of infant fussiness, irritability, and temper. Post hoc analyses regarding the present study finding that having fewer siblings is related to greater child behaviour problems, revealed that mothers with only one child were more likely to be a single parent. Based on these analyses, it may still be appropriate to suggest that the current study findings are related to the risk that accumulates when a child is being parented in a house
with fewer resources. In this case, this is a function of there being only one parent, as opposed to two, for the child to accumulate resources. In addition, and perhaps more critical to understanding this finding, post hoc analyses revealed that mothers in the sample who were only parenting the study child reported greater depressive symptoms and parenting stress. Taken together, the possible explanation for the relation between fewer siblings and greater child behaviour problems in the present study may be a result of these mothers having more personal challenges, which impacted their children’s environment and functioning. The presence of multiple risks in early childhood predicts later child behaviour problems (Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Evans, & Whipple, 2013).

**Methodological Considerations**

*Contributions to the research literature.* In addition to constructing simple and parallel mediator models to explain the transmission between maternal maltreatment history and child behaviour problems, other contributions to the research literature were achieved. These included utilization of a low-risk sample and an observation-based measure to assess parenting.

Mothers in the present study are representative of a high functioning, low-risk sample. A majority of mothers had a post-secondary education (95.9%) and were currently in a committed relationship (90.8%). The current study supports previous research findings that maltreated adults can be identified in low-risk community samples (MacMillan et al., 2013). However, the percentage of women reporting maltreatment in the present study was much less than what has been reported in large population-based studies (MacMillan et al., 2013; Kendler et al., 2000; Scher et al., 2004), but rates were similar to those reported in another community sample of Ontario mothers (Gonzalez et al., 2009). The majority of investigations exploring the mechanisms responsible for the relation between maternal childhood maltreatment history and child behaviour problems have been with low-income and high-risk samples (Koverola et al.,
2005; Min et al., 2012; Miranda et al., 2013; Morrel et al., 2003; Thompson, 2007). Only three population-based studies have examined these associations (Collishaw et al., 2007; Myhre et al., 2013; Rijlaarsdam et al., 2014; Roberts et al., 2004). The present study results have extended findings in the research literature by demonstrating that the mechanisms responsible for the transmission between maternal maltreatment history and child behaviour problems in a low-risk sample are similar to those found in high-risk samples.

The use of an observation-based measure of parenting is also an important addition to the research literature. Much of the research regarding parenting behaviours has relied on self-reports of parenting, which present with validity issues (Bennett et al., 2006; Lanyon, Dannenbaum, & Brown, 1991). Further, researchers have reported that the relation between parenting and child functioning produces significantly stronger effect sizes when parenting is assessed using observational measures over questionnaires (McLeod, Wood, & Weisz, 2007; Rothbaum & Weisz, 1994). In my review of the literature, I found that very few studies have utilized parent-child observations when examining mechanisms related to the transmission of maternal maltreatment history and child behaviour problems (Morrel et al., 2003), and none in combination with a low-risk sample. To avoid measurement issues such as shared method variance and socially desirable responding, an observation-based measure of maternal sensitivity was utilized. The observational parenting measure was not a significant mediator as anticipated, but a suppressor. However, suppressor variables are also important to include when examining relations between variables, as suppressor variables remove criterion irrelevant variance from the independent variable and, as a result, strengthen the direct association between an independent and dependent variable (Cheung & Lau, 2008). Identifying maternal sensitivity as a suppressor increased the predictive power of the model by 8%. As this finding was not expected, more research will need to be done to replicate this finding and understand what irrelevant variance
maternal sensitivity removes from maternal childhood trauma. The information collected in this study is not sufficient to answer this question. Future study designs should collect more information on childhood maltreatment (e.g., perpetrator, onset, duration) and parenting styles.

**Study limitations.** There are limitations to the study that need to be considered when interpreting results, related to shared method variance, sample size, generalizability of findings, issues of causality, use of single imputation, measurement of childhood trauma, genetic effects, and father’s role in predicting child outcomes. These are discussed in turn.

Given that the main findings of the study are all based on maternal self-report, validity of study findings need to be addressed. That is, significant study relations may be inflated due to shared biases, resulting from maternal self-report. Having mothers report on maternal characteristics and child behaviour introduces the possibility of error due to shared method variance. That is, parents’ perceptions of child behaviour may not be representative of their actual child’s behaviour, but more reflective of maternal functioning (i.e., depressive symptoms and parenting stress). Of important note, parents’ ratings of their child’s behaviour were not significantly correlated with the observed child behaviour measure used.

Another shortcoming of the study was related to the small sample size. Small sample sizes limit study findings because of the potential for Type II errors. That is, small sample sizes increase the probability of rejecting a true finding as a result of reduced statistical power. It would be advantageous for study findings to be replicated with a larger sample. Also, the present study findings were based on a low-risk sample, and therefore, findings may not be generalizable to high-risk samples. However, there were parallels found between the present study and those studies utilizing high-risk samples in regards to the mediating influence of maternal depressive symptoms and social support between maltreatment history and child behaviour problems. It would be advantageous for researchers in the future to examine not yet tested mediators in a
high-risk sample that were found to be significant in the present study (i.e., adult avoidant attachment and parenting stress).

To determine causality, experimental designs which randomly assign subjects to conditions are ideal; however, this is not possible when examining a maltreatment sample. Longitudinal designs are recommended when correlational data are used (Jenkins, 2008). In the present study, maternal variables, including retrospective reports of maternal childhood maltreatment, were collected when infants were 15 months old. Child variables were assessed when children were approximately age 5. Even with temporal sequencing (e.g., childhood maltreatment history precedes maternal adult depression) and using a longitudinal design (e.g., maternal adult depression was assessed before child behaviour), causation cannot be assumed. The mediation models presented in the study suggest that maternal maltreatment history leads to maternal personal and interpersonal dysfunction, which is responsible for the transfer of maternal maltreatment history to child behaviour problems. However, bidirectional relations may exist, which have been reported by researchers examining the bidirectional influences of child temperament and maternal behaviour (Lengua & Kovacs, 2005; Maccoby, Snow, & Jacklin, 1984). Using a cross-lagged longitudinal study design to study reciprocal effects between two variables over time would aid in determining which variable is a stronger predictor of the other (Jenkins, 2008). For example, in the future, researchers should consider following mothers prenatally and assessing maternal and child variables at several time points to assess for bidirectional mother-child effects.

A single imputation technique was used to replace missing data. The Expectation-Maximization (EM) technique that was used has been found to produce estimates closer to the original data than other single imputation methods; however, the EM method can underestimate range and standard deviation of original scores (Musil, Warner, Yobas, & Jones, 2002). As a
result, statistical power may be inaccurately increased. Acock (2005) suggests using multiple imputation which produces unbiased standard errors. The mediation macros used for the study’s analyses were not compatible with multiple imputation software and, therefore, could not be used. However, data analyses were run on non-imputed data and results were similar.

The childhood trauma measure used in this study (CTQ-SF) has its strengths, but it also presents with limitations. While the CTQ-SF generates a composite maltreatment score derived from the assessment of five maltreatment subtypes (emotional, physical and sexual abuse; and emotional and physical neglect), it does not require the respondent to disclose perpetrator, duration, or onset of maltreatment. These aspects of maltreatment have been found to be associated with child and adult negative outcomes (English, Graham, Litrownik, Everson, & Bangdiwala, 2005; Howells & Rosenbaum, 2008; Kaplow & Widom, 2007; Linning & Kearney, 2004). The CTQ also does not assess for the experience of witnessing violence in childhood, which has also been found to be significantly related to negative child outcomes (DeJonghe, von Eye, Bogat, & Levendosky, 2011; Jouriles, Norwood, McDonald, Vincent, & Mahoney, 1996; Kilpatrick & Williams, 1997). Future studies should attempt to understand how the severity of maltreatment related to the aforementioned aspects of maltreatment uniquely influences adult personal and interpersonal functioning and transmission of risk to offspring.

In addition, the CTQ-SF collects retrospective childhood trauma reports. Researchers have questioned the reliability and validity of adult reports of child maltreatment, with evidence that some individuals with documented cases of maltreatment do not report such experiences as adults (Widom & Morris, 1997; Widom et al., 2004; Williams, 1994). Researchers have also cautioned that there is potential for recall bias, in that those individuals who present with greater current undesirable life circumstances or negative mood may recall past experiences as being more negative (Alloy et al., 2006; Widom et al., 2004). White, Widom, and Chen (2007)
followed a large sample prospectively and assessed them 5 times between the ages of 12 and 30, and those adults who presented with more adversity in adulthood (e.g., depressed mood, drug dependence) showed less agreement between their child and adult reports of physical and sexual abuse. However, in a large ($N = 1413$) nationally representative sample, the strength of the association between participant psychopathology and maltreatment history did not differ between individuals identified through retrospective reporting or a national child protection database (Scott, McLaughlin, Smith, & Ellis, 2014). Even with shortcomings related to retrospective reports, Kendall-Tackett & Becker-Blease (2004) argue that maltreatment identified through retrospective reports represent an important contribution to the research literature, as they capture maltreated cases that may have been missed by child services. Individuals who do not come to the attention of child services may present with a chronic maltreatment history, due to no intervention or treatment. Further, it has been suggested that false positive retrospective reports of childhood maltreatment do not frequently occur (Hardt & Rutter, 2004).

It should also be noted that while this study examined environmental factors, it did not take genetic factors into account. Without differentiating between environmental and genetic effects, it is not possible to discern how much of the relation between maternal childhood maltreatment and child behaviour problems is environmentally mediated and how much is accounted for by genetics (Jenkins, 2008). An examination of gene-environment interactions is important when examining stress vulnerability and developmental psychopathology (Rutter, 2010). Future researchers examining the relation between maternal childhood trauma and child behaviour problems should employ study designs that allow for the examination of gene-environment interactions.

In addition, this study is culpable of the same oversight as many studies before it: the exclusion of fathers. This would have been a worthwhile addition to the present study,
considering approximately 91% of the families that participated at follow-up were made up of
two-parent families. The impact of fathering on child outcomes has been understudied, especially
in comparison to studies that have examined mothers’ impact on children’s functioning.
Researchers have demonstrated that fathers do influence child outcomes and development
(Easterbrooks & Goldberg, 1984; Trautmann-Villalba, Gschwendt, Schmidt, & Laucht, 2006). In
particular, paternal psychopathology has been found to be positively associated with negative
child outcomes (Jacob & Johnson, 1997). In addition, paternal harsh discipline has been found to
be related to child internalizing and externalizing behaviour problems (McKee et al., 2007). The
association between paternal functioning and child outcomes may be stronger for males
(Ramchandani et al., 2013), which may be due to children being more strongly influenced by
models that are similar to them (Connell & Goodman, 2002). Also important to examine is the
moderating impact of maternal parenting on paternal functioning and vice versa. Researchers
have reported that parental warmth can moderate the negative impact of difficult parenting
within and across parents (McKee et al., 2007). Given this research, it would be worthwhile to
understand the moderating impact of paternal interpersonal and personal functioning on the
relation between maternal childhood trauma and child behaviour problems.

Research on fathers is also extremely limited with respect to studies examining the
impact of paternal childhood maltreatment history on subsequent parenting and offspring
outcomes. Given that researchers have found significant associations between childhood
maltreatment and subsequent parenting with mothers, fathers would most certainly be vulnerable
to similar personal and interpersonal risk that, in turn, put their offspring at risk for
maladjustment. A very scant literature has researched the intergenerational transmission of
parenting with fathers. In one study, father’s AAI interviews were found to be associated with
their young child’s social and emotional development (Cowan et al., 1996). In their prospective
longitudinal study that included fathers, adults examined from adolescence to adulthood were found to present with constructive parenting in adulthood if they received the same in adolescence (Chen, Liu, & Kaplan, 2008). Further, researchers have reported on the association between fathers being maltreated in childhood and risk for maltreating their own children (Fundudis, Kaplan, & Dickinson, 2003). The research literature would benefit from more studies that explore the relation between paternal childhood maltreatment history and child outcomes, and mediators that explain this relation.

**Future Implications**

Mediation models for internalizing and externalizing behaviour problems constructed in this thesis fit well with research that has demonstrated that child and adolescent problem behaviours can be effectively treated with an intervention that targets many different levels of maternal functioning. For example, multisystemic therapy (MST) acknowledges that families are part of many systems, which may be contributing to the development and maintenance of problem behaviour (Brunk, Henggeler, & Whelan, 1987). A main goal of MST is to remove barriers to effective parenting, such as parenting stress and low social support (Henggeler, Schoenwald, & Pickrel, 1995). Services are delivered in families’ natural environments, for example, home, school, and the community (Henggeler et al., 1995). MST has also been found to show significant improvement in maternal depression, in addition to youth externalizing behaviour symptoms, in a Canadian sample (Grimbos & Granic, 2009). Children receiving treatment for externalizing behaviour problems show greater improvements if their parents are not depressed, versus children of depressed parents (Grimbos & Granic, 2009; van Loon, Granic, & Engels, 2011). These studies signify the importance of targeting maternal variables in the prevention and treatment of child behaviour problems.
In addition, the present study lends support for the value of universal-based parenting programs. This study demonstrated that mothers with a trauma history deemed to be low risk may benefit from interventions that reduce behaviour problems in their offspring. However, as it stands, low-risk mothers are less likely to be targeted for these types of interventions. Future researchers may consider exploring how best to target low-risk populations that may benefit from parenting interventions. In addition, it would be beneficial to identify what types of interventions are most appropriate and how to deliver these interventions to low risk mothers. Evidence-based behavioural training interventions, such as Parent-Child Interaction Therapy (PCIT) and Triple P-Positive Parenting Program, have been found to be efficacious in improving parental warmth, parental self-efficacy, reducing parental hostility and stress, and improving child behaviour in middle to higher SES families (Thomas & Zimmer-Gembeck, 2007). These programs have been found to have greater impact on child behaviour problems over waitlist control groups (Bagner, Sheinkopf, Vohr, & Lester, 2010; Sanders, Markie-Dadds, Tully, & Bor, 2000).

To further explore the findings of the present study, intervention studies need to be conducted to determine if parent programs that target maternal depressive symptoms, adult attachment, social support, and parenting stress effectively reduce child behaviour problems. A study that looked at the impact of addressing parenting stress in an evidence-based intervention of child behaviour problems, reported an increase in therapeutic outcomes for children and parents (Kazdin & Whitley, 2003). Alternatively, parenting programs developed to reduce child behaviour problems should evaluate how they impact the aforementioned maternal personal and interpersonal variables, and perhaps incorporate modules in areas that are not sufficient in order to target these critical areas of maternal functioning.
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Appendices
Appendix 1

*Results of simple mediation models presented with standardized coefficients*

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<th>Independent variable (IV)</th>
<th>Dependent variable (DV)</th>
<th>Mediating variable (M)</th>
<th>Effect of IV on M (a)</th>
<th>Effect of M on DV (b)</th>
<th>Direct effects (c')</th>
<th>Indirect effects (a x b)</th>
<th>Total effects (c)</th>
<th>Bias Corrected Confidence Interval</th>
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<td>-.002 to .149</td>
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<td>.010 to .221</td>
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<td>.22</td>
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<td>-.29</td>
<td>.10</td>
<td>.09</td>
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## Appendix 2

### Results of parallel mediation models presented with standardized coefficients

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<th>Independent variable (IV)</th>
<th>Dependent variable (DV)</th>
<th>Mediating variable (M)</th>
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<th>Effect of M on DV (b)</th>
<th>Direct effects (c')</th>
<th>Indirect effects (a x b)</th>
<th>Total effects (c)</th>
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<td>Maternal Depression</td>
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<td>.32</td>
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Appendix 3

*Simple moderator models examining the relation between maternal childhood trauma and child internalizing behaviour problems*

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### Appendix 4

**Simple moderator models examining the relation between maternal childhood trauma and child internalizing behaviour problems**

<table>
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<th>Moderator</th>
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