

Parent-Child Dysfunctional Interactions and Childhood Internalizing: Examining a Transactional  
Relationship Across Early Childhood

by

Devyn Christine Rorem

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Department of Educational Psychology

University of Alberta

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## Abstract

To support children in achieving healthy outcomes, it is essential to understand the child's early environment, including the caregiver-child dyad. There is a well-established relationship between parenting stress and childhood internalizing (symptoms of depression and anxiety) in the literature; however, the directionality of this relationship is still unclear. An important factor that has not been widely examined is the mechanism through which parenting stress and childhood internalizing impact each other. This study further seeks to gain a deeper understanding of the relationship by focusing on the component of parenting stress that has demonstrated specificity to childhood internalizing, parent-child dysfunctional interactions. By examining a younger age group than previous studies and using a longitudinal design and normative sample, the present study is well situated to clarify the relationship between parenting stress and childhood internalizing. A clearer understanding of risk and protective factors for both emerging childhood internalizing behaviours and parenting stress is necessary to inform the timing and type of early interventions. Additionally, this study adds to the literature by examining how parental depression, which has been linked with both parenting stress and childhood internalizing, affects the relationship. Directional associations between parent-child dysfunctional interactions and childhood internalizing across early childhood were examined using a series of autoregressive, cross-lagged panel models. Results indicated that parent-child dysfunctional interactions at age 3 significantly predicted reported childhood internalizing behaviours at age 5. For both age 3 and age 5, parental depression mediated the relationship between parent-child dysfunctional interactions and childhood internalizing. Implications of the research findings for clinicians and researchers as well as direction for future research are discussed.

Preface

This thesis is an original work by Devyn Rorem. The Canadian Healthy Infant Longitudinal Study research project, of which this thesis is a part, received ethics approval from the University of Alberta Research Ethics Board (Pro00002099). Ethics approval for the secondary analysis of this data for the purpose of this thesis was also received from the University of Alberta Research Ethics Board (Pro00098157) on August 30<sup>th</sup>, 2020.

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Parent-Child Dysfunctional Interactions and Childhood Internalizing: Examining a Transactional Relationship Across Early Childhood

Early childhood has been identified as a pivotal developmental period as researchers over the past decade have increasingly linked many later life outcomes to influences during children's early years (Ashford et al., 2008; Karevold et al., 2009; Poulou, 2015). These findings have led to increased attention to early intervention as an effective means of promoting healthy development (Poulou, 2015). A meaningful understanding of key influences and how they are related to specific outcomes is essential in developing and selecting appropriate interventions. In particular, researchers have suggested that family is foundational to the developmental process. To understand and support children's health, it is essential to consider the family context in which development occurs (Garbarino, 2017). Emphasizing this priority, Bronfenbrenner and Neville (1994, p. 18) argued that society's primary goal should be "to provide families with the support... that will enable them to establish the relationships and environment necessary for healthy child development". This is not to suggest that family is the only significant factor, as numerous factors, including genetic and other environmental influences, affect healthy development (Cooper, 2001). However, it is the environmental influences that can be positively changed through targeted intervention.

The family environment of the early child is primarily controlled by the parents (Stone, 2016). Consequently, parents serve as one of the most significant environmental influences in their children's physical, social, and emotional development (Carpenter & Stacks, 2009). This is particularly important in early childhood when children are especially sensitive to environmental influences (Walker et al., 2011; Worthman et al., 2016). That said, we are still learning about how development and environment interact. One such area that is important to examine is early

childhood emotional development. Our knowledge of emotional development is increasingly expanding to include understanding early indicators of mental health.

In this paper, emerging mental health refers to the early stages in which emotional and behavioural maladjustment begin to present. Until recently, the developmental period of early childhood was rarely explored in the study of emerging mental health (Shala & Dharmo, 2013). Although mental health concerns can emerge later in life, a greater focus is needed to understand emotional development and mental health during to create opportunities for greater support and early intervention during this period (Shala & Dharmo, 2013). Nevertheless, there has been very little clinical research that has examined the characteristics or indicators of emotional problems in early childhood (Poulou, 2015). Early and appropriate intervention has been shown to lead to better long-term mental health outcomes into adulthood (Dodge et al., 2015; Wade et al., 2007). Although the importance of early intervention has been widely acknowledged, how to optimally do so in an early childhood population is still not fully understood. Therefore, a greater understanding of the parent-child relationship may help inform early intervention. Detecting indicators of emergent mental health is essential to better support and direct resources to children in need.

### **The Early Years**

Early childhood is a developmental period characterized by rapid change. As children progress through the early years, their bodies, brains, emotions, and social environment are growing and changing. Physiologically, participating in physical activity allows children to further develop their motor skills, providing them with a greater sense of independence and ability to explore their space (Zeng et al., 2017). Early childhood is also a period of immense neurological growth, characterized by a high degree of plasticity where children can rapidly take

in and learn new information (Marshall & Kenney, 2009). They also develop a better understanding of how to distinguish between and regulate their emotions (Black et al., 2017). Finally, early childhood marks a transition period as children start to venture outside their homes to attend preschool and kindergarten. Social interactions and their learning environment expand to include same-age peers and teachers. Throughout all the changes that occur over this period, children still rely on their parents for guidance and opportunities needed to thrive (Ranson & Urichuk, 2008). Through interacting with their parents, children learn about the world and continue to develop their emotions (Vygotsky, 1978). Parents serve as one of the first and most profound interactions in early childhood, and as such, the parent-child relationship is an important area of focus (Bernstein et al., 1991).

### **Early Childhood Development and Emerging Mental Health**

#### **Parent-Child Relationship**

The parent-child relationship is shaped by child factors, parent factors, and the interaction between the two. The parent-child relationship is distinctly salient for young children, as they are entirely dependent on their parents to provide them with safety, security, and stability (De Young et al., 2011). It is through their parents that children learn about the world and how to interact in it. As such, numerous theories examine how these relationships form and the long-term impacts.

#### ***Attachment***

Attachment theorists assert that the quality of the parent-child relationship in early life sets the stage for later development (Bowlby, 1969). Attachment is the emotional, long-lasting bond formed in infancy between the child and the primary caregiver, typically the parent (Ainsworth, 1989). As infants, a strong emotional bond with the primary caregiver is necessary for survival and future relationships. Because infants require their caregivers to meet all of their

basic needs, there is an evolutionary advantage to developing strong emotional bonds with their caregiver. The five instinctual responses observed by Bowlby (1958) necessary for infant survival (sucking, clinging, following, crying, and smiling) are all used by children to develop a close relationship with the caregiver. The early interactions between the child and parent are key, as children who perceive their parent as available, sensitive, and responsive to their needs will develop a secure attachment (Bowlby, 1973). Children with a secure attachment will use their parent as a secure base to explore and will seek comfort from them when distressed.

Alternatively, children who perceive their parent to be either inconsistently responsive or unresponsive to their needs will develop ambivalent or avoidant attachment, respectively (Ainsworth, 1970). Attachment theorists believe that a child's early attachment style with their parent impacts their ability to form relationships for the rest of their life (Ainsworth, 1989; Schneider et al., 2001). Furthermore, numerous researchers have linked attachment style with the development of mental health issues, especially anxiety and depression (Bowlby, 1980; Brumariu & Kerns, 2010; Carlson & Sroufe, 1995; Manassis, 2001). Based on these findings, it is evident that children's perceptions of their relationship with their parents have long-lasting developmental consequences.

### ***Goodness of fit***

Conversely, we can see how parents' perceptions of their relationship with their children can be impacted by temperament. Temperament refers to one's individual dispositions in the domains of activity, reactivity, emotionality, and sociability (Shiner, 2012). Temperament is typically first apparent in infancy and influences individual differences throughout development (Sanson & Rothbart, 1995). An important factor in the parent-child relationship is the goodness of fit between the child's temperament and the parent's own expectations and personality

(Mangelsdorf et al., 1990). A good fit can be a protective factor, as was the case when McDaniel and Buss (2018) found that maternal responsiveness moderated the association between temperament and behaviour problems. A discrepancy between a child's temperament and parental expectations has been identified as a risk factor for social and emotional maladjustment (Smart & Sanson, 2001; Webster-Stratton & Eyberg, 1982). Researchers have found that just as children's temperament impacts parenting behaviours, so too do parenting behaviour impact children's temperament traits (Coplan et al., 2009; Perry et al., 2018). To understand the dynamics of the parent-child relationship, it may be helpful to examine it through the lens of fluid interactions between multiple components of parent and child factors independently and the integration of the two.

## **Parent Factors**

### ***Parenting Stress***

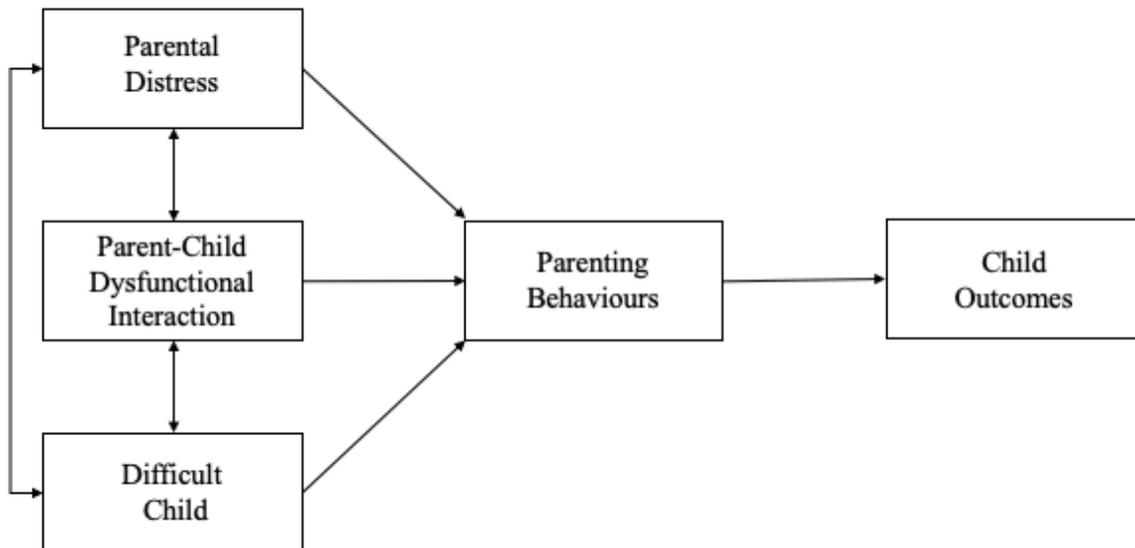
Parenting stress is conceptualized through fluid patterns of interactions. Parenting stress refers to "the aversive psychological reaction to the demands of being a parent" (Deater-Deckard, 1998, p. 315). Abidin's Parenting Stress Model (1992) proposes that parenting stress results from the interplay between parent, child, and relationship factors. Specifically, Abidin (1995) conceptualized parenting stress as three related components: parental distress, parent-child dysfunctional interactions, and difficult child. The parental distress component refers to the extent to which parents feel incompetent, restricted, conflicted, unsupported, or depressed in their role as a parent. The parent-child dysfunctional interactions component refers to the parent's negative perceptions about the quality of interactions with their child. The difficult child component refers to how the parent perceives their child's behaviour, temperament, and how that impacts how difficult they are to care for. Abidin (1992) theorized that the interactions between

these three factors culminate in the overall Parenting Stress construct, which impacts parent behaviour and subsequent child outcomes.

Abidin's model of parenting stress aligns with later researchers, which found an association between higher levels of overall parenting stress and a variety of poor parenting practices, higher amounts of child maladjustment, and greater parent-child conflict (Crnic et al., 2005; Deater-Deckard, 1998; Garcia et al., 2017). This is of particular importance for the early childhood developmental period, as parenting is the greatest source of stress for parents of young children (Crnic & Greenberg, 1990). Parenting stress has been found to remain relatively stable across early childhood (Crnic et al., 2005). The established link between parenting stress and child behavioural problems highlights the importance of routinely assessing parenting stress as part of childhood interventions (Barroso et al., 2017).

Figure 1.

*Abidin's Model of Parenting Stress (Adapted from Abidin, 1992; Uzark & Jones, 2003)*



### *Parental Depression*

Another factor that has been connected with the interplay between parent and child mental health is parental depression. Depression is the leading cause of disability worldwide due to the high prevalence, economic cost, and chronic nature of symptoms (Hammen, 2017). There is a solidly established link between parental depression and childhood behavioural and emotional functioning. Specifically, parental depression in both mothers and fathers predicts higher levels of internalizing and externalizing behaviours, lower levels of positive affect, and general psychopathology in children (Fanti & Henrich, 2010; Goodman et al., 2011; Kate & Garber, 2004; Letourneau et al., 2013).

A particular concern in the context of childhood development is the high likelihood of intergenerational transmission of depression (Hammen, 2017). Though depression is believed to be moderately genetically heritable, it is more strongly linked with environmental factors associated with parental depression. Depression related symptoms such as low positive affect, irritability, and difficulty with emotional regulation have been associated with reduced effective parenting behaviours (Hammen, 2017). Specifically, parents with depression display greater hostility, criticism, and withdrawn behaviours towards their children, which has been associated with the development of childhood mental health issues, particularly internalizing problems. Gunlinks and Weissman (2008) found evidence that the treatment of parent depression has been linked with the reduction of associated childhood mental health issues, highlighting the potential for the treatment of parent factors to benefit both parents and their children.

## **Child Factors**

### ***Emerging Mental Health***

Early childhood is characterized by rapid developmental change. Recent examinations of early childhood development have begun to include emotional growth, and challenges that may impact emotional development and potentially lead to emerging mental health issues.

Researchers have noted that although early childhood is a period that can be marked by the onset of several emotional and behavioural problems, young children have been “a neglected population in the study of psychopathology” (Shala & Dharmo, 2013, p.1008). Egger and Arnold (2006) reviewed numerous studies examining diagnostic criteria for early childhood emotional and behavioural maladjustment. They indicated that between 14 and 26 percent of children ages 2 to 5 met the criteria for the diagnosis of a mental health disorder as outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM–5). This is a similar prevalence to that of older children.

Childhood behavioural and emotional problems are often distinguished between externalizing (outwardly directed) and internalizing (inwardly directed) behaviour problems (Gilliom & Shaw, 2004; Rodriguez, 2011). Parents tend to identify and seek treatment earlier for externalizing behaviours, which typically decrease throughout early childhood (Fite et al., 2008; Gilliom & Shaw, 2004). As such internalizing behaviours, which tend to increase throughout early childhood, are less likely to receive such timely and appropriate intervention (Gilliom & Shaw, 2004). Further complicating identification, mental health issues in early childhood present differently than in later childhood and adolescence (National Scientific Council on the Developing Child, 2012). These factors collectively contribute to a lack of visibility that has long-term consequences, as internalizing behaviours that develop in early childhood tend to

remain stable into middle childhood and adolescence (Fanti & Henrich, 2010). It is especially crucial to identify indicators and risk factors that may aid in the early detection of internalizing behaviours during early childhood.

### ***Internalizing Behaviours***

Internalizing behaviour problems are characterized by inwardly directed distress, including symptoms of anxiety, depression, and somatization (Lui & Chen, 2011; Tandon et al., 2009). The prevalence of internalizing behaviour problems in early childhood is still not well understood, with estimates in the literature varying greatly from 3.8% to 31% (Shala & Dharmo, 2013; Qi & Kaiser, 2003). The presence of internalizing behaviours during early childhood has a meaningful impact on children in the short term, as these problems may interfere with how they interact with both adults and peers at preschool (Mejia & Hoglund, 2016; Olson & Rosenblum; Zatto & Hoglund, 2019).

The presence of early childhood internalizing behaviours also has well-established long term impacts, as it is the greatest predictor of internalizing behaviours later in life, including depressive disorders, anxiety disorders, and somatic complaints (Ashford et al., 2008; Lui et al., 2011; Mazza et al., 2009). Internalizing behaviours in early childhood have also been linked with asocial interactions with peers, suicidal ideations, and substance abuse (Fanti & Henrich, 2010; Hussong et al., 2011; Lui et al., 2011). Such findings indicate the necessity of identification and intervention of internalizing behaviours in early childhood. There are a variety of risk factors that have been identified for the development of internalizing behaviours in early childhood, including physical, parental, child, and relationship constructs, such as poor physical health, maternal emotional distress, harsh discipline, protective parenting, and relationship quality

(Barker et al., 2012; Bayer et al., 2011). One such parenting risk factor that has recently received increased attention is parenting stress (Rodriguez, 2011).

## **Integrating Parent and Child Factors**

### ***Childhood Internalizing and Parenting Stress***

There is a well-examined link between parenting stress and childhood internalizing; where each has been identified as a risk factor for the other (Rodriguez, 2011). A number of studies have identified parenting stress as a risk factor for childhood internalizing (Davis, 2017; Sher-Censor, 2018; Yavuz et al., 2018). Specific to early childhood, Goldberg and colleagues (1997) found parenting stress during the first three years of life to be the greatest predictor of child internalizing at age 4. Childhood internalizing behaviours have also been associated with greater parenting stress (Barroso, 2018; Spratt et al., 2007). In reviewing the literature, the directionality of the association between parenting stress and early childhood internalizing remains unclear. By establishing the directionality of this relationship, we can understand this dynamic across early childhood, which will influence intervention planning.

**The Challenge.** Throughout the mid-to-late 2000s, researchers predominately employed a cross-sectional approach to investigating the relationship between parenting stress and childhood internalizing. Hart and Kelley (2006) found that maternal and paternal parenting stress were associated with parent-reported incidence of childhood internalizing behaviours in early childhood. Similarly, Anthony and colleagues (2005) found that parenting stress was related to teacher-reported childhood internalizing at this age. These findings seemed to generalize beyond the early childhood developmental period, as Rodriguez (2011) found evidence of this association in late childhood. The challenge that arises from using this type of methodology is that it is unclear which variable has the greatest predictive power and how the relationship

changes throughout childhood (Stone et al., 2016). As previously noted, the parent-child relationship is dynamic, consisting of complex interactions over time. In order to increase understandings of parenting stress and childhood internalizing, a theoretical lens that reflects how these constructs are associated in the context of the relationship was needed.

**The Response.** As a response to these types of criticisms across child developmental psychology research, the overall scope of relational research began to shift “from a near exclusive focus on intraindividual process to a concern with individuals in an intrapersonal context” (Collins & Laursen, 2004, p. 1). Children operate in a social world, and as such, it is essential to consider the impact of other people and relationships in everything that they do. Traditional developmental research on the effect close relationships had on children typically focused on the "one-way direction of influence" close others had on the child (Berschied & Regan, 2016, p.87). Sameroff's transactional model asserts that development results from transactional exchanges between the individual and their environment and seeks to examine these bidirectional effects (Sameroff, 2009). This model differentiates transactions from other types of interactions by highlighting the change that occurs in both parties as a result of the transaction. As parents comprise most of the child's early environment, these transactions occur between the parent and child every day. The transactional theory of development posits that not only do parents and children impact each other, but their interactions shape future transactions. As the child interacts with their parent, both parties impact each other. The child plays a role in shaping the parent's future behaviour. It is through these interactions, that the child actively participates in shaping their environment.

A transactional lens can be used to examine both the individual impacts of the interaction and relationships themselves (Sameroff, 2009). As such, it has been used to examine both

developmental outcomes and relationship dysfunction (Branje et al., 2010; Gross et al., 2009; Neece et al., 2012). Proponents of transactional models of development assert that effective intervention for children must consider both the parent and child's role in the development and treatment of psychopathology (Petti & Arsiwalla, 2008). Consequently, addressing one member of the dyad will impact the other. Kingsbury and colleagues (2017) found that mothers of children with internalizing behaviour problems were three times more likely to themselves experience mental illness at 21 years post-birth. This also means that early intervention could not only improve children's mental health in the long term, but their parents' as well.

**Applying a Transactional Lens.** As a response to the aforementioned methodological challenges of previous cross-sectional studies, a number of recent longitudinal studies have been conducted to examine the directionality of parenting stress and childhood internalizing for children 5 and older, with contradictory results. Goemans and colleagues (2018) examined the relationship with a sample of children and foster parents in the Netherlands, finding evidence that child internalizing predicted parenting stress (Goemans et al., 2018). In contrast, Stone and colleagues (2016) and Rodriguez and colleagues (2019) examined these same constructs with a normative sample and with a sample of children with autism, but only found evidence of parenting stress predicting childhood internalizing when examining the directionality of the relationship. In addition to these conflicting results, as these researchers only examined these constructs for children 5 and older, this eliminated consideration of early childhood's potential impact on parenting stress and childhood internalizing. As internalizing problems that develop in early childhood tend to remain stable into middle childhood and adolescence, it may be that the relationship between parenting stress and childhood internalizing has already been established by age 5 (Fanti, 2010).

The only study that has examined parenting stress and childhood internalizing using a transactional approach in children under 5 did so with a specialized population. Woodman and colleagues (2014) conducted a longitudinal study with a population of children beginning at age 3 who had been diagnosed with developmental disabilities. In this study, researchers examined the directionality of parenting stress and childhood internalizing in early childhood, middle childhood, and adolescence. Researchers found that for this population, parenting stress predicted internalizing for adolescents ages 15-18 and internalizing predicted parenting stress for children ages 5-10. A transactional relationship between parenting stress and internalizing was only found for children ages 3-5, suggesting that this early period may be unique. To fully unpack the impact of the early childhood period on later mental health, further investigation is required to examine whether this age effect would replicate in a normative population.

### **The Current Study**

A critical factor that has not been widely examined in early childhood is the mechanism through which parenting stress and childhood internalizing impact each other. Costa and colleagues (2006) examined the specificity and incremental validity between Abidin's (1995) three components of parenting stress (parental distress, parent-child dysfunctional interactions, and difficult child) and childhood internalizing behaviours. Parent-child dysfunctional interactions was the only component that showed both specificity and incremental validity to childhood internalizing when controlling for parental psychopathology in a sample of children 5 and over. Further examination of this parenting stress component in early childhood may provide a greater understanding of the relationship between parenting stress and internalizing behaviours.

By examining a younger age group and using a longitudinal design and normative sample, the present study is well situated to discern the relationship between parenting stress and

childhood internalizing. A clearer understanding of risk and protective factors for both emerging childhood internalizing behaviours and parenting stress is necessary to inform the timing and type of early interventions. This study seeks to gain a deeper understanding of the relationship by focusing on the component of parenting stress that has demonstrated specificity to childhood internalizing; parent-child dysfunctional interactions.

Utilizing a transactional theory of development, I have examined the strength and direction of the relationship between parent-child dysfunctional interactions and early childhood internalizing behaviours. In addition, this study adds to the literature by examining how parental depression, which has been linked with both parenting stress and childhood internalizing, affects the relationship (Costa et al., 2006; Fanti & Henrich, 2010; Goodman et al., 2011; Hammen, 2017; Kate & Garber, 2004). The relationship between parent-child dysfunctional interactions and childhood internalizing was assessed in two research questions.

## **Research Questions and Hypotheses**

### ***Research Question 1***

Does a transactional model of development explain the relationship between parent-child dysfunctional interactions and childhood internalizing behaviours at ages 3 and 5?

**Hypothesis 1.** Previous research findings provide evidence of parent-driven, child-driven, and bidirectional relationships between parenting stress and childhood internalizing (Goemans et al., 2018; Rodriguez et al., 2019; Stone et al., 2016; Woodman et al., 2014). Given the well-established evidence in the literature of parenting stress and childhood internalizing acting as predictors for one another and Costa and colleagues (2009) finding that parent-child dysfunctional interactions was the only component of parenting stress that showed specificity and incremental validity to childhood internalizing, I hypothesize that there will evidence of a

transactional relationship between parent-child dysfunction and childhood internalizing.

Specifically, I expect that parents who report higher rates of parent-child dysfunctional interactions at age 3 will also report greater childhood internalizing behaviours at age 5.

Conversely, I also expect that parents who report greater childhood internalizing levels at age 3 will report higher rates of parent-child dysfunctional interactions at age 5.

### ***Research Question 2***

Does parental depression mediate the relationship between parent-child dysfunctional interactions and childhood internalizing behaviour at ages 3 and 5?

**Hypothesis 2.** Given that previous research findings that have associated parent relationship quality to parental depression and parental depression to childhood internalizing, I hypothesize that parental depression will mediate the relationship between childhood internalizing and parent-child dysfunctional interactions at both age 3 and 5 (Fanti & Henrich, 2010; Goodman et al., 2011; Hammen, 2017; Kate & Garber, 2004).

## **Method**

### **Participants and Procedures**

The current study involved secondary data analysis of the Edmonton cohort of the CHILD study. CHILD is a population-based longitudinal birth cohort study designed to examine the role of gene-environment interactions on development (Takaro et al., 2015). Pregnant mothers were recruited from hospital and birth centres in the second or third trimester. Study recruitment began in 2009 and continued until 2012. Each mother only had one child in the study. CHILD participant parents provided data about themselves and their families at enrollment and at follow up in-person lab visits. Parents completed questionnaires reporting on their child's behaviour, their relationship with the child, and their own mental health when their

children were 3 and 5 years old, either remotely or during in-person lab visits. A description of the study's nature was provided to parents, and informed consent was obtained from all mothers and consenting fathers. The main CHILD-Edmonton study (Pro00002099) and the secondary analysis for the use of this thesis were (Pro00098157) were approved by the University of Alberta Research Ethics Board.

Participants in this study included 649 mother-child dyads from the CHILD-Edmonton study, of whom 531 participated at age 3 years ( $M=36.2$  months) and 454 participated at age 5 years ( $M=60.5$  months). Baseline demographics were reported at enrolment. Children in the study were equally represented by gender (50.3% girls, 49.7% boys). Further demographic information is presented in Table 1.

Table 1.  
*Demographic Information*

<b>Demographic Variable</b>		<b>Frequency (%)</b>
<b>Mothers Age at Time of Child's Birth</b>	18-25 years old	9.8
	26-30 years old	35.1
	31-35 years old	38.5
	36-40 years old	15.1
	41-45 years old	1.5
<b>Mother's Highest Reported Education</b>	Did not attend post-secondary	5.4
	Attended post-secondary	91.1
	Missing	3.5
<b>Family Income (cad)</b>	\$0 - \$39,999	5.0
	\$40,000 - \$79,999	17.8
	\$80,000 - \$149,999	42.7
	\$150,000 or over	28.1
	Prefer not to say	6.4
<b>Child Ethnicity</b>	Caucasian	67.3
	Non-Caucasian	30.5
	Missing	2.2

## Measures

**Parent-child dysfunctional interactions.** Parent-child dysfunctional interactions was measured via parent-report using an adapted version of the Parent-Child Dysfunctional Interaction (PCDI) subscale of the *Parenting Stress Index Fourth Edition-Short Form (PSI-SF)* that allowed for reverse coding of items (Abidin,1995). The adapted PCDI subscale consists of 12 items that evaluated the parent's perceptions about the quality of interactions with their child over the last year. The first 11 items (e.g., My child is not able to do as much as I expected.) were rated on a 5-point Likert-scale ranging from "Strongly Disagree" to "Strongly Agree," with

higher scores indicating greater dysfunctional interactions. The final item asked participants to appraise their parenting on a 5-point scale ranging from "A very good parent" to "Not very good at being a parent." An example of the full adapted questionnaire can be found in Appendix A. The adapted PCDI had moderate retest reliability with  $r = 0.62$ . Internal consistency for the adapted PCDI subscale is adequate, ranging from  $\alpha = 0.82$  to  $\alpha = 0.84$ .

**Childhood Internalizing Behaviour.** Childhood internalizing was assessed through the Child Behaviour Checklist (CBCL) preschool version (Achenbach & Reschorla, 2001). The CBCL internalizing scale consists of 36 items that measure emotionally reactive, anxious, depressed, and withdrawn behaviours. Each item (e.g. nervous, high-strung, or tense) was rated on a 3-point scale ranging from "Not True " to "Very True or Often True." The CBCL internalizing scale produces a T-score (mean=50, SD=10). Higher scores are indicative of a greater number of parent-reported child internalizing behaviour problems. The CBCL internalizing had moderate retest reliability, with  $r = 0.52$ . The CBCL internalizing had adequate internal consistency, ranging from  $\alpha = 0.82$  to  $\alpha = 0.87$ .

**Parental Depression.** *The Center for Epidemiological Studies Depression Scale (CES-D;* Radloff, 1977) was used to assess parental depressive symptoms. Designed as a screening measure for the general population, the CES-D consists of 20 items that measure the frequency of various depression symptoms over the past week. Each item (e.g. I was bothered by things that don't usually bother me) was rated on a 4-point scale ranging from "Not at all" to "A lot." Higher scores indicate greater levels of parental depression, with a cut-off score of 16 commonly used to indicate elevated parental depression (Lewinsohn et al., 1997; Zich et al., 1990). The CES-D had moderate retest reliability, with  $r = 0.59$ . The CES-D had good internal consistency, with  $\alpha = 0.92$  at both time points.

**Baseline Covariates.** The cross-lagged path model tested in question 1 will be adjusted for several covariates. These include: child sex (0 = boys, 1 = girls), maternal age at birth ( $M = 31.67$ ,  $SD = 4.40$ ), family income (1 = \$0 - \$39,999 (below poverty line), 2 = \$40,000 - \$79,999 (average), 3 = \$80,000 - \$149,000 (above average), 4 > \$150,000 (well above average), and parental depression. Baseline covariates were chosen by reviewing previous studies in this area (see Appendix B) and from previous studies that used the CHLD dataset (e.g., Tamana et al., 2019).

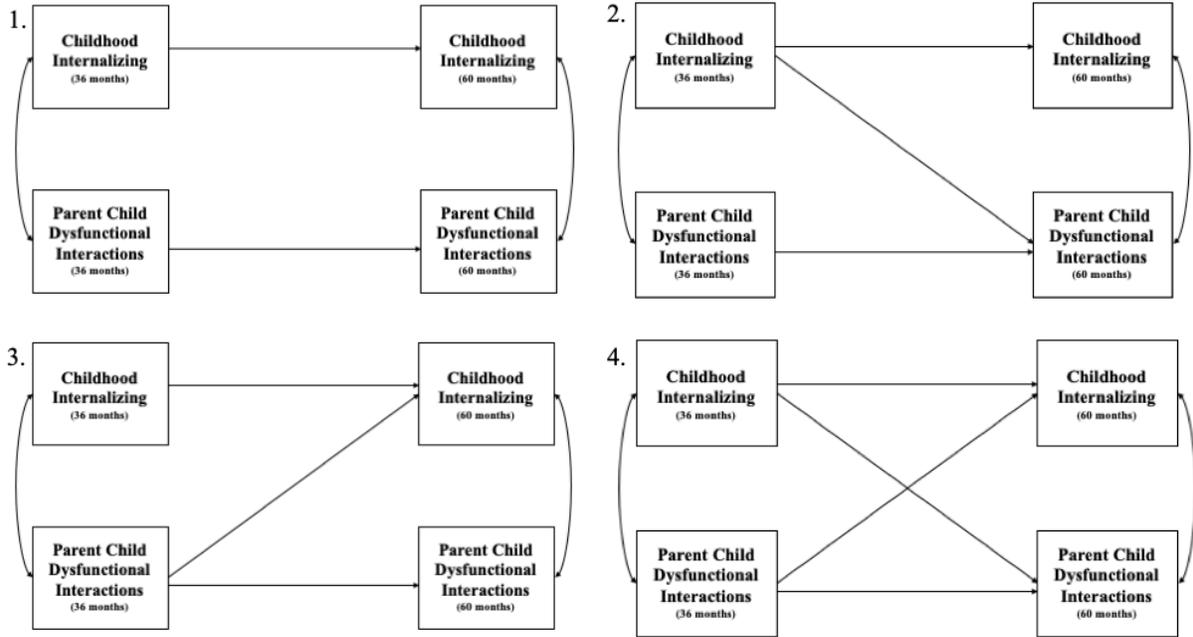
### **Data Analytic Strategy**

Preliminary analyses consisted of basic descriptive statistics (i.e., mean, standard deviation, range, Cronbach's alpha) and bivariate correlations for child internalizing, parent-child dysfunctional interactions, and parental depression at both time points. The preliminary analyses were conducted using Stata 15 (Statacorp, 2017) and SPSS 26 (IBM, 2020).

Additional analyses consisted of structural equation modelling with latent variables to test a cross-lagged panel model in which parent-child dysfunctional interactions and childhood internalizing were regressed on each other at two-time points. Within the model, child sex, maternal age at birth, family income, and parental depression were included to control for their effects. Model fit was determined by examining several fit indices including chi-square, comparative fit index, root-mean-square of approximation, standardized root mean square residual, and Bayesian information criteria. This type of modelling allowed for directional relationships (both direct and indirect) between parent-child dysfunctional interactions and child internalizing over the course of two years to be tested. Additionally, mediation analyses were conducted by testing the indirect effects of parental depression on the predictive relationship

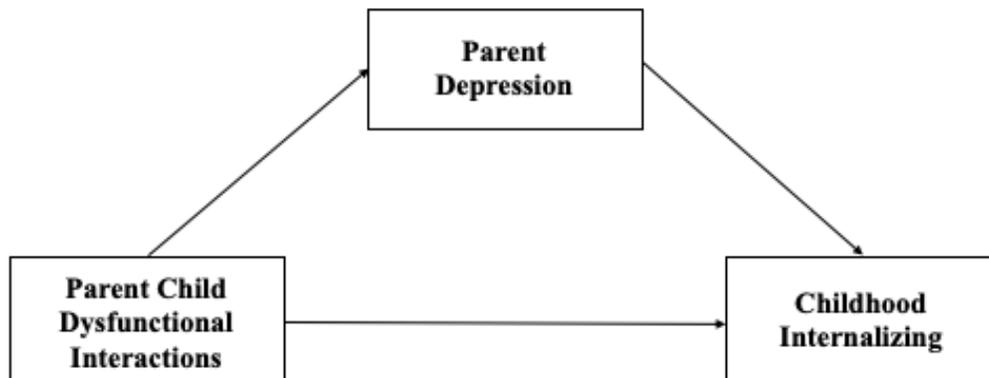
between parent-child dysfunctional interactions and childhood internalizing. Analyses were conducted using MPlus 8.4 (Muthén & Muthén, 2019).

Figure 2.  
*Tested Cross Lagged Panel Models*



Note: (1) Stability Model. (2) Child Driven Model. (3) Relationship Driven Model. (4) Transactional Model.

Figure 3.  
*Proposed Mediation Model*



Note. This model will be examined at age 3 and age 5.

### **Assumptions**

Cross-lagged panel analysis is contingent upon several assumptions, which were assessed by reviewing the study protocol and examining the present study results (Kearney, 2017). The first is the assumption of synchronicity, which assumes that data collected for each measure occurred at the same time for each participant (Kearney, 2017). This assumption is satisfied, as the data collected in the measures was done so as part of the same larger survey administered all at once. The second is the assumption of stationarity, which assumes that the variables of interest and relationships between these variables are consistent over time (Kearney, 2017). This assumption is satisfied as both bivariate correlations between variables across the timepoints and the stability model demonstrated indicated stationarity.

Prior to conducting the mediation analyses, the assumptions of independence, normality, linearity, and homoscedasticity were assessed using baseline data (age 3). The Durbin-Watson statistic is used to inform if the assumption of independent errors has been met. A general rule is that a Durbin-Watson statistic greater than 1 and less than 3 indicates no significant autocorrelation. The Durbin-Watson statistic in the present study is 1.91, suggesting that the assumption of independence has been met. A histogram and P-P plot for the residuals of the model were generated to visualize the normality of the data. The histogram appeared to be symmetrical and approximately bell-shaped. The data points on the normal P-P plot fell close to the line that indicates a normal distribution. The standardized residuals were plotted against the standardized predicted values to visualize whether the assumption of linearity had been met. As there was no clear curved trend in the residuals, it is assumed that the relationship between parent-child dysfunctional interactions and childhood internalizing is linear. As such, the assumption of linearity was met. A scatterplot that plotted the standardized residuals against the

standardized predicted values was used to assess whether the assumption of homoscedasticity was met. The plot did not have a distinct funnel shape, suggesting that the residuals of different levels of parent-child dysfunctional interactions and childhood internalizing did not have unequal variances. This indicates that the assumption of homoscedasticity was not violated.

### **Results**

Data analyses are presented in three sections. Descriptive statistics of key variables and bivariate correlations were examined for the overall sample. Second, a series of autoregressive, cross-lagged panel models were tested to determine whether parent-child dysfunctional interactions and childhood internalizing were reciprocally related and predicted differences in each other at age 5. Finally, mediation models at ages 3 years and 5 years were used to further explore the relationship between parent-child dysfunctional interactions and childhood internalizing, additionally considering parent depression as a mediator.

Model fit was determined by examining several fit indices including Chi-Square statistic ( $\chi^2$ ), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), and the Bayesian Information Criterion (BIC). The following guidelines outlined by Kline (2015) were used to interpret model fit: Non-significant chi-square values indicate a good model fit. CFI values between .90 and .94 indicate adequate fit and  $>.95$  indicate excellent fit, RMSEA and SRMR values between .06 and .08 indicate adequate fit and  $<.05$  indicate excellent fit. The BIC was used to compare non-nested model fit, with a BIC point difference greater than 10 compared to the stability model indicating better fit to the data. Finally, Chi-square difference tests ( $\Delta\chi^2$ ) were conducted to compare the fit between the models.

### **Missing Data**

Participants were included in the analyses if they participated in at least one of the two waves. Some children were missing parent-reported data. Overall, 412 (63.4%) of participants had parent-child dysfunctional interactions and 475 (73.1%) of participants had childhood internalizing data at both time points.

### **Descriptive Statistics**

Descriptive statistics including frequency, mean, standard deviation, and range were calculated for all relevant variables (parent-child dysfunctional interactions, childhood internalizing, and parental depression). These descriptive statistics are presented in Table 2.

Both the adapted PCDI scale of the Parenting Stress Index and the CES-D are unstandardized measures represented by raw scores. The adapted PCDI scale is comprised of 12 items rated on a five-point scale. The scores on these items were summed and can range from 12 to 60, with higher scores indicating a greater incidence of perceived dysfunctional interactions in the relationship. The CES-D consists of 20 items rated on a four-point scale. These scores were also summed and can range from 0 to 60, with higher scores indicating a greater level of depressive symptoms. Ratings on the CBCL Internalizing scale are represented as standardized T-scores based upon normative data (Mean of 50 and standard deviation of 10). Higher scores indicate a greater incidence of internalizing behaviours, with scores higher than 65 considered to be in the clinical range.

Descriptive statistics of key variables are presented in Table 2. On average, parents reported fairly low levels of parent-child dysfunctional interactions, childhood internalizing, and parent depression. However, these scores somewhat are consistent with population level estimates.

Table 2.  
*Descriptive Statistics of Key Variables*

<b>Variables</b>	<b><math>\alpha</math></b>	<b><i>N</i></b>	<b>Mean</b>	<b><i>SD</i></b>	<b>Range</b>
<i>Parent-Child</i>					
<i>Dysfunctional Interactions</i>					
Age 3	.84	507	16.4	5.0	12 – 39
Age 5	.82	464	16.7	5.1	12 – 38
<i>Child Internalizing</i>					
Age 3	.82	541	44.8	9.3	29 – 72
Age 5	.87	574	45.4	9.2	33 – 78
<i>Parental Depression</i>					
Age 3	.92	514	11.2	7.8	0 – 43
Age 5	.92	466	11.0	7.7	0 – 51

**Bivariate Correlations.** Bivariate correlations between the variables across time points are shown in Table 3. All correlations assessed were statistically significant ( $p < .01$ ). Parent-child dysfunctional interactions was moderately correlated with itself across time ( $r_s = .62$ ). Child internalizing was moderately correlated with itself across time ( $r_s = .52$ ). Parental depression was moderately correlated with itself across time ( $r_s = .59$ ). Parent-child dysfunctional interactions and childhood internalizing were very weakly or weakly correlated with each other across time ( $r = .26$  to  $r = .40$ ). Parent-child dysfunctional interactions and parental depression were very weakly correlated with each other across time ( $r = .19$  to  $r = .29$ ). Childhood Internalizing and Parent Depression were very weakly or weakly correlated with each other across time ( $r = .20$  to  $r = .35$ ).

Table 3.  
*Bivariate Correlations*

Variables	1	2	3	4	5
<i>Parent-Child Dysfunctional Interactions</i>					
1. Wave 1					
2. Wave 2	.62*				
<i>Child Internalizing</i>					
3. Wave 1	.34*	.29*			
4. Wave 2	.26*	.40*	.52*		
<i>Parent Depression</i>					
5. Wave 1	.29*	.19*	.25*	.24*	
6. Wave 2	.20*	.29*	.20*	.35*	.59*

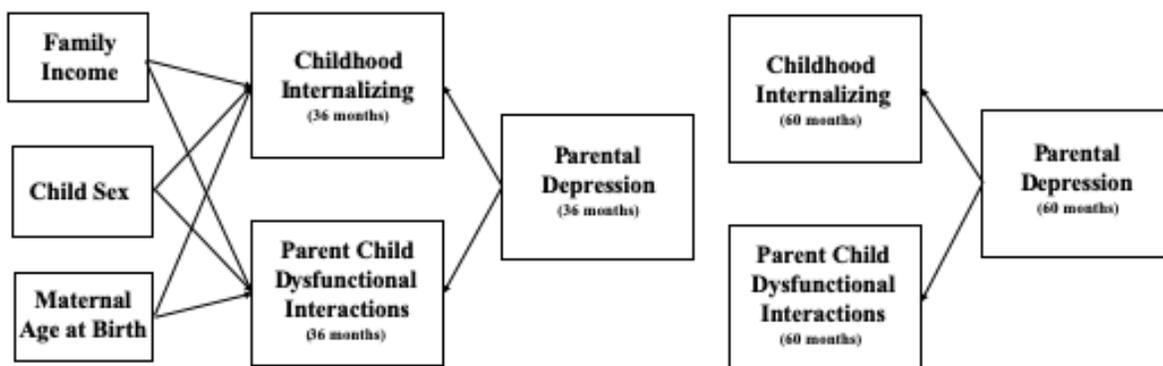
Note. \* $p < 0.01$ .

### **Cross Lagged Panel Models**

A series of autoregressive, cross-lagged panel models were tested to assess the directional associations between parent-child dysfunctional interactions and childhood internalizing (see Figure 2). First, a stability model with autoregressive paths for parent-child dysfunctional interactions and childhood internalizing across time (age 5 regressed on age 3 for each variable) and within-time correlation between parent-child dysfunctional interactions (variables at age 3 and age 5 examined separately) were run to be used as a point of reference for subsequent models to be built upon and to serve as a comparison for the primary models. Next, to examine the directional influence of each variable, both child-driven and relationship-driven models were tested. The child-driven model added a path from childhood internalizing at age 3 to parent-child dysfunctional interactions at age 5. Conversely, the relationship-driven model instead added a path from parent-child dysfunctional interactions at age 3 to childhood internalizing at age 5. Finally, the transactional model added bidirectional paths between parent-child dysfunctional

interactions and childhood interactions (age 5 parent-child dysfunctional interactions regressed on age 3 childhood internalizing and age 5 childhood internalizing regressed on age 3 parent-child dysfunctional interactions). In all models, both variables were regressed on baseline covariates including child sex, family income, and maternal age at birth (see Figure 4). Parental depression was controlled for at ages 3 years and 5 years.

Figure 4.  
*Control Variables*



**Stability Model.** Consistent with the bivariate correlations, both parent-child dysfunctional interactions and childhood internalizing remained relatively stable across early childhood. Parent-child dysfunctional interactions showed moderate stability from age 3 to age 5 ( $\beta_s = .56$ ,  $SE = .05$ ,  $p < .01$ ). Similarly, childhood internalizing was moderately stable from age 3 to age 5 ( $\beta_s = .48$ ,  $SE = .05$ ,  $p < .01$ ). Parent-child dysfunctional interactions and childhood internalizing showed very weakly stability at age 3 ( $\beta = .24$ ,  $SE = .05$ ,  $p < .01$ ) and weak stability at age 5 ( $\beta = .32$ ,  $SE = .06$ ,  $p < .01$ ) in this model.

**Primary Models.** The child-driven, relationship-driven, and transactional models were tested to examine directional associations between parent-child dysfunctional interactions and childhood internalizing. Both the relationship-driven and transactional model fit the data well, but the relationship-driven model (Table 4) was chosen as having the best fit for two reasons.

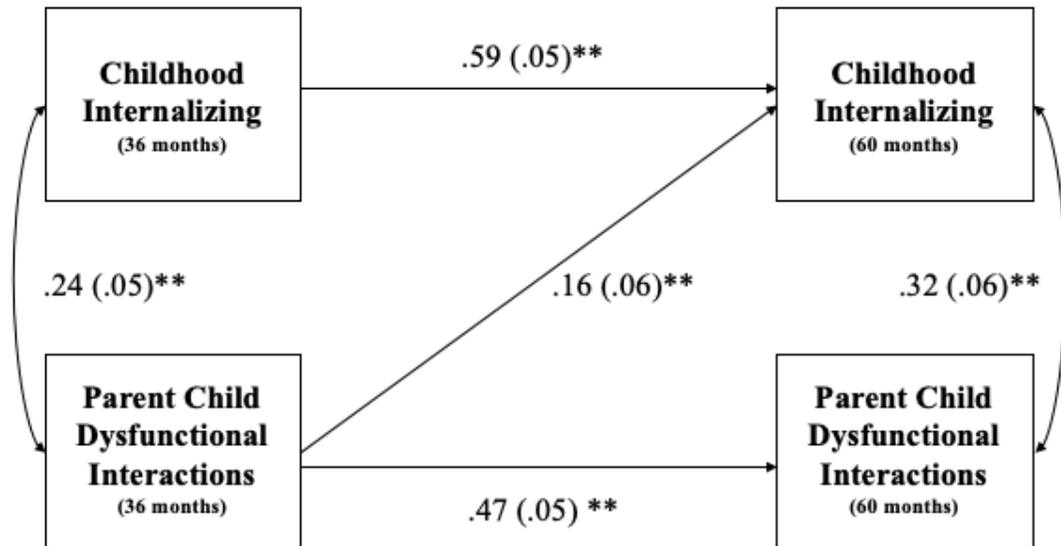
First, the addition of the child-driven pathway into the transactional model did not yield a significant change in model fit. Secondly, the child-driven pathway in the transactional model was not significant. Therefore, the relationship-driven model was chosen as being the most parsimonious, representative model of the data. In this model, there was moderate stability in the autoregressive paths for both parent-child dysfunctional interactions ( $\beta_s = .59$ ,  $SE = .05$ ,  $p < .01$ ) and childhood internalizing ( $\beta_s = .47$ ,  $SE = .05$ ,  $p < .01$ ). Parent-child dysfunctional interactions was very weakly correlated with concurrent childhood internalizing at age 3 ( $\beta = .24$ ,  $SE = .05$ ,  $p < .01$ ) and weakly correlated at age 5 ( $\beta = .32$ ,  $SE = .06$ ,  $p < .01$ ) in this model. Accounting for stability paths, concurrent associations between the variables, baseline covariates, and parent depression; parent-child dysfunctional interactions at age 3 predicted childhood internalizing at age 5. The relationship-driven model is presented in Figure 5.

Table 4.  
*Auto-Regressive Cross Lagged Panel Model Fit Indices*

<b>Model</b>	$\chi^2$ (df)	CFI	RMSEA (90% CI)	SRMR	BIC	Model comparisons: $\Delta\chi^2$ (df)
Stability	21.56 (11), <i>p</i> <.05	.971	.051 (.02 - .08)	.052	9312.605	
Child-Driven	21.35 (11), <i>p</i> <.05	.972	.050 (.02 - .08)	.052	9312.411	vs. stability: $\Delta\chi^2$ (df) = 0.21 (0)
<b>Relationship Driven</b>	<b>12.83 (10),</b> <i>ns</i>	<b>.992</b>	<b>.028 (.00 - .07)</b>	<b>.026</b>	<b>9308.421</b>	<b>vs. stability: <math>\Delta\chi^2</math> (df) = 8.52(1)</b>
Transactional	12.62 (10), <i>ns</i>	.993	.027 (.00 - .07)	.026	9308.222	vs. stability: $\Delta\chi^2$ (df) = 8.94 (1) vs. child-driven: $\Delta\chi^2$ (df) = 8.73 (1) vs. relationship driven: $\Delta\chi^2$ (df) = 0.21 (0)

*Note:* Best fitting model shown in boldface.

Figure 5.  
*Relationship Driven Model*



*Note.* Relationship driven model of Parent-Child Dysfunctional Interactions and Childhood Internalizing. Standardized estimates (standard error) are presented. Model fit:  $\chi^2(10) = 12.83$ , *ns*, CFI = .992, RMSEA (90% CI) = .028 (.00 - .07), SRMR = .026,  $**p < .01$ .

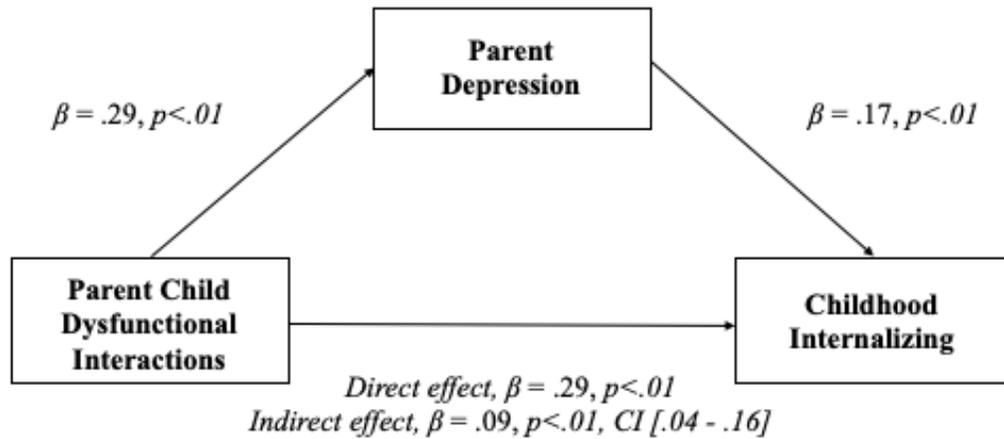
**Mediation Model**

Mediation analyses were conducted using guidelines by Stride and colleagues (2015) for use with MPlus, which they adapted from Hayes’ (2013) PROCESS computation tool for SPSS. Mediation models were run for data at age 3 and 5 years, with parent-child dysfunctional interactions as the predictor variable, parental depression as the mediator, and childhood internalizing as the outcome variable. The results of the mediation models are presented in Figures 6 and 7.

At age 3 years, parental depression mediated the relationship between parent-child dysfunctional interactions and childhood internalizing. The direct and indirect models accounted for approximately 23% of the variance in the outcome variable.

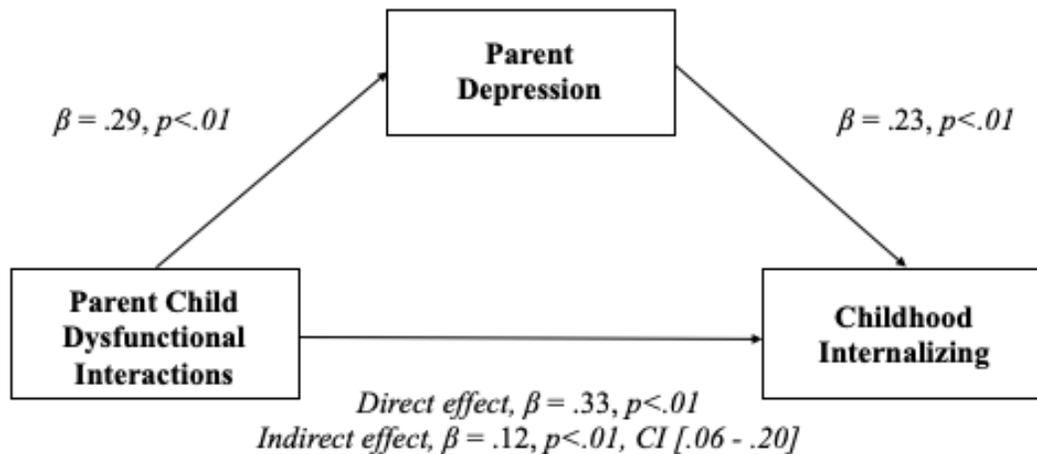
At age 5 years, parental depression mediated the relationship between parent-child dysfunctional interactions and childhood internalizing. The direct and indirect models accounted for approximately 29% of the variance in the outcome variable.

Figure 6.  
*Age 3 Mediation Model*



*Note.* Parent-child dysfunctional interactions as a predictor for childhood internalizing, mediated by parent depression at age 3 years.

Figure 7.  
Age 5 Mediation Model



*Note.* Parent-child dysfunctional interactions as a predictor for childhood internalizing, mediated by parent depression at age 5 years.

## Discussion

The present study's overall purpose was to gain a deeper understanding of the means to better support children and families by examining the association between parent-child relationships and the development of emerging mental health in early childhood. Specifically, the present study focused on understanding how parent-child dysfunctional interactions, a component of parenting stress, was associated with childhood internalizing across early childhood. Furthermore, the role of parental depression was examined within the relationship.

### Childhood Internalizing and Parent-Child Dysfunctional Interactions

The first research question sought to examine the strength and directionality of the association between parent-child dysfunctional interactions and childhood internalizing from ages 3 to 5. Four different cross-lagged panel models were compared to examine the relationship. The stability model was used as a point of reference, where parent-child dysfunctional interactions and childhood internalizing were compared to each other at each time point and to

themselves across time. Three primary models were then run to investigate whether a child-driven, relationship-driven, or transactional model of association best explained the relationship between parent-child dysfunctional interactions and childhood internalizing across early childhood. I hypothesized that the transactional model would best explain the relationship between these variables. Contrary to my hypothesis, the relationship-driven model had the best fit, with parent-child dysfunctional interactions at age 3 significantly predicting reported childhood internalizing behaviours at age 5. These findings highlight the importance of considering relationships as a predictor of emerging mental health in early childhood.

This result is somewhat unexpected, as researchers who used both cross-sectional (e.g. Yavuz et al., 2018; Spratt et al., 2007) and longitudinal (e.g. Woodman et al., 2014) approaches found evidence of childhood internalizing and parenting stress significantly predicting each other in early childhood. Costa and colleagues (2006) found parent-child dysfunctional interactions to be the only parenting stress component that showed specificity and incremental validity to childhood internalizing. It was, therefore, hypothesized that narrowing the focus would similarly demonstrate a transactional relationship. It may be that in seeking to examine the mechanisms that underlie the relationship, the component being examined became too far removed from the original construct of interest. In other words, when investigating constructs with multiple components, attempting to look at each contributing component as providing a unique contribution may lose an aspect of the dynamic interaction of all the parts. It may be that the gestalt produces something different than the actual combination of all components (Wuttke et al., 2020). For the present study, perhaps the interaction between the specific components of parental distress, parent-child dysfunctional interactions, and difficult child outlined in Abidin's (1992) parenting stress model produce a distinct effect beyond the sum of its parts.

### **Parental Depression as a Mediator**

The second research question evaluated parental depression's role in the relationship between parent-child dysfunctional interactions and childhood internalizing in early childhood. As predicted, parent-child dysfunctional interactions had an indirect effect on children's internalizing behaviours through the mediator of parental depression at both age 3 and age 5. These findings are consistent with previous research that have associated parent relationship quality to parental depression and parental depression to childhood internalizing ((Fanti & Henrich, 2010; Goodman et al., 2011; Hammen, 2017; Kate & Garber, 2004). Although parental depression is not explicitly included in Abidin's (1992) parenting stress model, the current study results present a potential extension to this framework. Abidin proposed that the components of parenting stress, parental distress; parent-child dysfunctional interactions; and difficult child, impacted parent behaviour, affecting child outcomes. Parent behaviours associated with parental depression such as hostility, criticism, and withdrawn behaviours towards children have been associated with a greater incidence of childhood internalizing (Hammen, 2017). Therefore, it is plausible that behaviours associated with parental depression are impacted by components of parenting stress, such as parent-child dysfunctional interactions, and then, in turn, impact child outcomes like childhood internalizing. However, more research may be needed to explore this further.

### **Contextual Considerations**

Divergent from previous literature that suggests that higher socioeconomic status is causally connected to a more positive parent-child relationship, child development, and parent mental health outcomes (Conger et al., 2010); overall parent-child dysfunctional interactions, childhood internalizing, and parental depression levels of this high socioeconomic sample were

fairly consistent with population estimates (Hammen, 2017; Justice et al., 2019). There was only moderate stability in both parent-child dysfunctional interactions and childhood internalizing across early childhood. This is somewhat unexpected, as previous research has found childhood internalizing and parenting stress, which parent-child dysfunctional is a component of, to be highly stable across childhood (Fanti, 2010; Crnic & Greenberg, 1990; Crnic et al., 2005). It may be that because the present study focused on such an early developmental period, these findings captured the emergence of some of these behaviours. This would support the hypothesis that early childhood is an especially important developmental period for early intervention, but more investigation would be needed to confirm this hypothesis.

### **Strengths of the Current Study**

The current study contributes to the literature on emerging mental health in several ways. First, by employing a longitudinal approach and a transactional lens, the strength and directionality of the associations could be examined. Examining these relationships in a younger sample than the majority of previous studies (e.g. Goemans et al., 2018; Stone et al., 2016) contributes to the growing literature on emerging mental health in early childhood, a developmental period traditionally neglected in the development of psychopathology (Shala & Dharmo, 2013). Another strength of the present study is the use of a normative population, which, taken together with the other strengths, allows for commentary on how these parent, child, and relationship factors interact and impact emerging mental health in the general population.

### **Limitations and Next Steps**

The current study should be interpreted in consideration of the following limitations. First, the characteristics of the sample should be considered when evaluating the generalizability of these results. Longitudinal studies require a multi-year commitment from families, as non-

participation and attrition arise as sources of potential sample biases (Henrich et al., 2010; Lissner et al., 2003). Demographically, mothers who are Caucasian, received post-secondary education, were older at birth, and are part of high socioeconomic families were overrepresented. However, participants reported parent-child dysfunctional interactions, parental depression, and childhood internalizing levels similar to general population estimates. Another limitation in the sample is that fathers were extremely underrepresented in the sample, accounting for 3 to 4 percent of participants at each wave. This sample limitation echoes a larger limitation in child development research, where fathers are largely underrepresented. Future research in this area should aim to include measures for both mothers and fathers and seek to further explore relationship dynamics for both parents (Rinaldi & Howe, 2012).

Second, there are some limitations related to the procedure of this study. All data were collected through parent-reported surveys, including the child and relationship factors, which solely rely on that respondent's perspective. Aspland and Gardner (2003) argued that observational studies within the home are more accurate in capturing relationship variables than parental self-reports. However, the benefit of using parent-report is that it captures the participant's subjective experience, which impacts their perception of the relationship. For example, observing parent-child interactions may have yielded a more objective frequency of dysfunctional behaviours, but it would fail to capture the emotional appraisal of the exchange. Future studies may benefit from employing both observational and parent-report methods (e.g., Crnic et al., 2005)

Finally, it is important to note that the present study only examined a subset of variables that likely contribute to the relationship between parent-child dysfunctional interactions and childhood internalizing. In interpreting the present results, it is important to consider the models

as representing facets of the association, rather than the association as a whole. Future work should aim to further explore the role of parental mental health and family factors, including other types of parental stress, marital status, and family structure.

Despite these limitations, the present study provides a unique perspective on parent-child relationships and emerging mental health in early childhood. The results also highlight several promising areas of future study. To further understand the relationship between parenting stress and childhood internalizing, it would be interesting to compare models that examine the overall constructs to models that break up the constructs into their components, parental distress, parent-child dysfunctional interactions, difficult child and anxiety, depression, withdrawal, respectively. Future research would be useful in assessing how differences in relationship quality between parents and in multi-generational households contribute to childhood internalizing in early childhood. It would also be beneficial to explore the role of culture in the association of these constructs. As most research in this area has been conducted in North America and Europe, it would be compelling to see how parent and child factors interact in cultures with differences in parenting style (Ang & Goh, 2006).

### **Implications**

Parent-child dysfunctional interactions were identified as an indicator for early child internalizing behaviours, which has clinical and research implications. Identifying indicators is especially crucial in early childhood, as internalizing problems may be challenging to detect as they present differently than in later childhood and adulthood as well and are comparatively less visible than externalizing disorders (Fite et al., 2008; National Scientific Council on the Developing Child, 2012). Recognizing parent-child relationship factors as indicators for childhood mental health impacts how we should consider addressing such symptoms. In cases

where childhood internalizing behaviours are not yet present, frequent parent-child dysfunctional interactions could lead to more considerable attention paid to emerging symptoms. Furthermore, investing in preventative resources and targeted interventions that aim to improve parent-child relationship quality may simultaneously have a positive effect on early childhood mental health. Understanding which indicators emerge first is vital in deciding where to target programming that optimizes outcomes.

More broadly, the current study highlights the importance of the parent-child relationship in early childhood. These results are intriguing when considered in the context of the Study of Adult Development at Harvard University, the longest longitudinal study ever conducted in psychology. That study followed both Harvard graduates and men from Boston's inner-city throughout their lifespans (Vaillant, 2012). Data was collected for over 75 years, and findings indicated that the strongest predictor of physical and psychological health was the presence and quality of close relationships. From improving neurological health to increasing one's sense of fulfilment in life, relationships were shown to be an essential feature of lifelong healthy development. Throughout the lifespan, relationship quality is impacted by the first relationship children ever develop, the parent-child relationship (Ainsworth, 1989). Collectively, it is clear that parent-child relationship quality has both short and long term developmental consequences.

Another key implication is that even when the quality of the parent-child relationship is perceived as being positive, parents' mental health can still impact the emergence of childhood mental health concerns. In a sample overrepresented by relatively high functioning mothers (in regard to socioeconomic status and education), parental depression impacted emerging childhood internalizing regardless of the parent-child dysfunctional interactions. This challenges assertions in the literature that identify stressful family and life environment (often specified as low

socioeconomic status and parental education) (e.g. Hammen, 2017) and parent-child interactions (e.g. Reck et al., 2016) as primary mechanisms for intergenerational transmission of parental depression to childhood internalizing. That is not to say that other factors do not have an impact, but that addressing these alone is not enough to circumvent its impact (Mathiesen et al., 1999; Mikkonen et al., 2016).

As discussed above, it seems that even though relationships matter, it is not only through relationships that parent and child mental health factors interact. It is evident that, regardless of the process through which it occurs, when parents are feeling depressed, their children may also begin to develop these symptoms (Bernard-Bonnin et al., 2004). This underscores the importance of supporting parental mental health throughout early childhood. Gunlinks and Weissman (2008) found in a systematic review of the associations between parental depression and their children's mental health that successful treatment of parental depression was associated with an improvement in children's own symptoms and functioning. A generalization from these findings may be that it is essential for clinicians treating parent's mental health to also check in with their children's mental health, and vice versa.

### ***COVID-19***

The present study's implications are particularly relevant in light of emerging data around the mental health and economic impacts of the COVID-19 pandemic (Golberstein et al., 2020). Jiao and colleagues (2020) found that for children ages 3 to 6, clinginess, anxiety, and expressed fear of a family member getting sick were the most common behavioural and emotional responses to the pandemic. Substantial global increases in adult anxiety, depression, substance use, and loneliness are also expected as a result of COVID-19 (Galea et al., 2020). Wang and colleagues (2020) found that over half of surveyed adults reported moderate to severe

psychological symptoms as a result of COVID-19, with 28.8%, 16.5%, and 8.1% reporting moderate to severe symptoms of anxiety, depression, and stress, respectively. Based on these findings, it is evident that COVID-19 has had a significant impact on the home lives of families worldwide. The United Nations Educational, Scientific, and Cultural Organization is estimating that approximately 1.38 billion children have been pulled out of schools and childcare centers (Culver et al., 2020). This, in combination with the aforementioned mental health needs and economic uncertainty, is expected to have a marked increase on parenting stress, abuse, and violence against children (Culver et al., 2020). The results of the present study in conjunction with these emerging findings underscore the importance of supporting the mental health of both children and parents in order to prevent the long term impacts associated with the onset of anxiety and depression symptoms.

Additionally, given the economic uncertainty resulting from COVID-19, the ability to effectively manage resources to best support young children and parents is especially important. In Canada, the unemployment rate rose to 13.7% (adjusted rate of 19.6% when considering those not actively looking for work) in May of 2020, the highest since comparable data has been recorded (Statistics Canada, 2020). The government of Canada predicts a \$343 billion deficit as a result of COVID-19, with provinces such as Alberta predicting a \$20 billion deficit (BBC News, 2020; Dryden, 2020). In order for psychologists to fulfil their responsibility to maximize benefit (CPA, 2017), an understanding of how and where to intervene most effectively is paramount. It will be increasingly important to consider the dynamic interactions of child, parent, and relationship factors; as families continue to experience increased levels of stress, fear, and loss (Galea et al., 2020). Emphasizing this priority, Galea and colleagues (2020, p. 818) argued that COVID-19 “represent(s) a unique threat, and we must recognize the pandemic that will quickly

follow it—that of mental and behavioural illness—and implement the steps needed to mitigate it.”

### **Conclusion**

This overarching goal of this study was to gain a better understanding of how mental health professionals can best support children and families in early childhood. This was accomplished through secondary analysis of the CHILD study. Keeping in line with the CHILD study’s principal goal of better understanding the role of environmental interactions on child development, this study examined how parent-child relationship and parent mental health impacted emerging childhood mental health (Takaro et al., 2015). Specifically, this study sought to achieve a deeper understanding of the relationship between parent-child dysfunctional interactions and childhood internalizing across early childhood. A series of autoregressive, cross-lagged panel models were run to examine the directional association between parent-child dysfunctional interactions and childhood internalizing. This analysis revealed that parent-child dysfunctional interactions at age 3 significantly predicted childhood internalizing at age 5. Mediation analyses found that parental depression had an indirect effect on the relationship between parent-child dysfunctional interactions and childhood internalizing at both ages 3 and 5.

These findings point to the importance of early childhood as a key developmental period for emerging mental health, while underscoring the value of early and appropriate intervention. The current study also calls attention to the importance of monitoring and supporting the mental health of parents in order to promote mental wellness within the family. The emergence of children’s mental health problems is not only shaped by relationship quality or direct interactions but through a complex interplay of parent and child factors. During these formative years, children are shaped by what they are exposed to and may exude similarities to their parents’

emotional states. Early childhood is a dynamic period of constant growth that, with the presence of appropriate supports, presents an optimal opportunity to positively impact outcomes for both children and their families (Dodge et al., 2015; Wade et al., 2007).

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Appendix A.

Adapted Parent-Child Dysfunctional Interactions scale of the Parenting Stress Index

**Below is a list of statements about how you might have felt or behaved within the PAST 12 MONTHS. The “my child” referred to below is the child enrolled in this study. Indicate how strongly you agree with each statement.**

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1. I expected to have closer and warmer feelings for my child than I do and this bothers me.					
2. Sometimes my child does things that bother me just to be mean.					
3. My child rarely does things for me that make me feel good.					
4. Sometimes I feel like my child doesn't want to be close to me.					
5. My child smiles at me much less than I expected.					
6. When I do things for my child, I get the feeling that my efforts are not appreciated very much.					
7. When playing, my child doesn't often giggle or laugh.					
8. My child doesn't seem to learn as quickly as most children.					
9. My child doesn't seem to smile as much as most children.					
10. My child is not able to do as much as I expected.					
11. It takes a long time and it is very hard for my child to get used to new things.					
12. I feel that I am: (Check the response that applies best)	Not very good at being a parent	A person who has some trouble being a parent	An average parent	A better than average parent	A very good parent

## Appendix B.

<b>Authors</b>	<b>Predictor and Outcome Variables</b>	<b>Control Variables</b>
Anthoney et al., 2005	- Parenting Stress - Child Internalizing - Child Externalizing - Child social competence - Parent expectations of child behaviour	- Child gender - Preschool type (headstart vs private)
Costa et al., 2006	- Parenting Stress - Child Internalizing - Child Externalizing	- Parent psychopathology
Goemans et al., 2018	- Parenting Stress - Child Internalizing Child Externalizing	
Hart & Kelley, 2006	- Parenting Stress - Child Internalizing - Child Externalizing - Mother's work-family conflict - Mother's belief about father involvement - Father's number of hours worked	
Rodriguez, 2011	- Parenting Stress - Child Internalizing	- Child sex - Maternal age - Child age
Rodriguez et al., 2019	- Parenting Stress - Child Internalizing - Child Externalizing - ASD Symptoms	- Parent gender
Stone et al., 2016	- Parenting Stress - Child Internalizing - Child Externalizing	- Maternal mental health - Maternal age
Woodman et al., 2014	- Parenting Stress - Child Internalizing - Child Externalizing	
Zatto & Hoglund, 2019	- Child Internalizing - Positive teacher-child relationship quality - Negative teacher-child relationship quality	- Child gender - Preschool program (charity vs government funded) - child aggression