Parent-Child Mutuality in Early Childhood: An Examination of Children with Typical Social Development and Children At-risk for or Experiencing Emotional/Behavioural Difficulties

by

Karen Fay Cook

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Department of Educational Psychology
University of Alberta

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Abstract

Parent-child mutuality focuses on bidirectional processes and refers to the positive, responsive, reciprocal and cooperative qualities observed in healthy parent-child relationships (Deater-Deckard, Atzaba-Poria & Pike 2004). Greater mutuality in the parent-child relationship has been associated with fewer child behavior problems, and increased prosocial behaviours, child adjustment and social competence (Deater-Deckard, Atzaba-Poria & Pike 2004; Kochanska & Ortmann, 2006). The present study examined whether observed individual or dyadic behaviours in parent-child interactions predicted child outcomes, and compared parent-child dyadic properties in two samples of children (a sample of typically developing children and a sample of children identified at-risk for or experiencing clinical levels of emotional behavioural difficulties) in two contexts (i.e., a play and a clean-up task). In addition, this study sought to contribute to the body of literature examining dyadic mutuality in mother-child and father-child dyads.

Ninety- three mothers and fathers with their children (49 daughters, 44 sons), between 25 and 50 months of age (M = 34.15, SD = 5.78), engaged in structured play and clean-up activities in their homes. Interactions were videotaped and later coded using the Parent Child Interaction System (PARCHISY; Deater-Deckard, Pylas & Petrill, 1997). Parents were asked to complete the *Behavior Assessment System for Children, second edition: Parent Rating Scales Preschool* (BASC-2; PRS-P; Reynolds & Kamphaus, 2004) in order to gather information on the child's externalizing, internalizing, and adaptive behaviours and confirm group assignment (typically developing or at-risk/clinical). Teachers (where available) were also asked to complete measures of social, emotional, and behavioral functioning.

Multiple linear regression analyses were conducted to examine predictors of child outcomes based on parent reports. The findings based on mothers' reports accounted for 16% of the variance in their children's adaptive functioning with the children's gender, age, and family income contributing significantly to the model. Fathers' reports accounted for 26% of the variance of their children's adaptive behavior with children's age, fathers' negative and positive affect, and father-child dyadic mutuality significantly contributing to the model. Based on teacher reports, significant models were observed for adaptive behaviours and externalizing behaviours, accounting for 36.4% of the variance and 39.7% of the variance respectively. Repeated measures ANOVA explored group differences in dyadic mutuality, revealing a significant group effect in the clean-up task but not the play task; with mean scores in dyadic mutuality declining significantly for the at-risk/clinical group, a task that put more stress on the dyad to work together. No significant differences were found between the tasks or between mother-child and father-child mutuality. Findings are discussed in relation to previous research on parent-child mutuality and future considerations are proposed.

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CHAPTER ONE: INTRODUCTION

The parent-child relationship is the foundation from which a child grows and develops. Through the revolutionary work of Rene Spitz in the 1940s, it was realized that infants in foundling homes who were fed but deprived of handling or nurturing often failed to thrive and in some instances even perished (Karen, 1993). Today, the importance of the parent-child relationship for optimal child development is widely acknowledged, and although this relationship does not develop in isolation of broader systems and culture, the significance of this relationship for optimal child development is generally accepted across cultures (Anderson, Riesch, Pridham, Lutz, & Becker, 2010; Belsky, 1984; Bornstein & Cheah, 2006; Brofenbrenner, 1989). "The parent-child relationship refers to the connecting and binding qualities of parent and child in relation to each other. These qualities include closeness, influence, attachment, and investment" (Anderson, et al., 2010, p. 111). Hinde's theory of relationships, often cited in parent-child literature, describes the parent-child relationship as a dynamic interactive process of mutually reciprocal patterns that are established early in a child's life and develop over time (Hinde, 1987, 1988; Russell, Mize, & Bissaker, 2004). Hinde (1987, 1988) posits that each parent-child relationship has its own unique pattern of interaction and although influenced by other relationships and contexts, the relationship itself is the primary context in which the distinctive dynamic evolves. Furthermore, the relationship networks that children form, not only influence their development throughout their lifespan, but also carry into subsequent generations (Hinde, 1988; Hinde & Stevenson-Hinde, 1987).

The early parent-child relationship sets the stage for children's emotional well-being and social relationships later in life, concepts that have been strongly supported in the attachment literature, where the quality of the early attachment to the primary caregiver has been linked to

subsequent developmental outcomes (Landy, 2009; Schore, 2001; Thompson, 2008). A concept that has gained acceptance in the latter part of the 20th century is the idea of parent-child bidirectionality, where both children and parents contribute to the quality of their relationship and through their interactions shape one another and their relationship (Lollis & Kuczynski, 1997; Pettit & Arsiwalla, 2008; Russell, 2011). Consequently, not only the health of children can be positively or negatively influenced by the parent-child relationship, but also the health of the parents themselves (Brofenbrenner, 1996; Stretkowicz, 1992, cited in Anderson, et al., 2010). Developmental theorists today emphasize this bidirectional nature of the parent-child relationship and its influence on both children and parents over time (Buggental & Grusec, 2006; Deater-Deckard & O'Connor, 2000; Hinde & Stevenson-Hinde, 1987; Kochanska, 1997; Lollis & Kuczynski, 1997). Focussing on bidirectional processes that capture the quality of a parent-child relationship, as opposed to individual processes, is recognized by many scholars as essential in explaining parent-child interactions, and understanding children's development (Hinde, 1987; Lollis & Kuczynski, 1997). Hinde (1987) suggested that what we observe in children as they develop might actually be properties of their relationships. From this perspective, it may be hypothesized that the parent-child relationship could be a better predictor of children's social, emotional and behavioural functioning over time than individual attributes.

Mutuality, a bidirectional process, "…is a property of the dyad and cannot be defined by the behaviour of either individual alone" (Deater-Deckard & O'Connor, 2000, p. 562). Mutuality in the parent-child relationship refers to the balanced, responsive and cooperative nature of parent-child interactions (Deater-Deckard & O'Conner, 2000; Kochanska, 1997; Lindsey & Mize, 2000). Parent-child mutuality, a positive relational construct, is believed to be relatively stable in early childhood and has been associated with several positive child outcomes, and

"thus, the establishment and maintenance of mutuality appear to be an integral part of the socialization process between parent and child in early childhood" (Deater-Deckard & O'Connor, 2000, p. 562), and may be of particular importance for future socialization (Kochanska, 1997; Maccoby, 1992).

The concept of mutuality is primarily discussed in newer developmental research; however, the conceptualization of the parent and child in the context of their relationship, as opposed to individual behaviours, has been acknowledged in many socialization and developmental theories (Deater-Deckard & O'Connor, 2000). Attachment theory, family systems theory, transactional and socioecological frameworks have highlighted the importance of observing relationships as a whole, as opposed to the often prevalent view in which the behaviours of children and parents are observed separately, contributing to our understanding of the link between parent-child relationships and child outcomes (Deater-Deckard & O'Connor, 2000). Although it is widely accepted that parent-child interaction patterns contribute to children's social, emotional and behavioural development, (Shonkoff & Phillips, 2000; Sroufe, 1995; Stern, 1985), few studies actually examine dyadic interactions (bidirectional processes) from an authentic methodological perspective (Aksan, Kochanska & Ortmann, 2006; Lollis & Kaczynski, 1997; Scaramella & Leve, 2004). Thus, while individual parent and child attributes have been identified as affecting risk for later social, emotional and behavioural difficulties, much less is known about how bidirectional parent-child properties influence future child functioning (Deater-Deckard & O'Connor, 2000; Deater-Deckard, Atzaba-Poria & Pike, 2004; Kochanska, 1997; Kochanska & Murray, 2000).

By 6 years of age, children have developed many essential skills that allow them to function competently in social situations, which is often referred to as social competence in the

research literature (Feldman & Masalha, 2010; Landy, 2009; Waters & Sroufe, 1983). While the development of social competence has been associated with academic success, self-esteem, social and emotional adjustment, difficulties with emotion regulation and self-regulation of negative behaviours, identified as essential building blocks in the development of social competence, have been associated with emotional/behavioural difficulties (E/BD) in children (Briggs-Gowen, Carter, Skuban, & Horwitz, 2001; Denham & Burton, 2003; Landy, 2009; Shonkoff & Phillips, 2000). Empirical evidence suggests that 10-15% of preschool aged children experience E/BD (Briggs-Gowen, et al., 2001; Egger & Angold, 2006; Lavigne, et al., 1996), with children living in poverty identified as being at greater risk (Repetti, Taylor, & Seeman, 2002; Squires & Nickel, 2003). Once established in early childhood, patterns of E/BD are resistant to change (Egger & Angold, 2006; Eron, 1990; Gardner & Shaw, 2008; Squires & Nickel, 2003). It is estimated that at least 50% of preschool children identified with E/BD continue to experience difficulties over time (Gardner & Shaw, 2008; Mathieson & Sanson, 2000), emphasizing the need to understand the development of social-emotional processes and E/BD early in life (Briggs-Gowen, et al., 2001; Landy, 2009). On entering school, young children experiencing E/BD often progress to having several related problems, such as peer rejection, behavioural challenges, and low academic achievement, and are at risk for adolescent delinquency and criminality (Cohn, 1990; Gardner & Shaw, 2008; Kaiser, 2000; Walker & Sprague, 1999). These findings highlight the importance of understanding the development of E/BD and the processes that contribute to children's healthy social, emotional and behavioural development, especially in at-risk populations. As noted, few studies truly examine bidirectional interaction patterns at the level of the dyad, but even fewer have been examined amongst children at-risk for or experiencing EB/D (Deater-Deckard & Petrill, 2004).

The Present Study

The present study compared two groups of children (a sample of children identified with normative behavioural functioning, and a sample of children identified at-risk for or experiencing E/BD), to answer the following research questions: (1) What is the strongest predictor of children's social, emotional, and behavioural functioning: observed child behaviours, parent behaviours or dyadic interactions? (2) Does observed mother-child and father-child dyadic mutuality predict children's social, emotional, and behavioural functioning one year later (as reported by teachers)? (3) Are there differences in observed dyadic interactions (i.e., dyadic mutuality) between the two groups of toddlers and their mothers and fathers in two tasks (i.e., play and clean-up)? (4) What are the differences between mother-child and father-child mutuality in two tasks (i.e., play and clean-up)?

Comparing the data between the two groups (a normative sample and an at-risk/clinical sample) may help identify both risk and protective factors (at both an individual level (child and parent) *and* dyadic level) in the development of social, emotional and behavioural competence, and may also assist in the early identification of E/BD, and in guiding intervention practices. Negative parenting practices and interactions have been associated with negative outcomes for children, ranging from such issues as internalizing and externalizing behaviour problems, academic difficulties, and juvenile delinquency (Barber, Stolz, & Olsen, 2005; Baumrind, 1978; Deater-Deckard et al., 2004; Erickson, Sroufe, & Egeland, 1985; Garner & Shaw, 2008; Patterson, Reid & Dishion, 1992). However, less is known about the specific nature of positive interaction patterns that may protect against the development of such difficulties (Deater-Deckard et al., 2004; Lunkenheimer, Olson, Hollenstein, Sameroff, & Winter, 2011). As emphasized in the executive summary from the Committee on Integrating Science of Early

Childhood Development: “The question today is not whether early experience matters, but rather how early experiences shape individual development and contribute to children’s continued movement along positive pathways” (Shonkoff & Phillips, 2000, p. 6). Although research has advanced since the release of this summary, many questions still remain as to how and what positive relationship constructs are protective against the development of E/BD in children, especially in those at risk. Through the use of ecologically valid tasks, the preliminary inquiry in this study, aimed to enhance our understanding of how parent-child interactions influence children’s social, emotional and behavioural functioning, and offered a unique opportunity to compare dyadic mutuality in an at-risk/clinical population with a sample of children experiencing normative social, emotional and behavioural development, with hopes to enhance the developmental outcomes for young children experiencing E/BD, and for those at risk.

CHAPTER TWO: REVIEW OF THE LITERATURE

Mutuality in relational terms refers to the responsive, reciprocal and cooperative nature of relationships. In the parent-child relationship, the construct of mutuality emphasizes bidirectional processes, and includes behaviours such as joint attention, shared positive affect, smooth-flowing communication and mutual responsiveness (Aksan, et al., 2006; Deater-Deckard & Petrill, 2004; Deater-Deckard, et al., 2004; Kochanska, 1997; Kochanska & Murray, 2000). The back and forth interactions between a parent and a child are believed to be co-created and shape the dyad over time, perhaps more so than their individual attributes. Although this is not a new concept in developmental psychology, the construct of mutuality has been more specifically defined and operationalized by scholars over the past 20 years. In fact, several decades prior, Sears (1951) proposed a theoretical shift in the study of relationships from an individualistic perspective to one of dyadic analysis, asserting that relationships represent the combined interactions of at least two people and thus describing the dyadic interactions between individuals was essential in the study of relationships. Subsequent research confirmed the importance of including a dyadic perspective in the study of parent-child relationships by demonstrating that while parents affect their children, children also affect their parents, creating a pattern of interactions that are unique to a particular dyad (Bell, 1968). Furthering this early work, Hinde (1987) emphasized that parents and children establish interaction patterns early in life, and they continue to develop over time in the context of an enduring relationship; each partner influences the other and the nature of the relationship itself, highlighting the interconnectedness of the parent-child relationship that is difficult to separate from the dyad.

In current studies of relationships it is often highlighted that “the whole is greater than the sum of its parts,” and although the study of individuals in relationship has its merits, maintaining

an individualistic perspective can be limiting in that there is a risk of capturing only individual attributes while neglecting characteristics that are unique to the relationship itself, and the parent-child relationship is no exception in this regard (Lindsey & Mize, 2000). Maccoby (1992) stressed that the bidirectional influence of parent-child interactions must not be overlooked as each partner in the dyad influences the other, despite the difference in power and competence inherent in the parent-child relationship. Furthermore, the negotiation of power between a parent and a child is not simply determined by parental influence but is a result of the unique and interdependent nature of their relationship (Kuczynski, 2003). Contemporary theories of socialization and child development acknowledge the parent-child relationship as bidirectional in nature and recognize dyadic mutuality, the formation and maintenance of warm, responsive, synchronized interaction patterns, as foundational to healthy parent-child relationships (Aksan et al., 2006; Bugental & Grusec, 2006; Deater-Deckard & Petrill, 2004; Harrist & Waugh, 2002; Kochanska & Murray, 2000; Lindsey, Cremeens, Colwell, & Caldera, 2009; Lollis & Kuczynski, 1997; Parke & Buriel, 2006). Despite the shift in recognizing the importance of observing bidirectional processes in parent-child relationships, methodological limitations have led most researchers to continue to observe individuals in relationships and aggregate individual contributions to the relationship, instead of actually observing dyadic processes (Aksan et al., 2006; Lollis & Kuczynski, 1997; Scaramella & Leve, 2004). Bidirectional causality and dyadic processes are more difficult to study empirically, resulting in less formal analyses and inclusion primarily in the discussion sections of research papers (Kuczynski, 2003), a limitation that the study of parent-child mutuality has been addressing.

The purpose of this literature review is to present research and theories that are relevant to parent-child mutuality and examine the construct of parent-child mutuality in greater detail.

Initially, theoretical frameworks that support the construct will be discussed, followed by a review of the definitions and operationalization of mutuality. Current research on parent-child mutuality will be explored, including mutuality in mother-child and father-child relationships, in various contexts. Parent-child mutuality has been associated with children's social, emotional and behavioural functioning, and particularly in the development of social competence, and more recently parent-child mutuality and E/BD have been examined. Therefore, this review will include a brief overview of social, emotional and behavioural functioning, including social/emotional competence and E/BD in children and the influence of temperament, and will conclude with a review of current research specific to E/BD and parent-child mutuality.

Theoretical Framework

Mutuality is grounded in several theories that focus on relationships and bidirectional relationship processes, such as attachment theory, family systems theory, transactional systems theory and bioecological models (Deater-Deckard & O'Connor, 2000). While transactional systems theory and bioecological models support a relationship approach, they also focus on the multiple broader systems that directly and indirectly influence the parent-child relationship (Clark, Tluczek, & Gallagher, 2004). Attachment theory and family systems theory do not ignore the broader systems in which families interact, but similar to the study of parent-child mutuality, they tend to have a more direct focus on the parent-child relationship. Thus, in this review, attachment theory and family systems theory will be explored in greater detail.

Attachment theory. Attachment theorists were among the first scholars to highlight that parent-child relationships are co-created and to characterize the relationship between a caregiver and a child as opposed to simply representing the individuals (Deater-Deckard & O'Connor, 2000) Attachment refers to the strong emotional connection that develops between a child and

his/her caregiver during the first year of life, which is believed to play a vital role in a child's social and emotional development (Cassidy, 2008; Landy, 2009; Schore, 2001). Schore (2001), a leading researcher in the field of neuropsychology, describes that we are hardwired for relationship and that the attachment relationship is critical for a child's healthy development, and particularly his/her social-emotional development. The qualities of this attachment relationship not only affect children's developmental outcomes but are also carried into subsequent relationships (Karen, 1993; Maccoby, 1992; Schore, 2001; Thompson, 2008). In fact, the quality of attachment to the primary caregiver (and perhaps a few other significant caregivers) has been shown to be predictive of numerous developmental outcomes in children, such as general wellbeing, self-esteem, social competence with peers, problem-solving abilities, academic success, behavioural outcomes, and resilience (Landy, 2009; Mares, Newman, & Warren, 2005; Siegel, 1999; Thompson, 2008).

Attachment theory originated in the 1950s with the work of psychiatrist John Bowlby, and was further developed in conjunction with the work of his colleague, Mary Ainsworth (Cassidy, 2008; Landy, 2009). Building on an evolutionary perspective, Bowlby observed how "attachment behaviours" maintained the proximity between caregivers and infants, ensuring their safety and survival (Cassidy, 2008). "Bowlby proposed that an infant's attachment or tie to his mother (or substitute caregiver) is formed out of a number of behavioural systems or responses that develop during the first year of life and ensure survival by attracting the attention of caregivers" (Landy, 2002, p. 153). According to Bowlby (1969), the attachment system instinctively motivates an infant to seek proximity to its primary caregiver (typically mothers) or bring the caregiver to the infant by cooing, smiling, crying, clinging, approaching, and following, particularly during times of distress, for protection and to ensure survival. This biological drive

to maintain proximity to caregivers was also believed to be important for other aspects of development, such as feeding, learning about the environment and social interactions (Cassidy, 2008; Siegel, 1999; Zeanah & Boris, 2005; Karen, 1993).

Bowlby expanded his theory of attachment, through his work on separation and loss, to include the construct of "internal working models" (Landy, 2009). Internal working models have been described as relationship representations of self and others (Bretherton & Munholland, 2008; Cassidy, 2008), and are referred to by some as relationship scripts or schemas (Landy, 2009). These relationship representations become internalized and thus influence a child's later relationships and the intergenerational repetition of attachment patterns (Crockenberg & Leerkes, 2005; Karen, 1993; Landy, 2009; Mares et al., 2005).

> The infant builds up models or representations of the self and the carer ('the other') in relationship, along with associated feeling states. This model (known as inner working model in attachment theory) acts as a template for the child's expectations, behaviours and perceptions of future relationships." (Mares et al., 2005, p. 6)

Furthering the work of John Bowlby, Mary Ainsworth began observing infants in Uganda and later in Baltimore and observed patterns of attachment behaviours that supported Bowlby's description of attachment (Karen, 1993). The two scholars joined forces in the 1960s and greatly expanded the constructs of attachment theory. Through Mary Ainsworth's research in Uganda (1954) and Baltimore (1963-1967), specific patterns of attachment were documented and have since become integral to the understanding and assessment of a child's attachment to his/her caregiver (Karen, 1993). Utilizing "the strange situation" procedure, where infants were separated from their caregivers in a lab for brief periods of time, Ainsworth observed three attachment patterns, secure, insecure ambivalent/resistant, and insecure avoidant (Karen, 1993;

Landy, 2009). Later, Main and Solomon (1990) observed a fourth pattern, disorganized/disoriented attachment (Landy, 2009; Main & Solomon, 1990; Mares et al., 2005). Securely attached infants were reported to receive consistent, sensitive and responsive care, and were able to use adaptive strategies to manage distress and separation from their caregivers, while infants that were insecure were reported to have received less optimal care and utilized less adaptive coping strategies when distressed (Cassidy, 2008; Karen, 1993; Landy, 2009; Zeanah & Boris, 2005). Children that were classified as disorganized/disoriented generally had experienced abuse or neglect or had caregivers that were unavailable because of their own histories of loss or trauma, and experience the least optimal outcomes (Mares et al., 2005). Many children will have a few select attachment figures; however, not all attachment relationships are equal, as a hierarchy is generally observed, with one attachment figure being preferred for comfort and security (Cassidy, 2008).

The quality of an infant's attachment has been found to be relatively consistent over time, particularly in middle-class stable situations, with more variations reported in higher-risk, disadvantaged populations (Landy, 2009). Key parental behaviours that are believed to support the development of a child's secure attachment are emotional availability, nurturance and warmth, protection, and the provision of comfort (Zeanah & Boris, 2005). While the parent-child relationship is co-created, consistent, sensitive and responsive care has been found to lead to the development of a secure attachment (Kochanska, 1997). Although these parental behaviours are the responsibility of the caregiver, they have been found to contribute to the child's willingness to be responsive, which further encourages parental responsiveness, supporting the bidirectional perspective of parent-child relationships (Kochanska, 1997; Kochanska & Murray, 2000). Behaviours that are characteristic of mutuality in the parent-child relationship, such as shared

cooperation, shared positive affect, reciprocity, and responsiveness, have also been observed in securely attached parent-child dyads (Kochanska, 1997). In fact, Kochanska (1997) suggested that the securely attached dyad represents a good illustration of parent-child mutuality.

Family systems theory. Family systems theorists emphasize that individual behaviours must be understood within the context in which they occur, and while this extends to include larger family systems, considerable attention is given to subsystems within families, such as the parent-child relationship (Bugental & Grusec, 2006; Clark, et al., 2004; Russell, 2011). While family systems theorists assert that parent-child relationships influence and are influenced by multiple levels within a family system, they also maintain a clear focus on bidirectional processes, where parents shape and are shaped by their children (Pettit & Arsiwalla, 2008; Russell, 2011). From a family systems perspective, relationships are viewed as a whole, stressing that each individual within a relationship mutually influences the other; thus, the parent-child relationship, although influenced by other relationships, is viewed as the sum of its parts (Hinde, 1987, 1988; Hinde & Stevenson-Hinde, 1987; Russell, 2011). "…A family consists of parental and child subsystems that function interdependently as a single unit" (p. 28), and while parents maintain the responsibility of caring for their children, this care is influenced by the parent-child relationship (Clark et al., 2004).

Family systems theorists also emphasize a developmental perspective, observing how children and parents influence one another over time, how their interactions evolve as children develop through various stages, and how these changes influence children's adjustment (Kent & Pepler, 2003). Reciprocal interactions between parents and children are not static but change with time, as circumstances change and as children, parents, and their relationship develop (Kuczynski, 2003). Parent-child relationships are often described as interaction loops that are

recursive with no distinct beginning or end, which is often referred to as "circular causality" in the family systems literature (Kuczynski, 2003). Circular causality in the parent-child relationship is most often used to describe "vicious cycles," frequently referred to as coercive cycles (Kuczynski, 2003). Coercive cycles in parent-child relationships have been associated with developmental delays, emotional dysregulation, and behaviour problems (Clark et al., 2004; Kent & Pepler, 2003; Patterson et al., 1992). Similar to the "goodness of fit" model, often discussed in literature on temperament (addressed later in this review), the coercion model describes how difficult child attributes (e.g., aggression, oppositional behaviour) and adverse parental characteristics (e.g., stress, parenting style) interact resulting in a dysfunctional cycle and disturbances in the parent-child relationship, which can precipitate and perpetuate children's behaviour problems (Patterson et al., 1992; Pettit & Arsiwalla, 2008). These cycles of cause and effect, in conjunction with neurobiological and attachment research, have been instrumental in understanding and treating disturbances in early parent-child relationships, which are recognized as risk factors in negative developmental outcomes for children (Clark et al., 2004; Kent & Pepler, 2003; Schore, 2001). Thus, one must not lose sight of the importance of the parent-child relationship, especially when considering children's adjustment (Clark et al., 2004).

Congruent with a family systems perspective, parent-child mutuality focuses on bidirectional processes and emphasizes the significance of viewing the parent-child relationship as a whole. It would seem that parent-child mutuality could also be described as a form of circular causality, as it describes reciprocal relationship interactions that are unique to each relationship and evolve over time, although unlike mutually coercive cycles, parent-child mutuality has generally been used to describe positive interaction processes between parents and children. While coercive patterns have been associated with behavioural difficulties in children,

mutuality in the parent-child relationship has been associated with positive developmental outcomes.

Parent-Child Mutuality Defined and Operationalized

The concept of mutuality is referred to in the literature using a variety of terms that are closely related and often overlapping, such as: dyadic synchrony (Harrist & Waugh, 2002; Lindsey, et al., 2009), mutuality (Lindsey & Mize, 2000; Lindsey, Mize & Pettit, 1997), dyadic mutuality (Deater-Deckard & O'Connor, 2000; Deater-Deckard, et al., 2004; Deater-Deckard & Petrill, 2004) and the mutually responsive orientation (Aksan, et al., 2006; Kochanska & Murray, 2000). These terms have been used by researchers to describe specific or global aspects of healthy parent-child relationships, such as reciprocity, responsiveness, shared positive affect and cooperation, and have been associated with a variety of positive social, emotional and behavioural outcomes in children, several of which will be discussed in this review.

Kochanska and her colleagues were among the first groups of contemporary scholars to specifically define and operationalize mutuality in the parent-child relationship and to emphasize the need for methodological shifts in the unit of analysis. Through their study of parent-child relationships, building on Maccoby's proposed *system of reciprocity* where the parent and child form "…a mutually binding, reciprocal, and mutually responsive relationship" (p. 94), Kochanska defined and operationalized the *mutually responsive orientation* (MRO; Kochanska, 1997). Initially, MRO described mother-child shared co-operation and mother-child shared positive affect and was coded by aggregating individual scores on each dimension, a limitation that was later addressed (Kochanska, 1997). From this initial work Kochanska concluded that: "The degree of mutual reciprocity or responsiveness appears to be an important quality of the

parent-child relationship and one that differentiates individual dyads …[and] is a foundation for a host of outcomes central in successful socialization" (Kochanska, 1997, p. 94).

MRO, intended to capture dyadic interactions, was defined as "…a positive, mutually binding, and cooperative relationship between the parent and the child" (Aksan, et al., 2006, p. 833). However, initially in measuring MRO individual qualities were aggregated to obtain a dyadic rating, which the researchers described as limited from a truly relational perspective in that it was not the dyadic interactions themselves that were being measured (Aksan, et al., 2006; Kochanska, 1997; Kochanska & Murray, 2000). To shift the unit of analysis from that of the individuals to dyadic qualities, Aksan et al. (2006) further defined and operationalized the MRO construct and extended their observations to include mother-child and father-child dyads. In developing their dyadic coding scheme, they found that when parent-child dyads were high on MRO they developed coordinated routines with ease; displayed a back and forth flow of communication (harmonious communication); showed mutual cooperation with conflicts being diffused with ease; and shared frequent bouts of joy, affection and humour (emotional ambiance) (Aksan et al., 2006). The updated coding scheme captured these four components (coordinated routines, harmonious communication, mutual cooperation, and emotional ambiance), showed stability over time, and was found to capture aspects of the parent-child relationship that were unique to the dyad and distinct from the individual characteristics (Aksan et al., 2006). Similarities and differences were observed in mother-child and father-child MRO, and will be reviewed in this dissertation.

Near the time of Kochanska and her colleagues' work, other groups of scholars were also working to define and operationalize mutuality in the parent-child relationships. While Kochanska and her colleagues focused primarily on younger children and their parents, Deater-

Deckard, Pylas and Petrill (1997) operationalized mutuality with preschool and school-aged children and developed a coding scheme (The Parent Child Interaction System; PARCHISY) to capture variances in parent-child mutuality. The PARCHISY captured individual qualities in the parent and child (parent codes: control, affect, responsiveness, initiative/persistence, verbalizations; child codes: affect, responsiveness, initiative/persistence, noncompliance, autonomy, activity, and verbalizations), and dyadic qualities, providing dyadic codes of reciprocity, conflict and cooperation. These authors defined dyadic mutuality as "…the bidirectional reciprocal responsive quality of interaction that describes well-functioning parent-child relationships" (Deater-Deckard & O'Connor, 2000, p. 561). Dyadic mutuality is observed in interactions that are coherent, warm, cooperative and synchronous. It is evident from infancy, and although it may change and develop over time, it persists throughout the lifespan (Deater-Deckard & O'Connor, 2000; Deater-Deckard & Petrill, 2004). Furthermore, dyadic mutuality is specific to a dyad and not the individuals alone and is an indicator of the co-regulation of joint attention and behaviour within the dyad (Deater-Deckard & O'Connor, 2000; Deater-Deckard & Petrill, 2004; Deater-Deckard, et al., 2004).

Deater-Deckard et al. (2004):

> …operationalized mutuality using the same model as Kochanska (1997) and Deater-Deckard and O'Connor (2000) that includes mother and child responsiveness to each other (i.e., contingent, immediate), cooperation (i.e., discussion, planning, and agreement about how to proceed), and reciprocity (i.e., matching affect, eye contact, coherent 'turn taking' in verbal and nonverbal interaction). These correlated dimensions converge as a reliable mutuality construct that is readily observed in brief parent-child interactions (Kochanska, 1997; Lindsey & Mize, & Pettit, 1997). (p. 610)

Similar to MRO, studied by Kochanska and colleagues, dyadic mutuality captured global qualities in the parent-child relationship and was found to be an important aspect of socialization within families (Deater-Deckard & O'Connor, 2000; Deater-Deckard & Petrill, 2004; Deater-Deckard, e al., 2004).

Concurrent to the work of Kochanska, Deater-Deckard and their colleagues, Lindsey et al. (1997) examined the link between mutuality and children's social competence. These scholars described mutuality as the relative balance between a parent and child in play, and believed that a bidirectional view of the parent-child relationship would be a more accurate indicator of the relationship itself. They argued that observing the relationship as a whole, as opposed to individual characteristics, would offer a unique perspective of the relationship, but they wanted a coding scheme that would measure observable behaviours over global qualities in the parent-child relationship. They defined mutuality as the relative balance between partners' initiations and compliance to initiations in interactions, and although they found it to be moderately correlated with dyadic synchrony they found mutuality to have acceptable construct validity (Lindsey & Mize, 2000). Furthermore, they identified dyadic synchrony (joint attention, reciprocity, and responsiveness) as a more global index encompassing parent-child mutuality. In their initial work they found that a higher level of parent-child synchrony was observed in dyads that had higher mutual initiation and mutual compliance scores. They also found that a higher level of mutual compliance was associated with higher levels of social competence in early childhood (Lindsey et al., 1997). They concluded that individual and dyadic level assessments provide unique information about parent-child relationships and that an event-based behavioural observation system provided valuable information and captured specific aspects of dyadic synchrony, mutual initiations and mutual compliance, which they refer to as mutuality (Lindsey

et al., 1997; Lindsey & Mize, 2000). Further to this early work, in an attempt to also capture the more global aspects of the parent-child relationship, Lindsey, Cremeens and Caldera (2010a; 2010b) studied mutuality in conjunction with dyadic synchrony and positive affect to observe the influence of gender and context on mutuality in parent-child relationships, studies that will be reviewed in this dissertation.

Although mutuality has been defined and operationalized with variations in terminology and in coding schemes, there has been a consistent link found between this bidirectional relationship process and young children's socialization. Whether defined globally or by specific mutual interactions, mutuality focuses on bidirectional processes that describe aspects of well-functioning parent-child relationships, which are suggested to be a better indicator of relationship functioning than individual characteristics (Hinde & Stevenson-Hinde, 1987). For the purpose of this dissertation, mutuality will be defined as the more global relationship quality, where mutuality in the parent-child relationship refers to positive bidirectional processes that represent the reciprocal, responsive and cooperative nature of the relationship (Kochanska, 1997; Maccoby, 1992; Deater-Deckard & O'Connor, 2000).

Current Research on Parent-Child Mutuality

Early in the study of parent-child mutuality it was recognized that this relationship construct played a unique role in the socialization of children (Aksan et al., 2006; Deater-Deckard & O'Connor, 2000; Deater-Deckard, et al., 2004; Deater-Deckard & Petrill, 2004; Kochanska & Aksan, 1995; Kochanska, 1997; Kochanska & Murray, 2000; Kochanska, Aksan Prisco & Adams, 2008; Lindsey, et al., 1997). Several studies conducted by various research groups, observing global or specific aspects of mutuality, reported associations between higher levels of mutuality and a variety of positive child outcomes. In one of the earliest studies,

Kochanska and Aksan (1995) found that when toddlers (aged 26-41 months) and their mothers shared higher levels of mutual positive affect, the toddlers scored higher on dimensions of child cooperation, and were more eager to comply and internalize their mother's standards of conduct. These authors proposed that positive affect and child cooperation might be important in the development of early conscience (Kochanska & Aksan, 1995). Further to this initial study, Kochanska (1997) studied two components of the mutually responsive orientation (MRO), mother-child mutual positive affect and shared cooperation, over two time periods, when children were 26-41 months and again when they were 43-56 months. Mother-child dyads that maintained higher levels of MRO during both time periods had toddlers who were observed to be more compliant with greater internalization of maternal standards of conduct, despite the conflicting goals of compliance and autonomy that are characteristic of this developmental period; thus supporting their findings that early parent-child mutual responsiveness is associated with adaptive social outcomes, especially when this orientation endures beyond the toddler years (Kochanska, 1997). Extending on this earlier work, Kochanska and Murray (2000) followed mother-child dyads at three time points, when the children were toddlers, preschoolers and at school-age, observing their mutual responsive orientation and assessing the children's conscience development at school-age. Mother-child mutual orientation during toddlerhood and the preschool years was found to explain a significant portion of variance (48%, $p < .001$) in conscience development at school-age, after controlling for age and gender, demonstrating the important influence of MRO in child socialization (Kochanska & Murray, 2000). Although these studies highlighted the importance of parent-child mutuality in children's socialization, they were limited in advancing the dyadic intent of the construct in that the methodology used to measure MRO continued to aggregate individual qualities as opposed to capturing the

relationship as a whole (Aksan et al., 2006). To this end, Aksan et al. (2006) developed a coding scheme that specifically measured dyadic qualities of the parent-child relationship. These authors found MRO to be a distinct construct that measures qualities in the parent-child relationship that are "…distinguished from and is not reducible to the 2 interacting individuals' qualities (responsiveness and positive affect)" (Aksan et al., 2006, p. 833). These authors suggested that future research should continue to examine the futility of measuring the relationship directly, as opposed to examining individual exchanges, but also highlight the need for future research to examine "…whether such dyadic-level measures predict external-outcomes better than measures reflecting characteristics of the individuals" (Aksan et al., 2006, p.845), the latter being a question that is explored in this dissertation.

Deater-Deckard and O'Connor (2000) expanded on the research of Kochanska and colleagues in two studies of British families, including twins, adoptive and biological siblings. They examined parent-child dyadic mutuality in monozygotic and same-sex fraternal twin pairs in their first study and adoptive and biological siblings in their second study (all at 3 years of age) to examine sibling differences and gene-environment processes. Dyadic mutuality was measured using the PARCHISY; two global ratings of dyadic interactions (reciprocity and cooperation) and ratings of the parent and child's responsiveness to one another were combined to provide a standardized composite score, with higher scores representing greater dyadic mutuality. Acknowledging the limitations of their research, these authors concluded that their two studies supported the hypothesis that mutuality in the parent-child relationship was a critical component of children's development and socialization, with patterns of parent-child mutuality being well established by the time the children were 3 years of age (Deater-Deckard & O'Connor, 2000). When examining between-family differences, they found mutuality to be

greater in families with more resources and with more child positivity. Within families, they found mutuality to be dyad specific and not explained by a shared environment effect. Parent-child mutuality amongst siblings was more similar when the siblings were more alike, thus suggesting both genetic influences and non-shared environment effects, however, they caution that parent effects could not be ruled out in their studies (Deater-Deckard & O'Connor, 2000).

Further to these behaviour-genetic studies, Deater-Deckard and Petrill (2004) and Deater-Deckard et al. (2004) observed 7 to 9-year-old children and their parents to examine the link between dyadic mutuality and the development of child behaviour problems. In one study, a behavioural genetic design was employed to examine between- and within-family differences in parent-child dyadic mutuality (Deater- Deckard & Petrill, 2004). Their sample included 396 genetically unrelated siblings in adoptive families, and although most parents were European American, they reported ethnic diversity amongst the children. Consistent with the previous gene-environment studies, these researchers found dyadic mutuality to be dyad-specific within families, which they suggested may in part be related to child effects (genetic influences), and non-shared environment effects (parent and child effects). They also reported that although the children in their study were generally well-adjusted, greater dyadic mutuality was associated with lower levels of child behaviour problems, which were not accounted for by genetic similarity of the parent and the child (Deater-Deckard & Petrill, 2004). In another study, Deter-Deckard et al. (2004) observed mother-child and father-child mutuality in Anglo and Indian British families and the link with externalizing behaviour issues. They found higher levels of dyadic mutuality to be associated with lower levels of externalizing behaviours, particularly when parent-child positive affect was also high, despite participants' gender, ethnicity and socioeconomic status. These authors also reported that mother-child dyads tended to show

greater mutuality than father-child dyads, although parents shared moderately similar mutuality with their child, and Anglo parents tended to have higher mutuality than Indian parents, which was in part related to acculturation (years in Britain, language spoken, and cultural attitudes). In reviewing the limitations of their study, the authors highlight that few of the children presented with clinical levels of externalizing behaviours, and suggest that future studies attempt to include clinical samples, a limitation that this dissertation aimed to address.

Lindsey et al. (1997) have added to the research on the correlations between children's outcomes and mutuality by examining an aspect of dyadic mutuality, the relative balance in the rate of partner's initiations and compliance to the initiations. They found that children (4-6 years of age) who had balanced, reciprocal parent-child play also had more synchronous play interactions with their parents, and were rated 4-6 months later as more competent and more liked by their teachers and peers (Lindsey et al., 1997). These authors found mutual compliance to have a stronger association with social competence than mutual initiations and suggested that mutual compliance may be a more accurate indicator of relationship characteristics, while initiations may be more of an indicator of individual characteristics. Lindsey et al. (1997) suggested that longitudinal studies would be necessary to confirm the direction of the effects found. Lindsey, et al. (2010a) in a longitudinal study on the role of context in parent-child mutuality, found earlier parent-child mutuality to be linked to children's later peer competence and suggested that consistent with earlier work, their findings support that parent-child mutuality is linked to children's adjustment, (Lindsey, et al., 2010a). In further examining parent-child mutuality, Lindsey et al. (2010a, 2010b) observed gender and contextual differences; these findings will be discussed in greater detail.

Mother-child and father-child mutuality. Historically, the parenting and developmental literature has focused on mothers' contributions to children's development and the mother-child relationship with little attention given to fathers' contributions and the father-child relationship, and the study of mutuality has been no exception in this regard. However, both mothers' and fathers' influences on children's development and their relationships with their children have been examined more rigorously in recent years. From a systems perspective where families are viewed as networks of interrelated relationships, it is essential to study the complex interactions within families and between relationships in order to have a broader understanding of the influences on children's development (Belskey, 1984; Hinde & Stevenson-Hinde, 1987; Lamb, 2010; Parke & Buriel, 2006; Reis, Collins & Berscheid, 2000). Although it is acknowledged that parent-child relationships are not the sole relationships within these networks, the relationships that children have with their mothers and fathers are recognized as particularly influential in children's socialization (Brofenbrenner, 1989; Parke & Buriel, 2006).

Differences in mother-child and father-child relationships have been reported in the parent-child literature; however, overall more similarities than differences have been documented in recent literature (Lamb, 2010; Russell, et al., 2004). In general, it is suggested that mothers and fathers in industrialized nations can be equally responsive to their children but their interaction styles may differ (Parke, 2002). However, Lamb (2010) suggests these differences may be related to the unique characteristics of each parent rather than being gender specific, an area that warrants further investigation. Traditionally, mothers have tended to be more involved in caretaking and comforting behaviours and are thus thought to be more responsive and sensitive. While in some studies mothers have been reported to play more frequently with their children, proportionately fathers tend to engage in more play and may be

the preferred playmate over mothers, with father play being more intense and likely having a unique influence on children's development (Lamb, 2000, 2010; Lindsey et al., 1997; Lindsey et al., 2010a; Parke, 2002; Parke & Buriel, 2006; Russell & Russell, 1987). Researchers have suggested that such differences in mother-child and father-child interaction patterns may influence children's developmental outcomes in unique ways (Lindsey, et al., 1997; Rinaldi & Howe, 2012). Preferences and differences in interaction styles are thought to have developed as a result of context (e.g., time spent with child, role demands) and culture (e.g., social norms for mothers and fathers) (Deater-Deckard et al., 2004; Lamb, 2000, 2010; Parke, 2002; Parke & Buriel, 2006). Despite advances in the study of parent-child relationships, there is still limited research focusing on how specific relationship processes are unique to mother-child and father-child dyads and how they influence children's development.

The bulk of research on parent-child mutuality has focused on mother-child dyads, with limited data available on father-child mutuality (Harrist & Waugh, 2002; Kochanska, 1997). However, more recent studies have included more father-child dyads and have examined both mother-child and father-child mutuality and how each influences child outcomes. In one earlier study examining the balance of initiations and mutual compliance in parent-child dyads (children aged 4-6 years) during play, Lindsey et al. (1997) found that father-child mutual compliance, but not mother-child mutual compliance, was associated with children's social competence and peer acceptance (controlling for individual contributions to the interactions). Furthermore, they reported that father-child mutual compliance was more predictive of children's social competence than measures of individual behaviours, supporting the importance of father-child play in children's development. Although mothers and fathers are generally compliant with their children during play, father-child dyads that were high on mutual compliance had fathers that

were more compliant with their children's play suggestions and vice versa (Lindsey et al., 1997). Further to this early study, Lindsey et al. (2010a) compared mother-child and father-child mutual compliance and positive affect in two contexts (play and a caregiving task) when toddlers were 15 and 18 months of age with children's subsequent peer competence (at 24 months of age). Contrary to Lindsey et al.'s (1997) earlier work, they found no *significant* difference between mother-child and father-child mutuality (the relative balance of initiations and compliance between partners during play) as it related to children's peer competence, but as suggested in the literature on father-child play, the father-child dyads tended to share more positive emotion than the mother-child dyads during play.

Lindsey et al. (2010b) examined gender differences in verbal communication patterns in mother-child and father-child dyads during play and a caregiving task when the toddlers were 15 and 18 months of age. Mother-child and father-child differences were observed in the play context but not the caregiving context. The authors reported that their findings were consistent with previous findings suggesting that mothers and fathers utilize similar caregiving behaviours, but in play, mothers tended to comply more with their children's initiations and displayed more facilitative and cooperative behaviour, whereas fathers tended to show less compliance and were more assertive and directive (Lindsey et al., 2010b). These authors posit that the parent gender differences observed in play may influence the development of children's gender schemas, and although no differences were observed in this study between how girls and boys communicate with their mothers and fathers, the children in the sample were young in age. As with all research studies there are limitations, often with the socioeconomic and ethnic diversity of the sample, but a limitation that is important to note in these two studies is that all mother-child dyads were observed at 15 months and all father-child dyads were observed at 18 months; thus, it is not clear

whether the differences observed between mother-child and father-child dyads were accounted for by parent gender or child maturation (Lindsey et al., 2010a, 2010b).

In their study of MRO, Kochanska and colleagues have also examined mother-child and father-child differences through the infant and toddler years. In a typically developing, socioeconomically diverse sample, Aksan et al. (2006) examined parent-child MRO when the children were 7 and 15 months of age, overall they found mother-child and father-child MRO to be moderately similar, yet some distinctions were evident. Father-child MRO was lower than mother-child MRO when their children were 7 months of age but was similar at 15 months, while mother-child MRO remained consistent at the two time points. The authors account for this difference by explaining that mothers tend to be more involved in their young children's care and may enjoy this stage more than fathers, whereas fathers may be more comfortable and enjoy their children more when they are able to be more playful (Aksan et al. 2006; Parke & Buriel, 2006). Further to this study, Kochanska et al. (2008) examined mother-child and father-child MRO in infancy and toddlerhood and the influences on children's outcomes (self-regulation and internalization of parents' prohibition) at 2 years of age. Despite observing similarities in the overall influence of MRO on children's outcomes, the authors found the mechanisms of influence to be clearer for mothers than fathers. Higher levels of early mother-child MRO were associated with less power assertion by mothers (at 38 months), which was found to mediate the internalization of mothers' prohibitions and self-regulatory behaviour in the child at 52 months of age. As with mothers, higher levels of early father-child MRO were associated with self-regulatory behaviours at 52 months of age, and higher levels of power assertion at 38 months were negatively related to children's outcomes at 52 months. Unlike mother-child MRO, the mediating links were not clear; higher levels of father-child MRO did not have an effect on the

internalization of fathers' prohibitions at 52 months and failed to predict the reliance on power assertion at 38 months (Kochanska et al., 2008). The authors note that their findings must be interpreted with caution as their sample was fairly homogenous and the parents in their study tended not to rely on power assertion in discipline, they also suggest further study to clarify the mediating role that power assertion may play, especially in at-risk populations where there may be a higher reliance on such strategies. In a more recent study, Kim and Kochanska (2012) examined if infants' negative emotionality (at 7 months) moderated the effects of parent-child MRO (at 15 months) on children's self-regulation (at 25 months), in a sample of relatively low-risk, well-functioning families. Again, they found differences in mother-child and father-child MRO despite them being moderately correlated and similar overall. In this study, infant negative emotionality moderated the effects of mother-child MRO but not father-child MRO (for highly emotionally negative infants). That is, when mother-child MRO was high, they found that highly emotionally negative infants actually showed greater self-regulation at follow-up than those that were less negative, while the highly negative infants that experienced lower levels of mother-child MRO were not well regulated. The authors proposed that the differences they observed in mother-child and father-child MRO might be related to the differences in the type of interactions and caregiving required by mothers and fathers during infancy, and that mothers may have greater involvement with their highly negative infants, concluding that mother-child MRO may play a more significant role than father-child MRO during this developmental stage (Kim & Kochanska, 2012).

Deater-Deckard et al. (2004) examined dyadic mutuality in a sample of school-age children (7-9 years of age) and found that although mother-child and father-child mutuality was moderately similar with their child (r = .47), mother-child dyads had slightly higher levels of

dyadic mutuality and positive affect than father-child dyads, although the effect size was reported as small, about a half a standard deviation difference. Furthermore, the authors reported that the differences observed were not accounted for by biological differences. They note that the slight difference found supports prior literature that suggests that fathers are as capable as mothers of having warm and engaging parent-child interactions, and posit that the differences found, as suggested in previous literature, could be a result of fathers having less time and thus less experience in interacting with their child, but also suggest that the structured nature of the etch-a-sketch task used in their study could have had an impact on the results (Deater-Deckard, et al., 2004).

Despite the differences in research designs and the limitations in each of the studies reviewed, there were similarities reported in mother-child and father-child mutuality. In global terms, a higher level of parent-child mutuality was consistently associated with positive child outcomes (e.g., self-regulation, peer competence), regardless of parent gender. However, the differences in mother-child and father-child mutuality were less consistently observed and understood. Often, the differences reported were thought to be related to the stage of childhood when mutuality was measured and the specific variables of interest being examined, as opposed to clearly indicating specific gender differences; however, many of the studies also reported having fairly homogenous samples, possibly limiting their findings. Future studies will need to continue to examine mother-child and father-child mutuality, particularly in samples of greater diversity to clarify and corroborate these earlier findings. This dissertation will explore mother-child and father-child mutuality in hopes of contributing to the literature in this area.

Context and parent-child mutuality. Mutuality has been studied in a variety of parent-child interactions, such as: during conversations, during free or structured play times, and during

teaching and caregiving tasks. While this variability in observing mutuality may support its pervasiveness in the parent-child relationship, it has limited our understanding of how mutuality may vary depending on the context (i.e., the situation) in which it occurs (Lindsey et al, 2010a). Russell, Pettit and Mize (1998) suggested that the parent-child relationship may differ in various contexts as the parent-child relationship may have two unique aspects, one where the parent maintains authority and provides a sense of security and protection (vertical relationship), and one that is more reciprocal and egalitarian (horizontal relationship). In the early study of parent-child relationships it was proposed that the parent-child relationship was a vertical relationship as adults have greater social power, whereas a horizontal relationship could be observed between peers where there is equal social power (Hartup, 1989). Contrary to this earlier perspective, Russell et al. (1998) proposed that it is possible for both vertical and horizontal aspects to be present in the same relationship. For example, Lindsey et al. (2010a) noted that parenting style typologies can be viewed as both vertical and horizontal as they observe how parents set limits and engage in democratic give and take exchanges; also parents take on more vertical characteristics during caregiving tasks and more horizontal characteristics when interacting as a play partner. It has been suggested by some scholars that since the parent-child relationship will vary by task and context (i.e., the circumstances and situation in which the interaction occurs), there is not simply one but multiple levels of relationship between a parent and a child (Grusec & Davidov, 2007). Parents may incorporate different strategies depending on the goal of their interaction, and children may differ in their state depending on the context of an interaction; therefore, interactions such as caregiving and play may be quite distinct (Grusec & Davidov, 2007). For example, play focuses more on fun, enjoyment and give and take interactions

whereas caregiving may be more goal focused, less egalitarian and more parent directed (Lindsey et al., 2010b).

To examine the role that context plays in the parent-child relationship, Lindsey et al. (2010a) observed how context influences parent-child mutuality during two unique interactions, a caregiving task (i.e., eating a snack) and a parent-child play interaction. Lindsey et al. (2010a) suggested that a play interaction would provide an opportunity for parents to engage in a more egalitarian relationship with their children, allowing them to focus less on discipline and the goals of the task. They described play as most closely representing a horizontal relationship and hypothesized that, "children whose parents' play style mostly resembles that of a mutual play partner may experience social advantages" (Lindsey et al., 2010a, p. 144). In this study the authors examined mutual compliance (compliance to each partner's bids for interaction) and shared positive affect. Overall they found higher mutual compliance in parent-child dyads during the play context, suggesting that parent-child behaviours change as the context for their interactions change. They also examined the link between parent-child mutuality in the two contexts and children's peer competence. Although they found greater mutuality in either context to be associated with peer competence, they did observe play to have a more significant link to peer competence than caregiving, but suggested caution with the interpretation of this finding as the sample was small and the statistical comparisons were not significantly different (Lindsey et al., 2010a). Thus, the authors concluded that mutual compliance and shared positive affect may endure across contexts as dyads with greater mutual compliance and shared positive affect in play also had higher levels in caregiving, and this shared power led to more positive peer interactions (Lindsey et al., 2010a). In another study, Lindsey et al. (2010b), observed mother-child and father-child dyads (children 15-18 months of age) during a caregiving (i.e., eating a

snack) and a play context and found that even at a young age the quality of parent-child interactions varied by context. In this study, the parents were observed to be more in charge during the caregiving task and the children were more likely to comply with the parent's initiations during this task. Whereas during the play task, both boys and girls were observed to take more of a lead by making more initiations, although overall, parent-child interactions during play were observed to be more egalitarian than during the caregiving task (Lindsey et al., 2010b). In the study of context, although higher levels of parent-child mutuality were observed in more horizontal relationship interactions, it seems important to note that overall higher levels of parent-child mutuality were associated with positive outcomes for children regardless of the context in which they were observed, thus emphasizing the importance of a responsive, reciprocal and cooperative parent-child relationship in supporting optimal children's development and socialization, regardless of the task or goal of the interaction. These findings on context may have particular relevance for parenting and parenting programs and warrant further investigation. Two contexts, play and clean up, will be observed in this dissertation to expand our understanding of the role of context in parent-child mutuality.

Social, Emotional, and Behavioural Functioning

Humans are social beings and we "… have been successful as a species in part because of our social nature. Interdependence, reciprocity, and responsivity characterize our actions in a social world of work, play, family, and community" (Odom, McConnell & Brown, 2008, p. 3). Human beings have neural systems that are wired to process social stimuli from birth, and cognitive abilities that are believed to be essential for social interactions, such as the ability to understand mental states in one's self and others (a theory of mind) (Frith & Frith, 2001). Social abilities begin to develop early in life, and are influenced by relationships with our caregivers,

siblings, and peers, although the parent-child relationship is reported as particularly influential in early socialization (Feldman & Masalha, 2010; Hastings, Utendale & Sullivan, 2007). The socialization of children is universal, but cultural variations in social behaviours and relatedness are observed (Denham, et al., 2011; Feldman & Masalha, 2010). Through the process of socialization, children develop the emotional, behavioural, and cognitive skills necessary for social functioning (Feldman & Masalha, 2010; Grusec & Davidov, 2010; Parke & Buriel, 2006). While socialization is seen as a bidirectional process, where the interactions of each partner influence the other, both mothers and fathers have been noted to play an important role in children's social and emotional development (Feldman & Masalha, 2010; Grusec & Davidov, 2010). However, fewer studies have observed how father-child interactions influence children's social development (Feldman & Masalha, 2010).

Social competence. Effective social functioning is often referred to as social competence. In the research literature, social competence has been specifically defined in a variety of ways, often depending on the focus of the study, but in general social competence refers to the ability to achieve a goal or recognize and respond appropriately to various situations or demands using effective behavioural strategies (Odom et al., 2008; Waters & Sroufe, 1983). In the child development literature, social competence generally refers to a child's ability to function socially with peers and adults (Feldman & Masalha, 2010; Landy, 2009). Thus, social competence allows children to cope in a variety of contexts, such as participating in group activities, interacting within and outside of the family unit, developing friendships, cooperating, and initiating social exchanges (Feldman & Masalha, 2010; Frith & Frith, 2001; Landy, 2009). Social abilities are believed to be well established by 5-6 years of age, and influence subsequent social adjustment, with language and communication, emotional regulation and the regulation of

negative behaviours, the ability to engage in pretend play and assume different roles, moral development and a secure attachment, all believed to contribute to the development of social competence (Landy, 2009). Early social markers, such as showing an interest in peers, have been observed in children as young as 2 months of age, with marked shifts in social interactions seen between 24 to 36 months of age with the emergence of cooperative, social and pretend play (Landy, 2009). While developmental milestones have been established in the development of social competence, a wide range of individual differences have been observed (Landy, 2009). The nature of social interactions change with development; as social demands increase and social networks expand beyond the parent-child dyad, social interactions become more complex (Denham et al., 2011). Social behaviours that were appropriate at an earlier age may no longer be appropriate later in development, and interactions with peers differ from those with adults, thus making it necessary to choose goals and behaviours that are appropriate to each situation (Denham, et al., 2011; Russell et al., 1998).

There are close links between social and emotional development, with aspects of emotional functioning being important in social interactions (Denham et al., 2011). In fact, emotional and social development overlap to the degree that it can be difficult to separate social and emotional competence; for example, when children are socially competent, they are able to regulate their emotions, cooperate, collaborate and take turns (Denham et al., 2011; Landy, 2009). The ability to regulate and control one's emotions and cope with the frustrations of daily life is crucial for social development and impacts social functioning, and thus is highlighted as an important building block in the development of social competence (Denham et al., 2011; Landy, 2009). Socially competent children are able to regulate their emotions and manage a variety of

social situations, allowing them to be accepted by their peers, have close friendships, and often be described as popular (Landy, 2009).

Children who are described as socially competent often respond to the needs of others and consider the well-being of others in their social goals and interactions (Landy, 2009). Social competence has been linked to many positive outcomes for children, including school achievement, academic success, self-esteem and emotional well-being (Denham, et al., 20011; Landy, 2009). On the other hand, children that do not develop social competence often display more acting out and aggressive behaviours (externalizing behaviours) or shyness and withdrawal (internalizing behaviours), and may experience school and social difficulties, up to 3-5 times more often than their peers (Ladd & Coleman, 1997; Landy, 2009). In particular, difficulties with emotion regulation and self-regulation of negative behaviours, which contribute to social competence, have been associated with behaviour problems in childhood and can lead to mental health issues (Landy, 2009). It has been highlighted that once established, "…social competence or difficulties tend to be relatively stable" (Landy, 2009, p. 560). In fact, social-emotional competence has been reported to play an important role in the long-term trajectory of emotional/behavioural problems (Briggs-Gowen, et al., 2001). Although the study of social competence primarily examines social behaviours, social competence appears to be greatly influenced by emotional and behavioural functioning, and encompasses all aspects of development (social, emotional, cognitive, and behavioural), making it essential to understand the interactions and influences of these developmental processes early in life.

Emotional/Behavioural Difficulties (E/BD). E/BD in the early years are complex and can be difficult to identify, as they must be differentiated from normative behaviours (Gardner & Shaw, 2008; Wakschlag et al., 2007). The toddler years can be a turbulent time in development

as toddlers have a quest for independence but tend to have fears of abandonment (Landy, 2009). Around two years of age a significant portion of toddlers may display non-compliance, aggression, and/or have temper tantrums (Wakschlag et al., 2007), in fact toddlers may act-out as frequently as 19 times or more in an hour, with increased frequency reported outside of the home environment (Laible & Thompson, 2002). Although these behaviours may be normative, they could also be signs of emerging E/BD. E/BD cause significant impairment and are pervasive in that they occur across contexts; they extend well beyond what is expected developmentally and persist beyond the preschool years (Wakschlag et al., 2007). E/BD may be a sign of psychiatric disorders, and although as few as 11-25% of preschool children experiencing clinically significant levels of E/BD are referred for mental health assessment and treatment, the incidence is believed to be similar in the preschool and later childhood years (Egger & Angold, 2006). The prevalence of E/BD in the preschool years is estimated to be between 10-15% (Briggs-Gowen et al., 2001; Egger & Angold, 2006; Lavigne, et al., 1996). Externalizing behaviours, such as aggression, impulsivity, and hyperactivity, are often more readily identified and often referred to as disruptive behaviours, which are often associated with such psychiatric diagnoses as ADHD (attention deficit hyperactivity disorder) and ODD (oppositional defiant disorder) (Gardner & Shaw, 2008). Emotional difficulties, such as anxiety and depression, are referred to as internalizing behaviours, and are much less studied in the preschool years with prevalence rates often reported between 0-5% (Gardner & Shaw, 2008). However, Egger and Angold (2006) suggest the prevalence of internalizing difficulties is likely closer to 10%, similar to externalizing difficulties; they may be under reported or identified because they are more difficult to identify in the preschool years with rapid emotional development and difficulties in expressing emotions in the preschool years. It is suggested that up to half of preschool children identified with E/BD

will continue to experience difficulties over time, making it important to understand the trajectory of these difficulties and intervene early (Egger & Angold, 2006; Gardner & Shaw, 2008; Landy, 2009; Mathieson & Sanson, 2000; Squires & Nickel, 2003).

Historically, research findings regarding the direction of effects in the etiology and dynamics of E/BD have been mixed as to whether parents impact children's adjustment or children influence parenting processes, suggesting that both parent and child effects likely precipitate and perpetuate E/BD (Pettit & Arsiwalla, 2008). Today it is generally accepted that the development and persistence of E/BD, both internalizing and externalizing, cannot be deduced to a singular unidirectional effect but are the result of the interplay between child factors (e.g., temperament), parenting factors (e.g., unresponsive parenting/attachment & coercive cycles) and contextual factors (e.g., poverty), with the magnitude of effects varying with the child's age (Gardner & Shaw, 2008; Landy, 2009; Pettit & Arsiwalla, 2008). To further advance our understanding in the trajectory of E/BD and to have the greatest impact in changing problematic behaviours, researchers and clinicians must continue to consider biological, psychological, and social risk factors (Dodge & Pettit, 2003; Pettit & Arsiwalla, 2008), but must also closely examine bidirectional processes (Pettit & Arsiwalla, 2008).

Temperament and E/BD. Temperament is generally viewed as a biological predisposition that interacts with the environment and influences our behavioural style in experiencing the environment and regulating affective states (Landy, 2009; Sanson, Hemphill, Yagmurlu, & McClowry, 2011). Extremes in temperament have been identified as risk factors in the development of E/BD (Egger & Angold, 2006). While temperament initially emerged as a theory for understanding constitutional differences in infants, the role of temperament as a risk factor in the development of E/BD has been extensively researched (Sanson, et al., 2011).

Following the three decades of the New York Longitudinal Study (NYLS), Thomas, Chess and Birch (1968) proposed a theory of temperament that described nine dimensions of temperament (activity level, regularity/rhythmicity, approach/withdrawal/first reaction, adaptability, sensory threshold/sensitivity, intensity of reaction, mood, distractibility, and persistence/attention), and three infant patterns: easy, difficult, and slow to warm-up. In follow-up with the children and parents in the NYLS study, it was observed that the children who had more dimensions in the negative direction (e.g., were more reactive, less adaptive, etc.) were seen as more difficult, and believed to be at greater risk for developing E/BD. However, not all of the children in this study that were reported as "difficult" ended up having E/BD, which led to an exploration of environmental risk factors, and an emphasis on the "goodness of fit" model (Landy, 2009).

The goodness of fit model refers to whether certain temperament characteristics are a good or a poor fit for a particular environment; therefore, it is not simply child or parent factors that influence social-emotional outcomes but the fit between them and the context in which they interact (Crockenberg, 1981; Landy, 2009; Lollis & Kuczynski, 1997; Sanson et al., 2011). While it has been suggested that an infant's temperament might influence the ease with which the infant can engage in reciprocal interactions (Kochanska (1997), it has also been observed, in a recent study, that the effects of children's temperament traits on their adjustment is most pronounced when their relationship, particularly with their mother (i.e., mutually responsive orientation, MRO), is less optimal (Kochanska & Kim, 2013). Despite the links that have been observed between children's temperament dimensions (i.e., negative emotionality, behavioural control and emotional self-regulation) and their self-regulation and social competence, today it seems widely accepted that temperament interacts with the environment, with caregiving and parent-child interactions influencing the ongoing expression of temperamental differences

(Barton & Robins, 2000; Kochanska, 1997; Kochanska & Kim, 2013; Landy, 2009; Sanson et al., 2011).

E/BD and parent-child mutuality

Warm, harmonious, and mutually responsive interactions are seen as essential components of the parent-child relationship, and have been associated with positive child outcomes, including the development of self-regulation (Deater-Deckard, & Petrill, 2004; Deater-Deckard, et al., 2004; Harrist & Waugh, 2002; Murray & Kochanska, 2002). Children learn to regulate their own behaviour through the co-regulation of interactions with their parents (Feldman, Greenbaum, & Yirmiya 1999; Lunkenheimer et al., 2011; Stern, 1985; Weinberger & Tronick, 1994), and dyadic mutuality captures "… aspects of co-regulated affect and behaviour at the level of the dyad" (Deater-Deckard & Petrill, 2004, p. 1171). Disruptions in the development of children's regulatory processes have been associated with the development of behaviour problems (Deater-Deckard, & Petrill, 2004; Deater-Deckard, et al., 2004; Harrist & Waugh, 2002; Murray & Kochanska, 2002). Research has demonstrated that controlling and demanding or uninvolved parenting can lead to disruptions in the development of children's self-regulatory processes, which may result in the development of behavioural difficulties (Baumrind, 1978; Deater-Deckard et al., 2004); however, less is known about the absence of mutuality or other positive aspects of the parent-child relationship in the development of problem behaviours (Deater-Deckard et al., 2004; Lunkenheimer, et al., 2011; Scaramella & Leve, 2004). Pettit, Bates and Dodge (1997) suggested that positive and negative parenting processes may be separate dimensions of parenting, both of which may be associated with behaviour problems (i.e., low levels of positive parenting and higher levels of negative parenting). The development of warm, responsive, reciprocal and cooperative interaction patterns (dyadic mutuality) are

considered to be important in the development of self-regulatory processes and foundational in the parent-child relationship (Deater-Deckard & Petrill, 2004; Harrist & Waugh, 2002). Although dyadic mutuality is believed to play an essential role in the development of self-regulation, not many studies to date have examined the relationship between parent-child mutuality and the development of E/BD.

Parent-child relationships that are high in mutuality have been associated with children's optimal social emotional outcomes, and it has been hypothesized that lower levels of parent-child mutuality may be related to the development of children's behaviour problems (Deater-Deckard & Petrill, 2004; Deater-Deckard, et al., 2004). Research has linked mutuality in the parent-child relationship, or aspects thereof, to the development of conscience and self-regulation, a decrease in conduct problems and increased peer competence (Deater-Deckard & O'Connor, 2000; Kochanska, 1997; Kochanska & Murray, 2000; Lindsey et al., 1997; Lunkenheimer, et al., 2011). In more recent years, two studies have specifically examined the relationship between parent-child mutuality and children's behaviour problems.

Deater-Deckard and Petrill (2004) examined the relationship between parent-child dyadic mutuality and child behaviour problems in a non-clinical sample of school-aged children (7-9 years of age) in adoptive families. The dyads were primarily mother-child pairs; although the mothers were generally European American, there was ethnic diversity amongst the children in the study, with many being adopted from Asian countries. The behavioural-genetic design of this study included biological and adoptive children as well as adoptive siblings, allowing for between- and within-family differences to be observed. The researchers found higher levels of behaviour problems (noncompliance, aggression, and conduct problems) in families with lower levels of dyadic mutuality. They also observed differences amongst siblings with the same

parent, with more aggressive and less compliant children having lower parent-child mutuality in comparison to their less challenging siblings. This study design allowed for the examination of both genetic and environmental effects. The researchers concluded that the correlation between dyadic mutuality and child behaviour problems was not a function of mother-child genetic similarity; however, more genetically similar siblings had more similar mother-child mutuality, which the researchers attributed to possible child effects. Thus, they also concluded that parent-child mutuality within families is likely child-specific and related to both child effects and non-shared environment effects (Deater-Deckard & Petrill, 2004). Although this study was informative on the association between mutuality and behaviour problems, the researchers reported that the data were limited in that there was no data on the children's functioning outside of the home environment, and the sample of children was generally well adjusted; therefore, their findings may not generalize to at-risk or clinical populations.

In another study examining the relationship between parent-child mutuality and child behaviour problems, Deater-Deckard et al. (2004), observed a sample of 125 British families; 59 were Caucasian English and 66 were of Indian origin, and the children ranged from 7-9 years of age. The children's behaviours were assessed using the Child Behaviour Checklist (CBCL); nine children were above the clinical threshold (*t* score of 64 or above) for externalizing behaviour (aggression, delinquency), and 18 above the threshold for internalizing symptoms (withdrawn, depressive, anxious symptoms). The researchers found that higher levels of mutuality (responsiveness, reciprocity, and cooperation), when paired with dyadic positive affect (which was measured separately from mutuality), was associated with fewer externalizing problems and was significant regardless of gender, ethnicity or socioeconomic status. The researchers concluded that the correlates for externalizing and internalizing behaviour must differ as they

found a significant association between mutuality and externalizing behaviours but not internalizing behaviours. Their conclusion in this regard was supported by the findings of their earlier study examining the risk factors for problem behaviour in the same sample of British families. In this study, the risk factors for problem behaviour were found to operate in a cumulative manner and the trajectories for externalizing and internalizing behaviours were observed to differ. Externalizing behaviour was reported to be primarily predicted by cumulative factors in the child's microsystem (parent-child relationship, parental positivity, harsh discipline), whereas internalizing behaviours were mainly predicted by cumulative individual attributes (e.g., self-worth, temperament, gender) and risk factors related to the exosystem (e.g., marital relationship, parental work experience, socioeconomic status) (Atzaba-Poria, Pike & Deater-Deckard, 2004). They also highlighted that their sample was drawn from a community sample and therefore may not be representative of a clinical sample, and suggest that exploring mutuality in a clinical sample is a priority to corroborate these findings. One of the primary goals of the current study was to respond to this gap in the research literature by examining parent-child mutuality in a sample of children who are at-risk for or experiencing clinical levels of E/BD.

Purpose of Study and Research Questions

The primary aim of this dissertation was to expand upon the current literature on parent-child mutuality by comparing mother-child and father-child mutuality in a normative sample with a sample of children who are at-risk for or experiencing clinical levels of emotional and behavioural difficulties. The data for the current study were drawn from two larger studies that were conducted at the University of Alberta. The *Mutuality in parent-child interactions: The emergence of emotion regulation strategies and social competence in early childhood (2006-*

2009) study, in part explored how individual parent (mother and father) influences, child influences, and bidirectional parent-child mutuality independently and jointly predicted children's social functioning in a community sample. The *Parenting and Parent-Child Engagement in Early Childhood: Promoting Social and Emotional Competence* project (PACE project, 2010-2013), recruited families from at-risk and clinical populations to parallel the data gathered in the existing community sample, in part to allow for a comparison between the two samples. The data for each project were collected at two time points (12 months apart), *time one* was the point of entry into the study and *time two* was the one-year follow-up.

Initially, the two samples were combined to test which is the strongest predictor of children's current social, emotional and behavioural functioning, observed child factors, parent factors, or the quality of their dyadic interactions (specifically parent-child mutuality). Following the initial exploration, the typically developing sample and the at-risk/clinical samples were compared across two tasks (i.e., play and clean-up) in an attempt to expand our understanding of risk and protective factors in parent-child relationships. Mother-child and father-child differences across the two tasks were also explored.

In the literature reviewed, it is hypothesized that the quality of the parent-child relationship, specifically parent-child mutuality, may be a stronger predictor of children's social, emotional and behavioural functioning than individual child or parent factors, and that this is an area that warrants concentrated attention in the prevention and treatment of social, emotional and behavioural difficulties in young children. Through this investigation, this hypothesis was explored and the following research questions were addressed:

1. (a) At Time One, what best predicts children's current social, emotional and behavioural functioning (as reported by their mothers), observed child

behaviours, observed mother behaviours or observed mother-child dyadic interactions?

(b) At Time One, what best predicts children's current social, emotional and behavioural functioning (as reported by their fathers), observed child behaviours, observed father behaviours or observed father-child dyadic interactions?

2. Does observed mother-child and father-child dyadic mutuality predict children's social, emotional, and behavioural functioning one year later (as reported by teachers)?
3. Are there differences in observed dyadic interactions (i.e., dyadic mutuality) between children and their mothers and fathers in the normative sample and in the sample of children at-risk for or experiencing emotional/behavioural difficulties in two tasks (i.e., play and clean-up)?
4. What are the differences between mother-child and father-child dyadic mutuality in two tasks (i.e., play and clean-up)?

From a theoretical standpoint, it is expected that parent-child dyadic mutuality will be a stronger predictor of children's social, emotional and behavioural functioning at time one (i.e., internalizing, externalizing and adaptive behaviours, as assessed by parents), and will be predictive of children's social and emotional functioning (i.e., internalizing, externalizing and adaptive behaviours) and social competence at time two (as assessed by teachers). It is also expected that less adaptive dyadic interactions will be observed in the at-risk/clinical sample as compared to the sample of children experiencing normative emotional and behavioural development. Identifying any differences between the two groups will be helpful in

understanding dyadic processes that contribute to young children's social, emotional and behavioural development and expand our understanding of risk and protective factors in early parent-child relationships, which in turn may support the advancement of clinical practice.

CHAPTER THREE: METHOD

Participants

Study participants were drawn from two larger projects conducted at the University of Alberta. The *Mutuality in parent-child interactions: The emergence of emotion regulation strategies and social competence in early childhood study (N=59),* recruited families through daycares in the greater Edmonton area, word of mouth, advertisements placed in Edmonton's Child and Family Focus magazine, and advertisements placed on parenting internet message boards. The *Parenting and Parent-Child Engagement in Early Childhood: Promoting Social and Emotional Competence* Parent and Child Engagement project (PACE project, N=34), recruited families through CASA's Infant and Preschool Program (a children's mental health clinic), Home Visitation, Early Head Start, Head Start Programs, and local daycares in the greater Edmonton Area and central Alberta, with a focus on recruiting families from programs that serve children that are at-risk for or experiencing clinical levels of emotional, behavioural difficulties (E/BD). While parents did not need to be residing in the same home in order to participate in each of these projects, they did need to be involved in their child's care.

Ninety-three children (49 boys and 44 girls) between 25 and 50 months of age (M = 34.15, SD = 5.78) at time one participated in the current study. Families identified their ethnic backgrounds as Caucasian (75.3%), Mixed (10.8%), South Asian (6.5%), Asian (3.2%), and Central American, Mexican, Caribbean, North African or other (4.4%). Parents were either married (88.2%), common-law (9.7%) or separated (2.2%), and all parents identified themselves as being involved in their child's care. The majority of parents had college/university (mothers 30.1%, fathers 27.9%) or professional/graduate level education (mothers 50.5%, fathers 38.7%); the remaining parents were divided between high school diploma (mothers 8.6%, fathers 7.5%),

certificate in trade/technology (mothers 3.2%, fathers 10.8%), partial university/college (mothers 5.4%, fathers 8.6%), partial high school (mothers 1.1%, fathers 5.4%), and less than eight years of schooling (mothers 1.1%, fathers 1.1%). Finally, families were predominantly median income earners and above (Statistics Canada, 2014), with reported annual combined household incomes of $70 000 or over (65.5%), $35 000 to $69 999 (23.7%) and $35 000 or under (10.8%). At time two (the one-year follow-up), there were 47 boys and 41 girls between the 38 and 59 months of age (M = 47.15, SD = 5.81) that participated along with their fathers (N= 88) and 87 with their mothers.

Procedure

The two larger studies received full ethics approval through the University of Alberta's Research Ethics Board. The PACE project included the approval to combine the data from the two studies to examine the research questions included in the current study, thus ethics approval for the current study was accepted under the PACE project ethics approval.

Time 1. Data were collected through two home visits, one with the mother-child dyad and one with the father-child dyad. The order in which these visits occurred was determined either by parent request or availability. Data were collected by a trained PhD student and two research assistants where needed. Parents were provided assistance by the research team to complete questionnaires where necessary, interpreters were utilized as needed, and staff from the participating agencies attended the home visits with the research assistants, as requested by the parents.

During each home visit, consenting mothers and fathers received the package of paper and pencil measures (see Appendix A), the Family Information form, and the *Behavioral Assessment System for Children, Second Edition: Parent Rating Scales-Preschool* (Reynolds &

Kamphaus, 2004) to complete. Each mother-child dyad and father-child dyad were also videotaped during a 15-minute free play activity with cleanup (toys provided), a teaching task (puzzle provided), and an emotion picture task that provides an opportunity for the dyad to discuss various emotions; tasks that have been combined in previous parent-child studies (Grolnick & Farkas, 2002; Lindsey et al., 2010a, 2010b; Kochanska & Kim, 2013; Rinaldi, Howe & Urichuk, 2009). To control for task order effects, a full counterbalancing procedure was used; however, for the purposes of this study, only the "play task' and the "clean-up" tasks were used. Scripts were followed for presenting each task to the parent-child dyad (see Appendix B). Each parent received a $25 gift card for their participation and completion of the measures at time one.

Time 2. At the 12-month follow-up, parents who agreed to continue with the study (95% of fathers and 94% of mothers) received a package of paper and pencil measures to complete (see Appendix A, these measures were not relevant for this study). Consistent with time one, assistance and/or interpreters were available to the parents where necessary. A package of questionnaires was also provided for the children's teachers where available (see Appendix A), including a project information letter, consent form and questionnaire instructions. The *Behavioral Assessment System for Children, Second Edition: Teacher Rating Scales-Preschool (*Reynolds, & Kamphaus, 2004) and the *Social Competence and Behavior Evaluation- Preschool Edition* (SCBE; LaFreniere & Dumas, 1995) were relevant for the purposes of this study. Questionnaires were either mailed in or a home visit was arranged to pick up the completed questionnaires, and assistance was provided where needed. As a token of appreciation for their time, mothers and fathers were each provided with a $25 gift card for their participation in the follow-up year of the project.

Measures

Time one. Parents completed two questionnaires, one that gathered family demographic information, and one that explored their child's social, emotional and behavioural development. Parents and their children were also video recorded to explore their interactions.

Family Information. Parents were asked to complete a short demographic questionnaire to gather information regarding their child's age and ethnicity, the parents' current relationship status and level of education, and the combined annual household income.

Behaviour Assessment System for Children, Second Edition. To examine children's social, emotional and behavioral functioning, parents completed the *Behavioral Assessment System for Children, Second Edition: Parent Rating Scales-Preschool (*BASC-2, PRS-P; Reynolds, & Kamphaus, 2004). The PRS-P version was designed for children between 2 and 5 years of age. It consists of 134 phrases describing positive and negative behaviours that parents may have observed in recent months (e.g., "Shares toys or possessions with other children," "Acts without thinking"). Parents respond to each phrase with: Never, Sometimes, Often or Almost Always, indicating how frequently their child has displayed each of the behaviours described.

The BASC-2 is a multidimensional system used to assess the emotional and behavioral functions of a child. It is a developmentally sensitive standardized measure of children's adaptive and problem behaviours/feelings in both the home environment and community settings. It was designed with clinical and adaptive scales to capture children's strengths and weaknesses and to facilitate the differential diagnosis of a variety of emotional and behavioral disorders in children. Composite scores are provided for Externalizing Problems (hyperactivity, and aggression), Internalizing Problems (anxiety, depression, and somatization), Behavioral Symptom Index

(atypicality, withdrawal, and attention problems) and Adaptive Skills (adaptability, social skills, activities of daily living, and functional communication). The Externalizing Problems, Internalizing Problems, and Adaptive Skills Composites were relevant to this study. Children were classified into at-risk (*T*-score = 60-69; n = 17) or clinical (*T*-score > 70; n = 17) groups based on standardized *T*-Scores *(M* = 50, SD = 10). Scores in the at-risk range may identify a significant problem, and scores in the clinically significant range suggest a high level of maladjustment. The BASC-2 was normed based on a community sample and a clinical sample of children (diagnosed with emotional-behavioural difficulties) from the United States. The reliability *alpha* coefficients for the composite scales in the preschool age group are reported as: externalizing problems (.87), internalizing problems (.85), behavioral symptoms index (.93), and adaptive skills (.93). Test- retest reliability for the composite scales is reported in the .80's, and inter-rater reliability between teacher and parent reports in the preschool age group for composite and individual scales are in the .70's and .80's. Validity studies have found the BASC-2 PRS-P to be comparable with other standardized behavior rating scales, such as the Child Behavior Checklist for Ages 1½ to 5 (CBCL; Achenbach & Rescorla, 2001). However, unlike the BASC-2 rating scales, the CBCL does not specifically focus on adaptive functioning.

Parent-child interactions. To assess parent-child interactions (dyadic properties) and each partner's participation in their interactions (parent and child behaviours), the *Parent Child Interaction System* (PARCHISY; Deater-Deckard, Pylas and Petrill, 1997) was used. The PARCHISY is an 18 item rating scale that measures aspects of parent-child interactions including parent behaviours (i.e., positive content/control, negative content/control, positive affect/warmth, negative affect, responsiveness, on task, and verbalizations), child behaviours (i.e., positive affect/warmth, negative affect, responsiveness, on task, noncompliance,

autonomy/independence, activity/energy, and verbalizations), and dyadic interactions (i.e., reciprocity, conflict, and cooperation). The following observed behaviours were relevant for the purposes of this study: mothers' and fathers' positive content/control, negative content/control, positive affect/warmth, negative affect, and responsiveness; children's positive affect/warmth, negative affect, responsiveness, noncompliance, autonomy/independence; and dyadic reciprocity and cooperation. Mother-child and Father-child dyadic mutuality is a composite of reciprocity, cooperation, parent responsiveness to child, and child responsiveness to parent (Deater-Deckard & Petrill, 2004). This composite has been used to examine parent-child dyadic mutuality in other studies that utilized the PARCHISY.

The parent, child, and dyadic dimensions are rated on a 7-point Likert scale, with 1 indicating the absence of the coded behavior, 4 indicating the presence of the behaviour for about half of the interaction, and 7 indicating the presence of the behavior throughout the interaction. The system was developed for use with children over the age of three using an "etch-a-sketch" toy and a "labyrinth" toy, however, the coding system is reported to be easily adapted for use with many types of tasks and parent-child populations and has been utilized by researchers in various ways with diverse age groups (Individual Differences in Development Laboratory @ Virginia Tech, n.d.) (see Appendix C).

Coding and reliability. Five research assistants were involved in coding the videotaped parent-child interactions for the play and clean-up tasks. For the play task, coding began after 3 minutes of play and continued for 10 minutes. The clean-up task was observed in its entirety to a maximum of 5 minutes. Four of the five research assistants completed the individual parent (N= 186) and individual child coding (N=93) and two of the five coders completed the dyadic interaction coding (N=186), all coders coded both the play task and the clean-up task. The coders

received video recordings with an assigned family number and thus were blind to information about the families in the video interactions. For the individual parent and child codes, each coder trained on the coding system to establish familiarity with the system and reliability (on approximately 20% of the videotaped interactions). Following the training, once coders achieved proficiency in coding, all videotaped data were randomly divided between the coders, who were paired in groups of two with a third coder overlapping to complete random reliability checks to prevent observer drift (27% of individual parent and 24% individual child behaviours in play and clean-up). For the dyadic coding, two research assistants trained on 20% of the video recorded interactions during play and clean-up to establish familiarity with the coding system and establish reliability. The video data were then randomly divided for coding, and random reliability checks were completed by each coder on 20% of the data to prevent observer drift. In establishing final codes for each video recorded interaction, consensus coding was employed to manage any discrepancies in the reliability codes. After viewing the video recorded interactions, each of the coders would rate the dyad and then share their rating. Any disagreement would be discussed to arrive at a consensus, further viewing and consultation with a third coder was employed where consensus was not achieved. To ensure the validity of the final codes, this process was also utilized when independent coders had questions on a particular observation (on non-reliability coding) and required support in establishing a final code.

Inter-rater reliability was achieved using Cronbach's alpha and Cohen's Kappa (weighted). Cohen's kappa estimates the degree of agreement between two raters and determines if it is better than what would be expected by chance alone (Cohen 1960; Stemler & Tsai, 2008). Cohen kappa's point-by-point agreement is thought to be one of the most stringent methods for measuring reliability (Bakeman & Gottman, 1997). However, Cohen's kappa does not allow for

slight variations in observer ratings and identifies one-point variations as complete disagreement, which could be too conservative when a one-point variation amongst raters does not in fact indicate complete disagreement (Bakeman & Gottman, 1997; Stemler & Tsai, 2008). Furthermore, Cohen's kappa does not account for the degree of disagreement observed in ordered ratings, as necessary with a likert rating scale. In this instance, as suggested by Cohen (1968), weighted kappas can be used, thus weighted kappas were used to estimate inter-rater reliability in this study. The average weighted kappas were as follows: individual parent codes .71 (range .56-.85), individual child codes .79 (range .63-.87), and dyadic codes .81 (range .72-.86). Kappas of .40 to .75 are generally characterized as fair to good and over .75 as excellent (Fleiss, 1981, cited in Bakeman & Gottman, 1997; Viera & Garrett, 2005). See Appendix D for a detailed list of the weighted kappas.

Cronbach's alpha allows for an examination of the internal consistency amongst multiple raters, and is often used in observation studies (Stemler & Tsai, 2008). It requires that raters consistently apply the scoring rubric opposed to having perfect agreement (Bakeman & Gottman, 1997; Stemler & Tsai, 2008). The average alphas for individual parent codes, individual child codes and dyadic codes were 0.90 (range 0.80-0.97), 0.94 (range 0.86-0.97) and 0.94 (range 0.89-0.96) respectively. See Appendix D for the detailed alphas.

Time two. To assess children's social and emotional functioning one year following the initial data collection, teachers (where available[1]) completed two questionnaires.

***Behaviour Assessment System for Children, Second Edition: Teacher Rating Scales-Preschool* (BASC-2, TRS-P; Reynolds, & Kamphaus, 2004)**. The Teacher Rating Scale (TRS) parallels the parent forms (as described above) but provides five composites: Externalizing

[1] Teachers were not always available as not all of the children in the study were attending programming outside of the home.

Problems (Aggression, Hyperactivity, Conduct Problems), Internalizing Problems (Anxiety, Depression, Somatization), School Problems (Attention Problems), Other Problems (Atypicality, Withdrawal) and Adaptive Skills (Adaptability, Leadership, Social Skills). The Externalizing Problems, Internalizing Problems, and Adaptive Skills Composites were relevant to this study. The Teacher Rating Scale was standardized based on a large sample from the United States, and is reported to have high internal consistency estimates for the individual scales, with coefficients ranging from .85 to .89. Test-retest reliability coefficients are reported in the .80s, with inter-rater reliability between the parent and teacher reports for the preschool population in the .70s (Reynolds & Kamphaus, 2004). Strong correlations (.70-.80s) have also been reported between the TRS composites and other related behavior scales, such as the Achenbach System of Empirically- Based Assessment (ASEBA; teacher form) and the Conners' Teacher Rating Scale-Revised (Reynolds & Kamphaus, 2004).

***Social Competence and Behavior Evaluation- Preschool Edition* (SCBE; LaFreniere & Dumas, 1995).** The SCBE is a standardized measure to assess the overall quality of preschool children's adaptation and social competence. It is a developmentally sensitive tool, for children between 30-78 months of age, and identifies the presence and absence of positive and negative emotions and behaviours. Teachers complete the 80-item questionnaire rating the frequency that each typical behavior or emotional state occurs on a 6-point scale: 1 (Almost Never occurs), 2 or 3 (Sometimes occurs), 3 or 4 (Often occurs), or 6 (Almost Always occurs). T-scores are provided for boys and girls on four summary scales (Social Competence, Internalizing Problems, Externalizing Problems, and General Adaptation), and 8 subscales (Depressive/Joyful, Anxious/Secure, Angry/Tolerant, Isolated/Integrated, Aggressive/Calm, Egotistical/Prosocial, Oppositional/Cooperative, Dependent/Autonomous). The Social Competence summary scale is

used for the purpose of this study. The SCBE was initially standardized using a large French-Canadian sample and later using two large samples from the United States, all demonstrating high internal consistency, reliability, and stability of the SCBE scales/subscales: inter-rater agreement across teachers (.72-.89), test-retest reliability (.74-.87), and internal consistency (.79-.91) (LaFreniere & Dumas, 1995). With well-established reliability and validity, the SCBE and the SCBE-30 (short form) have been widely used to assess social competence and behavior in daycare and preschool settings (Denham et al., 2003; Denham, 2005).

Planned Data Analyses

Initially descriptive analyses were conducted to explore the demographic information and the distribution of the data and to determine the utility of the data for the subsequent analyses. Correlations between the variables were also examined to observe the nature of the relationships between the variables of interest. Following this exploration of the data, specific analyses were conducted to address each of the four research questions.

To investigate the first two research questions, examining the predictive value of the observed child behaviours, parent behaviours and dyadic interactions on children's social functioning in year one (as reported by parents), and the predictive nature of dyadic interactions on teacher reports of the children's social and emotional competence one-year later, multiple regression analyses were conducted. To examine the differences in parent-child dyadic interactions in two contexts (play and clean-up) between the typically developing and at-risk/clinical samples (research question 3), a repeated measures analysis of variance (ANOVA) was conducted. This analysis also allowed for an examination of the differences between mother-child and father-child mutuality in the two contexts (research question 4). The repeated measure ANOVA design was a mixed design in that there is one between group factor (at-risk/clinical

and normative sample) and two levels of within group factors (the play and clean-up tasks, within group factors, also included mother-child and father-child parent observations for each task).

All analyses were conducted using IBM SPSS Statistics program (volume 21), with a significance level of $\alpha = .05$. Prior to each of the planned analyses, a preliminary investigation was completed and any adjustments necessary for the subsequent analyses were addressed. All results are reported in the following chapter.

CHAPTER FOUR: RESULTS

Statistical analyses were conducted to address the four research questions previously outlined. In this chapter, the results of this investigation are described in detail. Initially, the descriptive statistics are presented, followed by a review of any accompanying preliminary analyses and the statistical assumptions related to each analysis. Finally, the detailed results that correspond with each of the four research questions are presented.

Descriptive Statistics

Outcome variables. Means, standard deviations, ranges, skewness and kurtosis for parent reported BASC-2 composite scores, observed PARCHISY parent-child dyadic mutuality scores, teacher BASC-2 and SCBE, Social Competence ratings at time two are all reported in Table 1. The BASC-2 composite scores (parent and teacher) and teacher SCBE summary scores are presented as T-scores, with a mean of 50 and a standard deviation of 10. If items are not applicable or left blank when a parent/teacher completes the questionnaire, composite scores may not be calculated for each scale. For mothers' reports, of the 93 possible ratings, one composite score was not calculated for each the Externalizing, Internalizing and Adaptive scales. Father composites were provided for all 93 cases except for 2 cases where Internalizing composite scores were not computed. At time 2, teacher reports were provided where teachers were available resulting in a total of 64 BASC-2 and SCBE (Social Competence scale) reports; of these, all composites were calculated except in 3 cases where the Internalizing composite could not be provided.

Variability was found in parent and teacher BASC-2 scores and teacher SCBE scores. BASC-2 (parent and teacher) composite scores at or above 60 on the Externalizing and Internalizing behaviour subscales and below 40 on the Adaptive behaviour subscale fall into the

at-risk or clinical range, and are suggestive of problems in these areas. SCBE summary T-scores of 63 or higher suggest great success with social functioning, while scores of 37 or lower suggest difficulty in this area. Table 1 summarizes the scores that were reported by parents and teachers. Based on these reports, some of the children in the sample were rated by their parents and/or teachers as being at-risk for or experiencing clinical levels of externalizing, internalizing and/or adaptive behavior problems, and were experiencing success or difficulty with social functioning.

Mother-child and father-child dyadic mutuality scores showed some variability with similar means for mother-child and father-child dyads in the play and clean-up tasks. Overall, the means in the clean-up task were slightly lower than in the play task (see Table 1). Skewness and kurtosis were examined to check for univariate normality, although Brace, Kemp and Snelgar (2013) suggest that skewness and kurtosis are not as informative for smaller samples as for larger ones. In general, normal distributions are symmetrical with values of skewness and kurtosis close to 0, and in most samples values up to 1.96 are acceptable and perhaps as high as 3.29 in smaller samples (less than 200) (Field, 2013). In accordance with these guidelines, there were no problems with skewness in the data and all variables fell within acceptable limits for kurtosis, with the exception of Father BASC-2 Externalizing Behaviour scores nearing the upper limit, suggesting a slightly leptokurtic distribution (see Table 1). The assumption of normality with respect to regression analyses is specific to the residuals in the model (which will be discussed below) and not the original data; therefore, the presence of a slightly leptokurtic distribution of scores does not preclude the use of regression analyses for the current study.

Table 1

Means, Standard Deviations, Ranges, Skewness and Kurtosis for Mothers and Fathers BASC-2, Parent-child Dyadic Mutuality, Teacher BASC-2 and Teacher SCBE social competence scores

Mother BASC-2 Composite Scores	N	Mean	SD	Range	Skewness	Kurtosis
Externalizing Behaviours	92	50.22	9.95	31-89	1.13	1.99
Internalizing Behaviours	92	52.72	12.41	32-93	1.29	1.47
Adaptive Behaviours	92	50.00	9.07	20-69	-0.13	0.55
Father BASC-2 Composite Scores						
Externalizing Behaviours	93	50.81	10.28	34-96	1.20	3.09
Internalizing Behaviours	91	52.69	9.73	55-87	0.75	1.37
Adaptive Behaviours	93	49.66	8.88	26-75	-0.12	0.50
Mother-child Dyadic Mutuality Scores						
Play Task	93	4.72	0.69	2.25-6.00	-0.98	1.56
Clean-Up Task	93	4.29	0.90	1.00-6.50	-0.90	1.73
Father-child Dyadic Mutuality Scores						
Play Task	93	4.59	0.67	2.75-6.00	-0.54	0.07
Clean-up Task	93	4.26	0.80	1.50-6.00	-0.82	1.21
Teacher BASC-2 Composite Scores						
Externalizing Behaviours	64	50.83	9.35	41-80	1.14	0.76
Internalizing Behaviours	61	51.44	10.38	37-85	1.26	1.90
Adaptive Behaviours	64	53.48	9.39	32-73	-0.22	-0.57
Teacher SCBE Composite Scores						
Social Competence	64	51.78	8.39	36-70	0.40	-0.24

Demographic and PARCHISY individual variable frequencies. Frequencies for child age, gender, ethnicity, parent education, household income (see Appendix E) and the following PARCHISY Individual mother, father and child variables during the play task were observed: Mothers' and Fathers' Positive Control, Positive Affect, Negative Control and Negative affect; Child Positive Affect, Autonomy/Independence, Negative Affect and Noncompliance with their mothers (see Appendix F) and their fathers (See Appendix G). Limited variability was observed for parent education, household income, mother and father Negative Affect and Negative Control, Child Noncompliance and Negative Affect. Given the nature of the experimental set-up (in the home, the presence of video equipment and the research assistant) and the play task (novel toys, flexibility in the play itself, limited demands on the child or the parent) limited variability in parental or child negativity was not surprising. However, limited variability can lead to statistical bias in analyses; thus, dichotomies were created for the variables included in each subsequent analyses (household income cut off was above or below 70,000; mother and father Negative Affect and Negative Control and Child Noncompliance and Negative Affect dichotomies included the presence or absence of these behaviours).

Preliminary correlations. Table 2 presents the preliminary correlations that were run between the demographic variables and the parent (mother and father) BASC outcome variables, and Table 3 presents the teacher BASC and SCBE outcome variables. These correlations revealed primarily weak to moderate associations. However, it is important to note that the limited variability observed in some of the demographic variables (i.e. child ethnicity, parent education, and household income) could have restricted the strength of these correlations (Glass & Hopkins, 1996). Child gender was negatively correlated with mothers' and teachers' BASC Externalizing scores and positively correlated with Adaptive behavior ratings, suggesting that

boys were more frequently reported to display externalizing behaviours and girls with more adaptive behaviours. Interestingly, no significant gender correlations were observed in the father rated outcomes. The age of the children was positively correlated with mothers' and fathers' BASC Adaptive ratings, and fathers BASC Internalizing behavior ratings, indicating that older children were reported by their mothers and their fathers to have higher adaptive skills and internalizing behaviours. The child's ethnicity was correlated with mother BASC Internalizing ratings and teacher BASC Adaptive ratings, suggesting that how behaviours are expressed or perceived by the rater may be associated with the child's ethnicity, although the correlations observed were weak and children's rating scales are often critiqued for being limited in their ability to clearly represent ethnic diversity. Although the following correlations were weak, mothers' education level was negatively associated with fathers' BASC Externalizing and Internalizing ratings, and fathers' level of education was associated positively with mothers' BASC Adaptive behaviour ratings. Combined family Income was negatively associated with mothers' BASC Internalizing ratings and positively associated with mothers' and teachers' BASC Adaptive behavior ratings. While these associations were weak, research literature has suggested an association between income related socioeconomic status and children's behavioural and adaptive functioning (Repetti, Taylor, & Seeman, 2002).

Table 2

Correlations Between Demographic Variables and Parent BASC Outcomes

	Mother BASC Outcome Correlations								
Variable	1	2	3	4	5	6	7	8	9
1.Child gender	1	-.01	-.03	.05	.17	-.04	-.26*	-.01	.26*
2. Child Age (months)		1	-.23	-.13	.02	-.14	.15	.18	.25*
3. Child's ethnicity			1	.25	-.22*	.33**	-.18	-.25*	.04

4. Mother education level	1	.48**	.49**	-.18	-.04	.07
5. Father education level		1	.40**	-.17	-.08	.21*
6. Combined Income			1	-.09	-.24*	.21*
7. BASC-2 Mom Externalizing				1	.59**	-.42*
8. BASC-2 Mom Internalizing					1	-.21*
9. BASC-2 Mom Adaptive						1

Father BASC Outcome Correlations

Variable	1	2	3	4	5	6	7	8	9
1. Child gender	1	-.01	-.03	.05	.17	-.04	-.15	-.02	.20
2. Child Age (months)		1	-.23	-.13	.02	-.14	.08	.28**	.35**
3. Child's ethnicity			1	.25	-.22*	.33**	-.09	-.16	.11
4. Mother education level				1	.48**	.49**	-.25*	-.21*	.04
5. Father education level					1	.40**	-.02	.01	-.04
6. Combined Income						1	-.08	-.21	.04
7. BASC-2 Dad Externalizing							1	.61**	-.46**
8. BASC-2 Dad Internalizing								1	-.14
9. BASC-2 Dad Adaptive									1

*$p \leq 0.05$, **$p \leq 0.01$

Table 3

Correlations Between Demographic Variables and Teacher Outcomes (Time 2)

Variable	1	2	3	4	5	6	7	8	9	10
1. Child gender	1	-.01	-.03	.05	.17	-.04	-.51**	-.24	.35**	.18
2. Child Age at Time 2 (months)		1	-.23	-.13	.02	-.14	-.09	.12	-.04	.17
3. Child's ethnicity			1	.25	-.22*	.33**	-.01	-.02	.25*	.23
4. Mom education level				1	.48**	.49**	-.02	-.05	.22	-.02
5. Dad education level					1	.40**	-.23	-.09	.13	-.14
6. Combined Income						1	-.03	.05	.36**	.20
7. BASC-2 Tchr. Externalizing							1	.58**	-.43**	-.37**
8. BASC-2 Tchr. Internalizing								1	-.42**	-.36**
9. BASC-2 Tchr. Adaptive									1	.58**
10. Tchr. SCBE Social Comp.										1

*$p \leq 0.05$, **$p \leq 0.01$

Question 1: The Predictive Relationship Between Mother, Father, Child and Dyadic Observed Behaviours and Parent Reported Children's Social Emotional and Behavioural Functioning

To explore this research question separate simultaneous multiple regression analyses were conducted for mothers' and fathers' reported externalizing, internalizing and adaptive child behaviours. Observed mother and father Positive Control, Positive Affect, Negative Control and Negative affect and Child Positive Affect, Autonomy/Independence, Negative Affect and Noncompliance scores, mother-child dyadic mutuality and father-child dyadic mutuality (from the PARCHISY) were included in each model to explore how they predict concurrent parent

reported externalizing, internalizing and adaptive behavior (composites from the parent BASC-2) outcome variables.

Preliminary analysis. Prior to running multiple regression analyses, correlations between predictor variables and outcome variables were examined and frequencies and distribution of all predictor variables explored. This exploration and current theories guided the inclusion of select predictor variables in the regression analyses, as the number of predictor variables is limited as a result of the small sample size (Field, 2013). Sex of child, child's age and combined household income were included as predictor variables in each mother-child and father-child regression analyses based on the significant correlations found between these demographic variables and the outcome variables (see Table 2). These variables have also been identified in previous clinical developmental literature as potentially influencing children's behavioural functioning (i.e., externalizing, internalizing and adaptive behaviours).

The assumptions of multiple linear regression, as identified by Glass and Hopkins (1996) and Tabachnick and Fidell (2013) were tested for all models and it was determined that the requirements for the necessary assumptions were satisfied. Linearity was assessed using scatter plots, while normality and variance of residuals were assessed using histograms, Q-Q plots and plots of residuals. Mahalanobis distance revealed that there were no issues with outliers and collinearity diagnostics indicated that there were no issues with multicollinearity. Durban-Watson test of independence of errors were examined and all values were within acceptable parameters (Field, 2013).

Mother-child multiple regression analyses. For mothers, the general linear model including all predictors explained a small (16%) but significant portion of the variance in mothers' reports of children's adaptive behaviours $R^2adj = .16$, $F\ (12, 79) = 2.42$, $p < .05$. In

particular, child gender, child age, and combined household income had significant positive regression weights and significant contributions to the model. The models examining Mother's reports of child externalizing and internalizing behaviours did not account for a significant amount of variance with adjusted R^2 *adj*= .034, F (12, 79) = 1.27, $p < .05$, and R^2 *adj*= .089, F (12, 79) = 1.74, $p < .05$ respectively.

In summary, the variables examined in this study did not predict the children's internalizing or externalizing behaviours (as reported by their mothers), but did predict 16% of the variance in children's adaptive behaviours. While children's age, gender and family income were predictive of mother reported adaptive behaviours, none of the observed mother, child or dyadic behaviors significantly contributed to the model. Specifically, the children's adaptive functioning increased as their age and household income increased, and the girls in this study were reported by their mothers to have greater levels of adaptive functioning than the boys. See Table 4 for full regression results.

Table 4

Summary of Multiple Regression Analyses Predicting Children's Externalizing, Internalizing and Adaptive Behaviours (as Assessed by Mothers' BASC-2 reports)

Predictor Variable	*B*	*SE B*	*β*
Dependent Variable: Externalizing Behaviours			
Child gender	-4.98	2.09	-.25*
Age of Child in months	0.32	0.18	.18
Family Income dichotomy	-1.37	2.38	-.07
Mother Positive Control	0.81	1.25	.09
Mother Negative Control dichotomy	-1.76	2.64	-.09

Mother Positive Affect	0.57	1.04	.07
Mother Negative Affect dichotomy	0.39	3.72	.01
Child Positive Affect	0.02	0.94	.00
Child Negative Affect dichotomy	-0.13	2.34	-.01
Child Noncompliance dichotomy	4.26	3.03	.17
Child Autonomy/Independence	0.56	0.98	.07
Mother-child Dyadic Mutuality	-3.39	2.29	-.24
$\Delta R^2 = .034$			
Dependent variable: Internalizing Behaviours			
Child gender	-0.62	2.53	-.03
Age of Child in months	0.38	0.23	.18
Family Income dichotomy	-5.44	2.86	-.21
Mother Positive Control	-1.59	1.52	-.14
Mother Negative Control dichotomy	2.28	3.19	. 09
Mother Positive Affect	-0.01	1.27	-.00
Mother Negative Affect dichotomy	-7.24	4.50	-.18
Child Positive Affect	-1.54	1.14	-.16
Child Negative Affect dichotomy	3.83	2.84	.15
Child Noncompliance dichotomy	2.85	3.67	.09
Child Autonomy/Independence	2.00	1.19	.19
Mother-child Dyadic Mutuality	0.08	2.77	.01
$\Delta R^2 = .089$			

Dependent variable: Adaptive Behaviours			
Child gender	4.91	1.78	.27*
Age of Child in months	0.43	0.16	.27*
Family Income dichotomy	4.45	2.01	.24*
Mother Positive Control	-0.81	1.06	-.10
Mother Negative Control dichotomy	1.69	2.24	.09
Mother Positive Affect	0.74	0.89	.09
Mother Negative Affect dichotomy	1.11	3.17	.04
Child Positive Affect	0.81	0.80	.12
Child Negative Affect dichotomy	1.78	1.99	.09
Child Noncompliance dichotomy	-1.76	2.58	-.08
Child Autonomy/Independence	-1.06	0.84	-.14
Mother-child Dyadic Mutuality	1.67	1.95	.13
$\Delta R^2 = .158^*$			

$^*p \leq 0.05$, $^{**}p \leq 0.01$

Father-child multiple regression analyses. For fathers, the general linear model including all predictors explained a significant portion of the variance (26%) in fathers' reports of children's adaptive behaviours $R^2adj = .26$, F (12, 80) =3.69, $p < .001$. In particular, children's age, fathers' positive affect, fathers' negative affect and father-child dyadic mutuality significantly contributed to the model. Children's age, absence of father's negative affect and father-child dyadic mutuality had significant positive regression weights, indicating that as children's age increased, when fathers showed no negative affect and when father-child dyadic mutuality increased, higher levels of adaptive behaviours were reported. Although marginally

significant, fathers' positive affect had a negative regression weight, indicating that higher levels of positive affect in fathers predicted lower father-reported adaptive behaviours. This finding seems contradictory to the direction that would be expected (i.e., as fathers' positive affect increases, children's adaptive functioning would increase). This finding should be interpreted with caution as it was marginally significant; however it could be indicative of an issue in the measurement of this variable or perhaps suggestive of how children may perceive their fathers' positive affect, which is defined in the PARCHISY as verbal and non-verbal warmth, smiling and laughing.

The models examining fathers' reports of child externalizing and internalizing behaviours did not account for a significant amount of variance with adjusted R^2 *adj* = .028, F (12, 80) = 1.22, $p < .05$, and R^2 *adj* = .047, F (12, 78) = 1.37, $p < .05$ respectively.

In summary, the variables examined in this study did not predict father reported internalizing and externalizing behaviours in their children but did predict 26% of the variance in father reported adaptive behaviours. In the father-child results, the children's adaptive functioning increased with the children's age; however, the child's gender and family income did not contribute significantly to the model. Unique to the father-child data, father reported adaptive functioning in their children increased when the fathers had lower levels of negative affect and when the father-child dyads had greater mutuality. See Table 5 for full regression results.

Table 5

Summary of Multiple Regression Analyses Predicting Children's Externalizing, Internalizing and Adaptive Behaviours (as Assessed by Fathers' BASC-2 reports)

Predictor Variable	*B*	*SE B*	*β*
Dependent Variable: Externalizing Behaviours			
Child gender	-0.98	2.29	-.05
Age of Child in months	0.06	0.20	.03
Family Income dichotomy	-0.82	2.45	-.04
Father Positive Control	-0.75	1.09	-.09
Father Negative Control dichotomy	-1.92	2.76	-.09
Father Positive Affect	1.10	1.05	.12
Father Negative Affect dichotomy	11.65	5.08	.28*
Child Positive Affect	-0.75	1.04	-.09
Child Negative Affect dichotomy	2.06	2.60	.09
Child Noncompliance dichotomy	-1.41	3.25	-.05
Child Autonomy/Independence	1.11	1.11	.12
Father-child Dyadic Mutuality	-2.03	2.33	-.13
$\Delta R^2 = .028$			
Dependent variable: Internalizing Behaviours			
Child gender	0.15	2.17	.00
Age of Child in months	0.38	0.18	.23*
Family Income dichotomy	-2.95	2.32	-.15
Father Positive Control	-0.92	1.03	-.12

Father Negative Control dichotomy	-1.08	2.61	-.05
Father Positive Affect	1.86	0.99	.22
Father Negative Affect dichotomy	-2.30	4.76	-.06
Child Positive Affect	0.09	1.02	.01
Child Negative Affect dichotomy	1.05	2.45	.05
Child Noncompliance dichotomy	-0.32	3.05	-.01
Child Autonomy/Independence	0.46	1.04	.05
Father-child Dyadic Mutuality	-2.25	2.21	-.16
$\Delta R^2 = .047$			
Dependent variable: Adaptive Behaviours			
Child gender	0.69	1.73	.04
Age of Child in months	0.59	0.15	$.39^{***}$
Family Income dichotomy	0.63	1.85	.03
Father Positive Control	-0.98	0.82	-.13
Father Negative Control dichotomy	0.80	2.08	.04
Father Positive Affect	-1.69	0.79	$-.22^{*}$
Father Negative Affect dichotomy	-12.61	3.83	$-.35^{**}$
Child Positive Affect	-0.24	0.79	-.03
Child Negative Affect dichotomy	-1.92	1.96	- .10
Child Noncompliance dichotomy	2.55	2.45	.11
Child Autonomy/Independence	-0.39	0.83	-.05
Father-child Dyadic Mutuality	4.86	1.76	$.36^{**}$
$\Delta R^2 = .26^{***}$			

$^{*}p \leq 0.05$, $^{**}p \leq 0.01$, $^{***}p \leq 0.001$

Question 2: The Predictive Relationship Between Observed Mother-Child and Father-Child Dyadic Behaviours and Teacher Reported Children's Social Emotional and Behavioural Functioning One Year Later

To explore this research question separate simultaneous multiple regression analyses were conducted for teacher reported externalizing, internalizing and adaptive child behaviours (composites form the BASC-2 Teacher report) and children's social competence (composite from the teacher SCBE). Observed mother-child dyadic mutuality and father-child dyadic mutuality (from the PARCHISY coding during the play task) were included in each model along with children's gender, age at time two, and combined household income as included in mother and father regression analyses. Initial analyses revealed that the children's age at time two (their age at the time of the teacher reports) was not significant in any of the models; therefore, the models were re-run excluding children's age. The assumptions of multiple liner regression were examined and the requirements for the necessary assumptions were satisfied.

The model including all of the above noted predictors explained a significant portion of the variance (36.4%) in teachers' reports of children's adaptive behaviors, $R^2adj = .364$, F (4, 59) = 10.02, $p < .001$. In particular, children's gender, combined household income, and mother-child dyadic mutuality had positive regression weights and significantly contributed to the model. The model also accounted for a significant portion of variance (39.7%) in teacher reported Externalizing behaviours, $R^2adj = .397$, F (4, 59) = 11.39, $p < .001$. Specifically, children's gender, and father-child dyadic mutuality had significant negative regression weights, suggesting that teachers report lower levels of externalizing behaviours in girls, and when fathers and children have higher levels of dyadic mutuality, teachers report lower levels of externalizing behaviours. The models examining teacher reported BASC internalizing behaviours accounted

for a small portion of variance (7.9%) and was not significant. SCBE, social competence was not significant but showed a trend towards significance with the model accounting for 8.1% of variance in teacher reported SCBE, social competence scale. See Table 6 for full regression results.

Table 6

Summary of Multiple Regression Analyses Predicting Children's Externalizing, Internalizing, Adaptive Behaviours, and Social Competence (as Assessed by Teachers' BASC-2 reports and the SCBE, social competence scale)

Predictor Variable	*B*	*SE B*	*β*
Dependent Variable: Externalizing Behaviours			
Child gender	-8.15	1.89	-.44***
Family Income dichotomy	-1.85	2.17	-.00
Mother-Child Dyadic Mutuality	2.67	1.58	.19
Father-Child Dyadic Mutuality	-6.16	1.53	-.46***
$\Delta R^2 = .397^{***}$			
Dependent Variable: Internalizing Behaviours			
Child gender	-3.98	2.62	-.19
Family Income dichotomy	0.79	3.00	.03
Mother-Child Dyadic Mutuality	-.09	2.22	-.01
Father-child Dyadic Mutuality	-4.72	2.16	-.29*
$\Delta R^2 = .079$			

Dependent Variable: Adaptive Behaviours			
Child gender	5.55	1.95	.30**
Family Income dichotomy	6.16	2.24	.29**
Mother-Child Dyadic Mutuality	3.53	1.63	.25*
Father-child Dyadic Mutuality	2.46	1.58	.18
$\Delta R^2 = .364^{***}$			
Dependent Variable: SCBE, Social Competence			
Child gender	2.13	2.09	.13
Family Income dichotomy	2.12	2.40	.11
Mother-Child Dyadic Mutuality	2.59	1.75	.21
Father-child Dyadic Mutuality	1.48	1.70	.12
$\Delta R^2 = .061$			

$^{*}p \leq 0.05$, $^{**}p \leq 0.01$, $^{***}p \leq 0.001$

Question 3: Group Differences in Observed Dyadic Interactions Between Two Groups (children who are typically functioning and those at-risk for or experiencing emotional/behavioural difficulties) Across Tasks (play and clean-up)

To compare group differences in dyadic mutuality across tasks, a repeated measure ANOVA with task (play and clean-up) and parent (mother and father) as within subject factors, and group membership (typically functioning and at-risk/clinical emotional behavioural difficulties) as the between subject factor was performed.

Preliminary analysis. Prior to exploring this question the demographic variables between the two groups, the typically functioning (N=59) and the at-risk/clinical (N=34) groups were examined. No statistically significant differences were observed between the groups in

regards to child gender, although there were a greater number of boys (61.8% compared to 38.2% girls) in the at-risk/clinical group than in the typically functioning group (boys 47.5% and girls 52.5%). The over representation of boys at-risk for or experiencing E/BD is consistent with much of the literature on E/BD in preschool children. The following demographic variables were also examined: the children's ethnicity, the relationship status of the parents, the years of parental formal education, and the combined family income, none of which differed significantly between the two groups. There was, however, a statistically significant difference in the average age of the children (in months) between the two groups (typically functioning group M= 33.03, sd= 6.05, and the at-risk/clinical group M = 36.09, sd = 4.76). Given that on average the two groups differed significantly with respect to age, age would need to be controlled in the analysis (Field, 2013).

There was no significant age x group effect, indicating that the assumption of homogeneity of regression slopes was satisfied; thus, age was added as a covariate in the subsequent analyses to control for the pre-existing age differences between the two groups. The assumption of homogeneity of variance was assessed using Levine's test and was met for all group variances except for father-child dyadic mutuality in the play task, which was marginally significant (p = .04). The degree of variance was also minimal (< 2), and Field (2013) notes that when the degree of variances is less than 2 one can precede with the analysis. Box's M test for the homogeneity of variance-covariance assumption was also examined as the samples were of unequal sizes. This statistic was marginally significant (p = .03), indicating a violation of the assumption at p < .05, however, this can be a difficult condition to meet; in fact, some sources suggest that there is no need for concern unless the p value is < .001 (Field, 2005, Tabachnick & Fidell, 2013). Furthermore, the F statistic may also be examined and if it is small, as it was in

this case ($F = 1.97$), the departure from homogeneity of variance-covariance will not preclude proceeding with the analysis. The assumption of Mauchly's sphericity was met since there were only two levels of repeated measures in the ANOVA's conducted in this study. For all of the analyses two-tailed tests were used with alpha levels set at $p = .05$. The Bonferroni correction was used for all post hoc tests (pairwise comparisons).

The repeated measures ANOVA revealed one significant main effect and a significant interaction effect. Controlling for age, there was a significant main effect for group, F (1, 90) = 7.34, $p = .01$ but there was no significant age effect observed, F (1,90) = 1.76, $p = .19$ *ns,* suggesting that there is a difference between the two groups of children. Within-subject effects were not observed to be significant, task effect F (1,90) = 1.92, $p = .17$ *ns,* and parent effect F (1,90) = 0.85, $p = .36$ *ns.* A significant interaction effect between group and task was observed, F (1, 90) = 5.01, $p = .03$, as shown in Figure 1. Therefore, the profile ratings across the tasks were different for the two groups, suggesting that the groups differ dependent on the task they are completing.

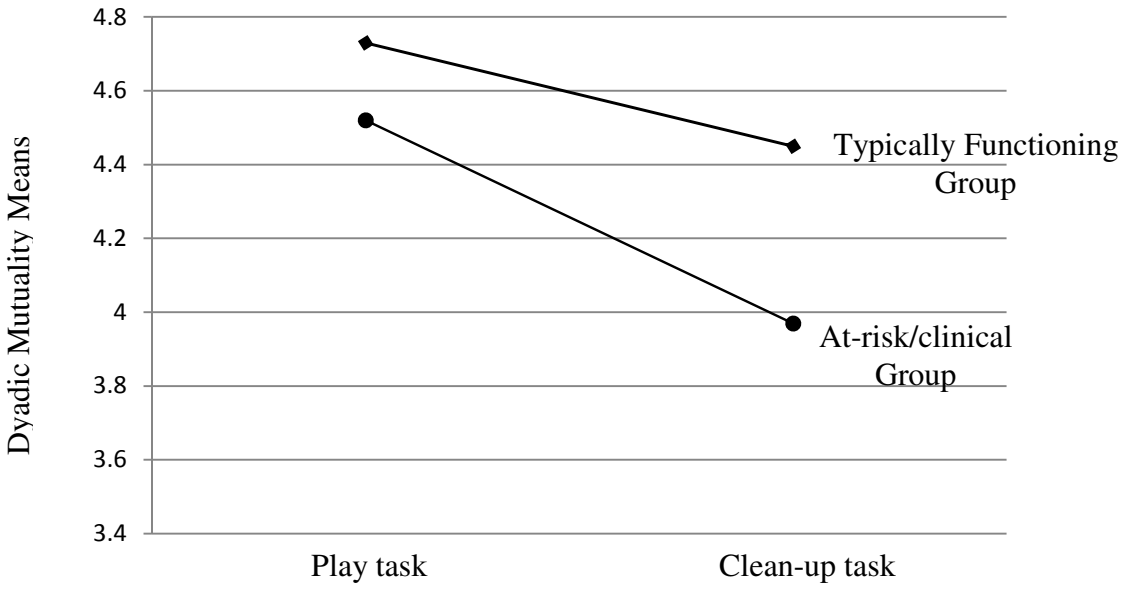

Figure 1. Dyadic mutuality group x task interaction.

In summary, both groups had higher mean scores for dyadic mutuality in the play task than in the clean-up task, a task that may put more stress on the dyad to work together, but dyadic mutuality significantly decreased in the clean-up task for the at-risk/clinical group (p = .002).

Question 4: Are There Differences Between Mother-Child and Father-Child Mutuality Across the Two Tasks (i.e. play and clean-up)

This research question was analyzed through the previous repeated measures ANOVA. A task x parent interaction effect appeared to be present, as shown in Figure 2, however, it was not significant, F (1, 90) = 2.05, p = .16 *ns.* The main effect for parent was also not significant, F (1,90) = .85, p = .36 *ns,* suggesting that there are no significant differences between mother-child and father-child dyadic mutuality across the two tasks.

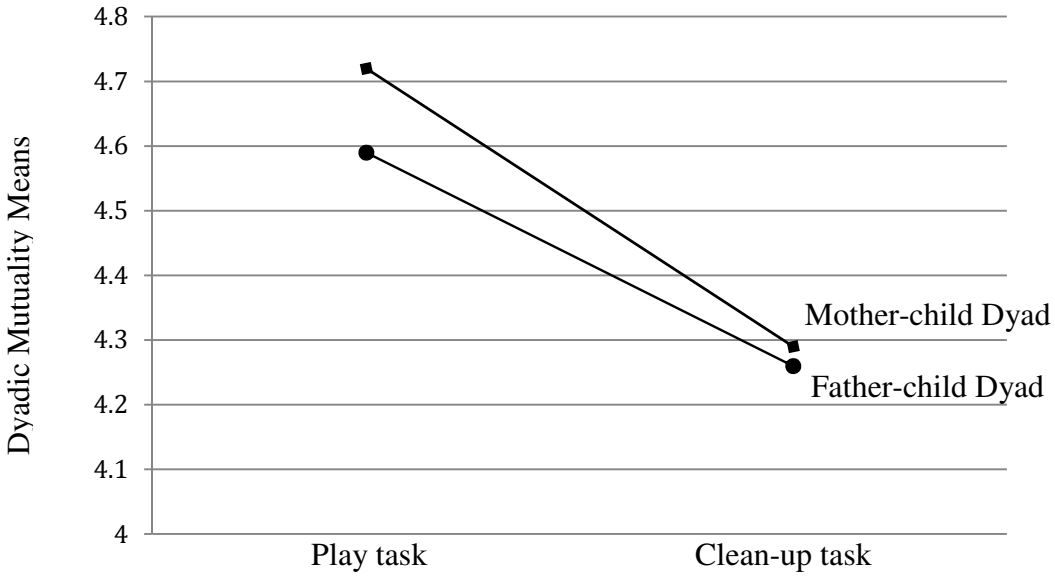

Figure 2. Dyadic mutuality parent x task interaction (*ns*).

CHAPTER FIVE: DISCUSSION

The aim of the present dissertation was to expand on the current parent-child mutuality literature and particularly to provide a comparison between observed parent-child mutuality in a group of children who are experiencing normative social, emotional, and behavioral development and a group of children who are at-risk for or experiencing clinical levels of emotional behavioural difficulties (E/BD). Initially, the data (at time one, the point of entry into the study) were explored to examine which was the strongest predictor of children's social, emotional and behavioural functioning (as reported by parents), observed child factors, observed parent factors, or the observed quality of their dyadic interactions. The predictive relationship between observed mother-child and father-child dyadic mutuality and children's social emotional functioning one year later, as reported by teachers, was also examined. Following the initial exploration, differences in parent-child mutuality between the two groups were explored in two contexts (i.e., play and clean-up), and mother-child and father-child differences were examined. In this final chapter, the results of this investigation will be discussed and situated in past research and theory. The limitations of this study will also be addressed and possible directions for future research offered.

Individual and Dyadic Behaviors and Children's Social, Emotional and Behavioural Functioning

Separate simultaneous multiple regression analyses were conducted for mothers' and fathers' reports of externalizing, internalizing, and adaptive child behaviours. Based on past theory and research, it was hypothesized that observed dyadic interactions would be a stronger predictor of children's social, emotional and behavioural functioning than the observed

individual parent and child behaviours; however, the analyses revealed a mixed pattern of results.

While the regression analyses were run separately for mother-child and father-child dyads (to control for statistical non-independence), there were some similarities and differences in the patterns observed in the findings. Contrary to Lamb's (2010) proposition that there may be more similarities than differences between mothers and fathers, unique contributions were observed in the present study, and have been reported in much of the research literature reviewed (Lamb, 2000, 2010; Lindsey et al., 1997; Lindsey et al., 2010a; Parke & Buriel, 2006, Rinaldi & Howe, 2012). Specifically, the global pattern of results for children's externalizing, internalizing and adaptive behaviours in this study were similar in the mother-child and father-child regression analyses, but the particular variables predicting the children's outcomes differed in each of the significant models. That is, the models including all of the predictor variables (child gender, child age, combined household income, and observed parent and child variables: parent positive control, positive affect, negative control and negative affect; child positive affect, autonomy/independence, negative affect and noncompliance; and parent-child dyadic mutuality) for both mother-child and father-child dyads accounted for a significant portion of the variance in parent reported adaptive behaviours (16% and 26% respectively), but did not predict the children's externalizing and internalizing behaviours, while the predictor variables that contributed significantly to each model differed as follows.

Mother-Child Findings. Child gender, age and combined family household income contributed significantly to the model while none of the observed mother, child or dyadic variables showed any significant contributions, suggesting that at time one of this study, children's age, gender, and family income were important predictors of their concurrent mother-

reported adaptive functioning (i.e., adaptability, social skills, activities of daily living, and functional communication). Specifically, the children's adaptive functioning increased with age, and between 25-50 months of age the girls in the sample showed higher levels of adaptive functioning than the boys (as reported by their mothers). While the research on the influence of children's gender on their adaptive functioning is varied, children's level of maturity (i.e., age) has often been associated with greater adaptive functioning and prosocial behaviours (Gardner & Shaw, 2008, Landy, 2009, Wakschlag et al., 2007). Family income, specifically families living in poverty, has often been associated with less adaptive behaviours and greater risk for experiencing E/BD (Repetti, Taylor, & Seeman, 2002; Squires & Nickel, 2003), although Raver (2004) cautions that this may be a simplistic conclusion that doesn't highlight the complex relationship between risk and protective factors in economically disadvantaged populations.

Father-Child Findings. Unlike the mother-child dyadic results, in the father-child results only the children's age and not their gender or the combined household income contributed significantly to the model, suggesting that fathers reported increased levels of adaptive behaviour in their children as their age increased, but the children's gender and family income did not make a difference in their ratings. Again, different from the mother-child findings, the following individual father and dyadic variables contributed significantly to the model: fathers' positive affect, fathers' negative affect and father-child dyadic mutuality. As expected, child adaptive behaviors were higher with lower levels of fathers' negative affect and higher levels of dyadic mutuality, highlighting that fathers may play a unique role in their children's early development, and that their behaviors and interactions with their children, particularly in play, seem especially important (Lamb, 2000, 2010; Lindsey et al., 1997; Lindsey et al., 2010a; Parke & Buriel 2006,

Russell & Russell, 1987). Furthermore, these findings support the assertion that fathers may play a particularly important role in their children's adaptive functioning (Rinaldi & Howe, 2012).

Contradictory to the direction that would be expected, the findings in the current study suggested that when fathers' positive affect increased, the children's adaptive behaviours decreased. These results were marginally significant and are not consistent with the findings reported in the previous literature reviewed (using the PARCHISY coding system), and must be interpreted with caution. In fact, in one study in particular, higher levels of mothers' and fathers' positive affect (when paired with dyadic mutuality) was specifically associated with fewer externalizing behaviours (Deater-Deckard et al., 2004), which one could infer might also translate to better adaptive functioning. Postulating that this finding is not the result of methodological error, it poses an interesting question as to how the children in the current study may perceive their fathers' positive affect (verbal and nonverbal warmth, smiling, and laughing), which would need to be examined beyond the scope of this investigation.

Externalizing and Internalizing Behaviours. While in previous research, parent, child, and/or dyadic properties have been associated with externalizing and internalizing difficulties; this was not observed when examining the findings from the initial year of the current study. Following-up on a study that identified mixed results in the correlates for externalizing and internalizing difficulties, Atzaba-Poria et al. (2004) examined the risk factors in problem behaviours. They concluded that the trajectories for internalizing and externalizing behaviours might differ, as do the cumulative risk factors associated with these difficulties. In their research they found that cumulative risk factors in a child's microsystem (such as the parent-child relationship, parental positivity, and harsh discipline) predicted externalizing difficulties, and cumulative risk factors within individuals (e.g., temperament, gender) and their exosystem (e.g.,

marital relations, parental work demands, and socioeconomic status) predicted internalizing behaviours. While a few of these same variables were observed in the current study (i.e., parental positivity, the parent-child relationship, gender, and socioeconomic status), others were not and may need to be considered in future studies. While no significant associations with parent-reported externalizing and internalizing behaviours were observed in the variables included in this study, it is important to note that the smaller sample size and the limited variability of some of the variables could in part be limiting the power to reveal significant findings.

In summary, mothers and fathers likely contribute to their children's concurrent adaptive functioning in unique ways. Consistent with previous research literature, the current study supports the assertion that fathers' behaviors and their interactions with their children, particularly in play, seem especially important for their children's adaptive functioning. The findings in this study and in the previous research literature also imply that externalizing and internalizing behaviours in the toddler years are likely accounted for by multiple factors that may need to be examined simultaneously in future research in order to best understand how they contribute to children's outcomes, and particularly how they influence internalizing and externalizing behaviours.

Observed Mother-Child and Father-Child Dyadic Mutuality and Children's Social, Emotional and Behavioural Functioning One Year Later

Multiple regression analyses were conducted to examine the predictive relationship between observed mother-child and father-child dyadic mutuality (during a play task) and teacher reported externalizing, internalizing, adaptive child behaviours, and social competence. The model, including child gender, combined household income, mother-child, and father-child dyadic mutuality, explained a significant portion of the variance in teachers' reported adaptive

behaviours (36.4%) and externalizing behaviours (39.7%), while the model examining internalizing behaviours and social competence explained a small portion of variance (7.9% and 8.1% respectively), but neither were significant. The variables contributing to each of the significant models differed, suggesting that the factors contributing to adaptive functioning and externalizing difficulties differ in this sample of children. These findings are consistent with previous research proposing that the correlates might differ for internalizing and externalizing behaviours (Atzaba-Poria et al., 2004; Deater-Deckard et al., 2004), and could likely be extended to include children's adaptive behaviours.

Child gender, combined household income, and mother-child dyadic mutuality all contributed significantly to teacher reported adaptive behaviours. Thus, in this sample, as reported by their teachers at the one-year follow-up, girls had higher levels of adaptive functioning, as did those children living in families with higher household incomes, and those who had higher mother-child dyadic mutuality scores one year earlier. Child gender and father-child dyadic mutuality contributed significantly to the model in predicting children's externalizing behaviours. That is, teachers reported externalizing behaviours more frequently in boys and reported higher levels of externalizing behaviours when father-child dyadic mutuality one year earlier was lower. Although studies examining children's gender are mixed, consistent with the findings in this study, girls have been reported to have higher levels of adaptive functioning and boys have been associated with more aggression and externalizing behaviours (Egger and Angold, 2006; Gardner & Shaw, 2008; Landy, 2009). In general, the results regarding parent-child mutuality in this study are consistent with previous studies, where higher levels of parent-child mutuality have been associated with children's positive child adjustment (Deater-Deckard & O'Connor, 2000; Kochanska, 1997, Kochanska & Murray, 2000) and lower

levels of externalizing difficulties (Deater-Deckard & Petrill, 2004; Deater-Deckard et al., 2004). However, in the current study differences were observed between the predictive significance of mother-child and father-child dyadic mutuality. Surprisingly, while only father-child mutuality predicted teacher reported externalizing behaviours, only mother-child mutuality was predictive of the children's adaptive functioning (i.e., adaptability, leadership, social skills). Although mother-child mutuality has been associated with children's positive adjustment, father-child mutuality has often been found to be a particularly important influence too. While the results have been mixed in the literature on mother-child and father-child mutuality and their influence on positive child adjustment (Aksan et al., 2006; Kim & Kochanska, 2012; Kochanska et al., 2008; Lindsey et al., 1997, 2010a, 2010b), many of the studies in the past only included mothers or noted observing a limited number of fathers (Deater-Deckard & Petrill, 2004; Harrist & Waugh, 2002; Kochanska, 1997), limiting the conclusions that could be drawn between mother-child and father-child mutuality. However, in more recent years, studies have endeavored to include both mothers and fathers to explore their contributions to children's development and the study of parent-child mutuality is no exception in this regard, which will be addressed in greater detail in this discussion.

Studies specifically examining the predictive relationship between parent-child mutuality and children's behavioural outcomes (i.e., externalizing and internalizing behaviours) have been very limited, and the findings in these studies have differed slightly from the results of the current study. In one previous study, both mother-child and father-child mutuality (when paired with positive affect) predicted lower externalizing problems in their children (Deater-Deckard et al., 2004), while only father-child mutuality was found to predict externalizing behaviours in this study. In another study, mother-child mutuality was linked to fewer behavior problems (such as

externalizing behavior; Deater-Deckard & Petrill, 2004), however this was not found in the current study. One important difference between these studies and the current study is that the previous studies consisted only of community children; thus, the authors noted that their results might not be representative of a clinical sample. The current study included both a community and a clinical sample, which could in part contribute to the differences found in the outcomes between these studies. Previous research on parent-child mutuality has also found parent-child mutuality to be associated with children's social competence (Lindsey et al., 1997; Lindsey et al., 2010a), and while this was not a significant finding in this study, a trend towards significance was observed. Perhaps a larger sample size would have rendered this result as significant.

Observed Dyadic Mutuality in a Typically Functioning and At-Risk/Clinical Sample

Unique to this study was the opportunity to compare parent-child mutuality in a group of children experiencing normative development with a group of children that were at-risk for or experiencing clinical levels of emotional behavioural difficulties (E/BD). In the past, studies that have examined the relationship between parent-child mutuality and E/BD difficulties have generally involved community samples and have identified the lack of an at-risk/clinical sample as a limitation of their study (Deater-Deckard & Petrill, 2004; Deater-Deckard et al., 2004). Thus, this study was able to respond to this gap in the research literature.

In examining the differences in dyadic mutuality between typically functioning toddlers and those at-risk for or experiencing E/BD in two tasks (i.e., play and clean-up), a repeated measures ANOVA was performed. Controlling for age, there was a significant main effect for group, but not for age, suggesting that there is a difference between these two groups of toddlers that is not accounted for by their age. While the main effects of task and parent were not found to

be significant, it was found that dyadic mutuality differed between the two groups, depending on the task they were completing.

Both groups of toddlers had higher means in dyadic mutuality in the play versus the clean-up task, and while the at-risk/clinical group had lower means than the typically functioning group in both tasks, post hoc analysis revealed that the groups only differed significantly in the clean-up task. Although dyadic mutuality has not been observed in a clinical sample, based on past research findings that higher levels of mutuality are associated with child adjustment and fewer behavioural difficulties (Deater-Deckard & O'Connor, 2000; Deater-Deckard & Petrill, 2004; Deater-Deckard et al., 2004; Kochanska, 1997, Kochanska & Murray, 2000), it was expected that dyadic mutuality would generally be lower in the at-risk/clinical sample. While somewhat surprising that the groups only differed significantly in the clean-up task, it does make sense that this task may put more stress on an already vulnerable dyad to work together. It has been shown that goal-oriented tasks, such as the clean-up task, can be highly demanding for toddlers (Kochanska & Aksan, 1995), whereas the play task may provide an opportunity for the dyads to connect in more positive ways, which seemed to be more readily achieved by both groups in this study.

While the task effect was not found to be significant in this sample, in general the findings in the current study seem congruent with Lindsey et al.'s (2010b) conclusions that the quality of parent-child interactions may vary depending on the context in which they occur, but overall higher levels of parent-child mutuality are associated with positive outcomes for children regardless of the context in which it is observed. Findings such as these highlight the importance of maintaining positive interactive patterns across various tasks and situations to support optimal child development and support the conclusions published in two recent research papers, where it

is suggested that supporting positive interactive patterns in early parent-child relationships is important, but may be even more important when children are experiencing E/BD (Kim & Kochanska, 2012; Kochanska & Kim, 2013).

It has been suggested in the developmental literature that there are multiple levels of relationship between a parent and a child and each level calls on the parent and the child to modify their interactive strategies and their state (Grusec & Davidov, 2007), highlighting that parents must be able to maintain both a vertical (e.g., democratic) and a horizontal (e.g., egalitarian) relationship with their children (Lindsey et al., 2010a; Russell et al., 1998). It would seem that the dyads from the community sample and the at-risk/clinical sample did experience shifts in their interactive patterns between the play and clean-up tasks that impacted their dyadic mutuality scores, but the at-risk/clinical group experienced this shift to a greater degree. It could be postulated that dyads in the at-risk/clinical group have a more difficult time maintaining positive interactive patterns (i.e., dyadic mutuality) as the stress of the task increases, a finding that may have particular relevance for early childhood treatment and interventions programs and emphasizes the importance of supporting early parent-child relationships, particularly in populations at-risk. Furthermore, this finding may have important implications for understanding early parent-child interaction patterns, more specifically highlighting that we may need to observe dyads while they are under some level of stress in order to understand them fully and know how best to support them.

Mothers and Fathers

While there were no significant differences observed between mother-child and father-child dyadic mutuality across the two tasks in this study, the regression analyses discussed earlier suggested differential influences between mothers and fathers on child outcomes. Previous

research on parent-child mutuality has also reported mixed findings regarding the differences in mutuality for mothers and fathers, although this work has been limited as many studies have involved primarily mothers or very few fathers (Harrist & Waugh, 2002; Kochanska, 1997). For the most part, mother-child and father-child mutuality have been reported to be relatively similar and moderately correlated (Aksan et al., 2006; Kochanska, 2008; Deater-Deckard, et al., 2004), while many of the differences that have been reported seem to be related to the specific variables influencing children's outcomes (as discussed previously). Differences have also been reported depending on the age of the children when parent-child mutuality was observed, the context in which the interactions occurred, or the particular outcomes being measured. For example, Lindsey et al., (1997), found father-child mutual compliance to be influential in children's peer and social competence but not mother-child mutual compliance, while in their later work, Lindsey et al. (2010a) found no significant difference in connections between mother-child and father-child mutuality and children's peer competence. Lindsey et al. (2009) found differences in mother-child and father-child mutual compliance and shared positive affect as it related to their children's future self-control, and in a more recent study, Kim and Kochanska (2012) found mother-child but not father-child MRO (mutually responsive orientation) to impact children's future self-regulation. Furthermore, Kochanska et al. (2008) observed similarities overall in mother-child and father-child MRO but found the mechanism of influence to be clearer for mothers than for fathers. Kochanska and her colleagues have also reported slight differences in mother-child and father-child MRO depending on the age of the child, with mother-child MRO being higher during infancy (i.e., when their infants were 7 months of age), but father-child MRO "catching up" by 15 months of age (Aksan et al., 2006). Deater-Deckard et al. (2004), also found slight differences in mother-child and father-child mutuality but suggested that such

differences could be primarily related to the parents' roles and their circumstances versus true gender differences. In conclusion, this study supports the idea that both mothers and fathers influence their children's development, but likely in unique ways, and ongoing research will be necessary to continue to understand what seem to be subtle yet important differences.

Limitations and Future Directions

Many of the findings in this study are supported by and build upon past parenting research; however, based on the following limitations, caution must be used when generalizing the findings to other populations. First, while the sample size in this study is fairly typical of parenting studies, it was relatively small (N= 93 families) when compared to other childhood studies, especially when the groups were delineated, with the at-risk/clinical group being particularly small (N= 34). In addition, the sample had limited socioeconomic and ethnic diversity with the majority of families having at least post secondary education, earning household incomes over $70,000, and being self-identified as Caucasian. The families in this study were self-selected and participated on a voluntary basis, which are likely to be parents that are interested in learning more about themselves and their children or interested in contributing to early parent-child research, which may not be representative of all families in this age group. The small sample size also limited the power to reveal significant findings in this study. Ideally, future studies should aim to recruit larger samples with greater diversity, especially to increase the power to explore how parent-child mutuality influences children's outcomes, and to generalize the results to a larger, more diverse population.

Second, there were two methodological limitations that could impact the generalizability of the findings in the current study. Although necessary to keep the tasks as naturalistic as possible, clean-up always followed the play time, which could contribute to task order effects

and constrain the conclusions that can be made when comparing parent-child mutuality in play versus clean-up. Ideally, counterbalancing tasks controls for such effects; however, in this situation it would not have made sense to clean-up prior to having playtime. Also, the results of this study were based on brief observational interactions and may not be representative of parent-child interactions in general. Observational measures offer a unique opportunity to obtain an objective view of parent-child interactions and provide a rich source of information (Aspland & Garner, 2003; Gardner, 2000); even through brief interactions a snapshot of parent-child interactions can be obtained that would not otherwise be available (McCall, Groark, & Fish, 2010). Despite the value of observational data, as with all assessment methods it also has its limitations (Gardner, 2000). Aside from the cost and time needed to execute and code behavioural observations, there are potential biases that can be introduced that decrease the generalizability of the results (Gardner, 2000). Particularly, behaviours may be influenced and interactions can change as a result of the observer's presence and the awareness of being observed (Gardner, 2000). While the observations in this study occurred in the families' homes (naturalistic environment), to minimize any bias resulting from being observed, the presence of a research assistant and a video camera may have influenced the dyadic interactions during the play and clean-up tasks, especially for those who felt anxious about being video recorded.

Third, while the at-risk/clinical sample was recruited through programs serving children who have been identified as being at-risk for or experiencing E/BD, group membership was confirmed based on parent BASC-2 reports. Also, the children's social, emotional and behavioural functioning examined at time one of the study (the initial entry into the study), was based solely on parent BASC-2 reports and was not corroborated by other measures or an outside source. Ideally, when assessing children's social, emotional and behavioural functioning multiple

informants and data sources are preferred and would have bolstered the findings in this study, and could be considered in future studies.

Finally, the focus of this study was to examine mother-child and father-child interactions, thus limiting the observations to dyads and excluding broader influences such as triadic and whole system interactions. Although proximal influences may have a greater impact on children's socialization, especially in the early childhood years (Brofenbrenner, 1989; Parke & Buriel, 2006), this narrower focus limited the possibility of examining how broader influences may impact the parent-child relationship, and in this situation, specifically parent-child mutuality. Kwon, Jeon, Lewsader and Elicker (2012), caution that limiting observations to dyads may constrain our understanding of socialization environments, and stress that future research should consider examining the influences of dyads, triads and family systems on children's socialization.

Despite the limitations, the findings from this study highlight the importance of continuing to expand our understanding of parent-child mutuality in early childhood, and have implications for both research and practice. First and foremost it would be important to replicate the findings from this study with at-risk and clinical populations, ideally with a larger sample size. A larger sample would allow for the inclusion of other variables that may contribute to children's social, emotional and behavioural development, such as parenting attitudes and styles, children's temperament, marital and family relationships. Also, observing parent-child interactions during multiple tasks, especially those that may place some stress on dyads (e.g., feeding, bedtime etc.) may provide a broader perspective of their relational dynamics and thus be more representative of their relationship as a whole. Having dyads engage in different kinds of tasks would also allow for more flexibility in counterbalancing the order of observed tasks

(possibly ruling out task order effects), and would help to expand upon and substantiate the findings in this study. Further investigation is also warranted to continue to develop a clearer understanding of how mothers and fathers impact their children and the specific mechanisms of their influence.

Conclusions and Implications

In conclusion, notwithstanding the limitations and future considerations, the findings in this study support previous literature on parent-child mutuality and add new insights as to the nature of parent-child mutuality in a sample of children who are at-risk for or experiencing E/BD. As posited, this study supports the impact of parent-child mutuality on adaptive outcomes for children, and highlights the importance of observing dyadic interactions. The findings in this study also demonstrated that observing dyadic interaction patterns (such as dyadic mutuality) offered a unique perspective on child developmental outcomes that would not have been realized if observations were limited to individual behaviours. Furthermore, both mother-child and father-child dyadic mutuality uniquely and differentially predicted children's social, emotional and behavioural development (concurrently and one year later), emphasizing the importance of including both mothers and fathers in research examining children's behaviours. Additionally, parents may have distinct perceptions of and experiences with their children that may be connected to children's development in unique ways, again highlighting the need to involve mothers and fathers in research studies.

The finding in this study related to the decline in parent-child mutuality during the clean-up task, especially for the at-risk/clinical group, offers a unique contribution to the study of parent-child mutuality and may provide important information for programs assessing and intervening with young children and their families. Specifically, the current study highlights the

importance of working at the level of the relationship (interaction level) and understanding how parents and their children relate during times of pleasure and during times of stress. This study also highlights that supporting positive interactive patterns in early parent-child relationships may be even more important when children are experiencing E/BD (Kim & Kochanska, 2012; Kochanska & Kim, 2013).

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Appendix A

Mutuality and PACE Project: Measures

	Measure	Participant	Definition	Sub-scale
	Time 1			
Mutuality and PACE	Demographics	Mother/Father/ Child	Family information	Age of child, gender, ethnicity, marital status, education, income (PACE & Mut) preschool program & parent age (PACE only)
	Behavioral Assessment System for Children, Second edition (BASC-2) (Reynolds & Kamphaus, 2005)	Mother/Father	Evaluates adaptive and problem behavior of children and provides information about the social, emotional and behavioural functioning of an individual.	*Composite Scores*: Externalizing: Hyperactivity, aggression Internalizing: Anxiety, depression, somatization Behavioural Symptom Index: Hyperactivity, aggression, depression, attention problems Other scores: Atypicality, withdrawal *Content Scores*: Anger control, bullying, developmental social disorders, emotional self-control, executive functioning, negative emotionality, resiliency
	Parenting Styles & Dimensions Questionnaire Short Form (PSDQ) (Robinson, Mandleco, Olsen, & Hart, 2001)	Mother/Father	Measures three global parenting styles and the internal structures within these typologies	*Construct Scores:* Authoritative: warmth and support (1, 7, 12, 14, 27), reasoning/induction (5, 11, 25, 29, 31), democratic participation (3, 9, 18, 21, 22) Authoritarian: verbal hostility (13, 16, 23, 30), physical coercion (2, 6, 19, 32), non-reasoning/punitive (4, 10, 26, 28) Permissive: indulgent (8, 15, 17, 20, 24)
	Temperament and Atypical Behavior Scale (TABS) (Neisworth, Bagnato, Salvia, & Hunt, 1999)	Mother/Father	Measures dysfunctional behavior and identifies children who are developing atypically or are at risk for atypical development	Content Scales: Detached (1-20), Hyper-sensitive/active (21-37), under-reactive (38-48), dysregulated (49-55)
	Adapted Mutually Responsive Orientation Scale (MRO (Kochanska, 2006)	Parent-Child	3-item rating scale that measures the dyadic quality of a parent-child interaction	Parent-Child Codes: Harmonious Communication, Mutual Cooperation, and Emotional Ambiance
	PARCHISY coding scheme (Deater-Deckard, 1997)	Parent-Child	18-item rating scale that measures various aspects of observed parent-child interactions. Included are parent codes, child codes, and dyadic codes	Mom/Dad Codes: Positive content, negative content, positive affect, Negative affect, responsiveness, on task and verbalizations Child Codes: Positive affect, negative affect, responsiveness, on task, non-compliance, autonomy/independence, activity-energy, and verbalizations Dyadic Codes: Reciprocity, conflict, and cooperation

Only Mut	Synchrony and Control Coding Scheme (Lindsey & Mize)	Parent-Child	Assess patterns of mutuality in observed parent-child interactions.	Parent-Child Codes: Synchrony, control, initiations, responses
Only Pace	Parenting Stress Index, third edition (PSI/SF) (Abidin, 1995)	Mother/Father	Evaluates stress in the parent-child relationship and identifies parent-child systems that are at risk for the development of dysfunctional parenting behaviours	*Composite Scores:* Parental Distress: Depression, role restriction, isolation, spouse (1-12) Parent-Child Dysfunctional Interaction: Acceptability, reinforces parent, attachment (13-24) Difficult Child: Adaptability, demandingness, mood, distractibility/hyperactivity (25-36)
	Parenting Atribution Test (PAT) (Bugental, 2004)	Mother/Father	Evaluates the perceived causes of caregiving success and failure	*Composite Scores:* Adult Control over Failure Child Control over Failure
	Time 2			
Only Mut	MacArthur Story-Stem Battery Task (MSSB) (Emde, Wolf, & Oppenheim, 2003)	Child	Task explores child's inner representations of the world	Content themes: interpersonal conflict, empathic relations, dysregulated aggression, moral themes Narrative emotion codes (e.g., safety, child power emo'l incoherence, etc.) Parental themes (e.g., pos, neg, discipline/control, etc.) Performance codes (e.g., distress, creativity, narrative coherence, responsivity w/ examiner, etc.) Avoidant strategies (e.g., denial, self exclusion, revising story, etc.) Dissociation codes (e.g., fantasy proneness, confusion, identifying with aggressor, etc.)
Mutuality and PACE	Ages & Stages Questionnaire: Social-Emotional (ASQ:SE) (Squires, Bricker, Twombly, 2002)	Mother/Father	Assess emotional and social competence of young children.	Behavioural areas: Self-regulation (48M: 4, 8, 31, 22, 16, 7, 18, 20, 25; 60M: 5, 9, 30, 22, 16, 7, 13, 20, 25), compliance (48M: 24, 13; 60M: 24, 15), communication (48M: 1, 17, 19; 60M: 1, 18, 19), adaptive functioning (48M: 11, 15, 23, 26, 32, 10; 60M: 12, 17, 23, 26, 32, 11), autonomy (48M & 60M: 21, 2), affect (48M: 5, 9, 14, 28; 60M: 3, 10, 8, 27), interaction with people (12, 3, 6, 27, 29, 30; 60M: 14, 4, 6, 31, 28, 29), general concerns and comments (48M: 33, 34, 35, 36; 60M: 33,34, 35, 36)
	Children's Behavior Questionnaire: Short Form Version 1 (CBQ-SF) (Rothbart, 2000)	Mother/Father	Assessment of temperament in early to middle childhood	Temperament scales: Activity level (1, 12, 18R, 22, 50R, 85, 93R), anger/frustration (2, 14, 30, 40, 61R, 87), approach/positive anticipation (6, 15, 46, 58, 90R, 92R), attentional focusing (16R, 21R, 62, 71, 84R, 89), discomfort (3R, 9, 29, 49R, 64, 91R), falling reactivity/soothability (25R, 34R, 44, 59, 66, 75R), fear (17, 23, 35R, 41, 63, 68R), high intensity pleasure (4, 10,

				33, 69, 78R, 88), impulsivity (7, 28, 36R, 43R, 51, 82R), inhibitory control (38, 45, 53R, 67, 73, 81), low intensity pleasure (26, 39, 57, 65, 72, 76, 86, 94), perceptual sensitivity (5, 13, 24, 32, 47, 83R), sadness (8, 20, 27, 31, 54R, 56R, 74), shyness (11R, 37, 42, 52, 60R, 70), smiling & laughter (19R, 48R, 55, 77, 79, 80R)
	BASC-2 (Reynolds & Kamphaus, 2005)	Teacher (Mut.) Teacher and parents (PACE)	See Time 1 BASC definition	Teacher composite and content scores are the same as parent scores.
	Social Competence and Behavior Evaluation: Preschool Edition (SCBE) (LaFreniere, & Dumas, 1995)	Teacher	Standardized instrument designed to assess patterns of social competence, affective expression, and adjustment difficulties in children aged 30 – 78 months.	*Basic Scales:* Emotional Adjustment: depressive-joyful (1, 12, 15, 17, 26, 2, 6, 14, 19, 24), anxious-secure (5, 9, 13, 20, 21, 4, 11, 23, 25, 28), angry-tolerant (3, 16, 18, 22, 29, 7, 8, 10, 27, 30) Social Interactions with Peers: Isolated-integrated (37, 41, 52, 56, 58, 34, 36, 38, 49, 57), aggressive-calm (35, 39, 48, 50, 51, 31, 32, 42, 44, 59), egotistical-prosocial (43, 45, 53, 55, 60, 33, 40, 46, 47, 54) Social Interactions with Adults: Oppositional- cooperative (63, 66, 68, 78, 80, 62, 65, 71, 74, 77), dependent-autonomous (61, 64, 67, 73, 76, 69, 70, 72, 75, 79) *Summary Scales:* Social competence, internalizing problems, externalizing problems, general adaptation

Appendix B

Task Scripts for Video recorded sessions

TOYS INSTRUCTIONS

For this task I am interested in seeing how young children of different ages play and interact. Here are some toys for the two of you to play with. I'll be in the next room if you need me and I will let you know when your play time is done. Thanks. (After instructions are given, pull bag out and take out toys. Place toys in a semi-circle around the child and parent, keeping the farm set on one half of the circle and the carousel set on the other side, and the bag of people and animals in the middle). Start timing with watch as soon as all toys are out ****Note: If you notice that the child has begun to play with the toys before they are all out, you can tell them to stop playing at about 14:45 instead of 15:00)

After 15 minutes – approach parents and state: "It's time to stop now and move on to the next task; so I'll leave this bag here for you (put bag in front of toys) and I'll give you a few minutes to clean up" (Give them toy bag). You can call me back when you're done." and walk away.

EMOTIONS TASK INSTRUCTIONS

For this task I am interested in young children's responses to different emotions. Please show these photographs to _____(Child's name). I would like the two of you to talk about the pictures. Note that each picture has a number on it. Please call out the number as you look at each picture. Thanks

INSTRUCTIONS FOR PUZZLE TASK

For this last task I am interested in children's learning. Here is a puzzle. Please teach _____ (Child's name) how to complete this puzzle and you can call me back into the room when you are finished. Thanks.

Appendix C

Definition of PARCHISY Codes for Dissertation

Adapted from: PARCHISY: PARENT CHILD INTERACTION SYSTEM GLOBAL RATINGS FOR THE ETCH-A-SKETCH TASK Kirby Deater-Deckard, Maria V. Pylas, & Stephen A. Petrill Institute of Psychiatry & Institute of education, University of London May 1997

Mother and Father Codes

Positive content (control): the use of praise, explanation, and open-ended questions (opposed to relying on explicit directions)

Negative content (control): the use of physical control of toys or child's hand/arm/body, use of criticism; (Physical control of toys or child's body must be with intention, not accidental or momentary.

Positive affect (warmth): smiling, laughing, (includes warm/positive tone of voice -opposed to cold/harsh tone)

Negative affect: rejection: frowning, cold/harsh voice

Responsiveness: responds to child's questions, comments, and behaviors (verbally or non-verbally)

Child Codes

Positive affect (warmth): smiling, laughing (includes positive tone in voice)

Negative affect - rejection: frowning, cold/harsh voice tones (may see pouting, frustration etc.)

Noncompliance: refuses or does something contrary to that which is asked of him/her

Autonomy/independence: child leads and controls task; does not include off-task behaviours

Responsiveness: responds to parent's questions, comments, behaviors, responses can be verbal or non-verbal

Codes Used in Dyadic Composite

Reciprocity: shared positive affect, eye contact, a "turn taking" (ie. conversation-like) quality of interaction

Cooperation: defined as explicit agreement (verbal or non-verbal), and discussion (may do through toys/play) about how to proceed with and complete task (eg. "Shall we do this next?" and child says "Yes")

Appendix D

Inter-Rater Reliability Statistics for PARCHISY

Individual codes

	Parent Codes		Child Codes	
	Alpha	Weighted Kappa	Alpha	Weighted Kappa
Positive Content/Control (parent) Autonomy/ Independence (child)	0.92	0.72	0.96	0.85
Negative Control (parent) Non-Compliance (child)	0.80	0.56	0.95	0.86
Positive Affect Non-verbal	0.93	0.69	0.95	0.78
Positive Affect Verbal	0.95	0.79	0.97	0.75
Negative Affect	0.80	0.62	0.97	0.87
Responsiveness	0.97	0.85	0.86	0.63

Dyadic Codes	Alpha	Weighted Kappa
Cooperation	0.89	0.72
Conflict	0.96	0.86
Reciprocity	0.96	0.84

Appendix E- Demographic Frequencies

Child Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	49	52.7	52.7	52.7
	female	44	47.3	47.3	100.0
	Total	93	100.0	100.0	

Child's age in months

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25	2	2.2	2.2	2.2
	26	5	5.4	5.4	7.5
	27	4	4.3	4.3	11.8
	28	8	8.6	8.6	20.4
	29	5	5.4	5.4	25.8
	30	8	8.6	8.6	34.4
	31	6	6.5	6.5	40.9
	32	1	1.1	1.1	41.9
	33	5	5.4	5.4	47.3
	34	6	6.5	6.5	53.8
	35	7	7.5	7.5	61.3
	36	1	1.1	1.1	62.4
	36	6	6.5	6.5	68.8
	37	3	3.2	3.2	72.0
	38	2	2.2	2.2	74.2
	39	5	5.4	5.4	79.6
	40	3	3.2	3.2	82.8
	41	2	2.2	2.2	84.9
	42	7	7.5	7.5	92.5
	43	1	1.1	1.1	93.5
	44	3	3.2	3.2	96.8
	46	2	2.2	2.2	98.9
	50	1	1.1	1.1	100.0
	Total	93	100.0	100.0	

Child's ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Asian	3	3.2	3.2	3.2
	Black	1	1.1	1.1	4.3
	East Indian	6	6.5	6.5	10.8
	Hispanic	1	1.1	1.1	11.8
	Mixed Ethnicity	10	10.8	10.8	22.6
	White	70	75.3	75.3	97.8
	Other	2	2.2	2.2	100.0
	Total	93	100.0	100.0	

Years of formal education completed-Mom

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 8 years	1	1.1	1.1	1.1
	Partial HS	1	1.1	1.1	2.2
	HS diploma/GED	8	8.6	8.6	10.8
	Certificate in Trade/Technology	3	3.2	3.2	14.0
	Partial College/Uni	5	5.4	5.4	19.4
	College/Uni degree	47	50.5	50.5	69.9
	Graduate/Prof. degree	28	30.1	30.1	100.0
	Total	93	100.0	100.0	

Years of formal education completed-Dad

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 8 years	1	1.1	1.1	1.1
	Partial HS	5	5.4	5.4	6.5
	HS diploma/GED	7	7.5	7.5	14.0
	Certificate in Trade/Technology	10	10.8	10.8	24.7
	Partial college/Uni	8	8.6	8.6	33.3
	College/Uni degree	36	38.7	38.7	72.0

	Graduate/Prof. degree	26	28.0	28.0	100.0
	Total	93	100.0	100.0	

Age in months at T2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	38	4	4.3	4.5	4.5
	39	6	6.5	6.8	11.4
	40	2	2.2	2.3	13.6
	41	5	5.4	5.7	19.3
	42	7	7.5	8.0	27.3
	43	7	7.5	8.0	35.2
	44	3	3.2	3.4	38.6
	45	3	3.2	3.4	42.0
	46	5	5.4	5.7	47.7
	47	5	5.4	5.7	53.4
	48	4	4.3	4.5	58.0
	49	5	5.4	5.7	63.6
	50	3	3.2	3.4	67.0
	51	8	8.6	9.1	76.1
	52	1	1.1	1.1	77.3
	53	6	6.5	6.8	84.1
	54	2	2.2	2.3	86.4
	55	4	4.3	4.5	90.9
	56	1	1.1	1.1	92.0
	57	5	5.4	5.7	97.7
	58	1	1.1	1.1	98.9
	59	1	1.1	1.1	100.0
	Total	88	94.6	100.0	
Missing	System	5	5.4		
Total		93	100.0		

Appendix F- Mother and Child PARCHISY Individual Variable Frequencies

Mother PARCHISY Positive Control Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	3	3.2	3.2	3.2
	3.00	2	2.2	2.2	5.4
	4.00	6	6.5	6.5	11.8
	5.00	27	29.0	29.0	40.9
	6.00	45	48.4	48.4	89.2
	7.00	10	10.8	10.8	100.0
	Total	93	100.0	100.0	

Mother PARCHISY Negative Control Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	59	63.4	63.4	63.4
	2.00	25	26.9	26.9	90.3
	3.00	7	7.5	7.5	97.8
	4.00	2	2.2	2.2	100.0
	Total	93	100.0	100.0	

Mom PARCHISY Positive Affect Composite Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	1.1	1.1	1.1
	2.00	1	1.1	1.1	2.2
	2.50	6	6.5	6.5	8.6
	3.00	11	11.8	11.8	20.4
	3.50	7	7.5	7.5	28.0
	4.00	17	18.3	18.3	46.2
	4.50	21	22.6	22.6	68.8
	5.00	7	7.5	7.5	76.3
	5.50	6	6.5	6.5	82.8
	6.00	10	10.8	10.8	93.5
	6.50	6	6.5	6.5	100.0
	Total	93	100.0	100.0	

Mother PARCHISY Negative Affect Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	83	89.2	89.2	89.2
	2.00	8	8.6	8.6	97.8
	3.00	2	2.2	2.2	100.0
	Total	93	100.0	100.0	

Child-Mother PARCHISY Positive Affect Composite Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.50	4	4.3	4.3	4.3
	2.00	3	3.2	3.2	7.5
	2.50	12	12.9	12.9	20.4
	3.00	15	16.1	16.1	36.6
	3.50	10	10.8	10.8	47.3
	4.00	15	16.1	16.1	63.4
	4.50	11	11.8	11.8	75.3
	5.00	9	9.7	9.7	84.9
	5.50	4	4.3	4.3	89.2
	6.00	6	6.5	6.5	95.7
	6.50	2	2.2	2.2	97.8
	7.00	2	2.2	2.2	100.0
	Total	93	100.0	100.0	

Child-Mother PARCHISY Negative Affect Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	62	66.7	66.7	66.7
	2.00	24	25.8	25.8	92.5
	3.00	6	6.5	6.5	98.9
	4.00	1	1.1	1.1	100.0
	Total	93	100.0	100.0	

Child-Mother PARCHISY Non Compliance Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	76	81.7	81.7	81.7
	2.00	16	17.2	17.2	98.9
	3.00	1	1.1	1.1	100.0
	Total	93	100.0	100.0	

Child-Mother PARCHISY Autonomy Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	4	4.3	4.3	4.3
	3.00	10	10.8	10.8	15.1
	4.00	28	30.1	30.1	45.2
	5.00	28	30.1	30.1	75.3
	6.00	20	21.5	21.5	96.8
	7.00	3	3.2	3.2	100.0
	Total	93	100.0	100.0	

Appendix G- Father and Child PARCHISY Individual Variable Frequencies

Father PARCHISY Positive Control Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	2	2.2	2.2	2.2
	3.00	9	9.7	9.7	11.8
	4.00	7	7.5	7.5	19.4
	5.00	23	24.7	24.7	44.1
	6.00	41	44.1	44.1	88.2
	7.00	11	11.8	11.8	100.0
	Total	93	100.0	100.0	

Father PARCHISY Negative Control Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	63	67.7	67.7	67.7
	2.00	21	22.6	22.6	90.3
	3.00	8	8.6	8.6	98.9
	4.00	1	1.1	1.1	100.0
	Total	93	100.0	100.0	

Father PARCHISY Positive Affect Composite Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.50	1	1.1	1.1	1.1
	2.00	2	2.2	2.2	3.2
	2.50	21	22.6	22.6	25.8
	3.00	9	9.7	9.7	35.5
	3.50	12	12.9	12.9	48.4
	4.00	17	18.3	18.3	66.7
	4.50	12	12.9	12.9	79.6
	5.00	7	7.5	7.5	87.1
	5.50	4	4.3	4.3	91.4
	6.00	8	8.6	8.6	100.0
	Total	93	100.0	100.0	

Father PARCHISY Negative Affect Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	87	93.5	93.5	93.5
	2.00	5	5.4	5.4	98.9
	4.00	1	1.1	1.1	100.0
	Total	93	100.0	100.0	

Child-Father PARCHISY Positive Affect Composite Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.50	1	1.1	1.1	1.1
	2.00	5	5.4	5.4	6.5
	2.50	11	11.8	11.8	18.3
	3.00	15	16.1	16.1	34.4
	3.50	17	18.3	18.3	52.7
	4.00	13	14.0	14.0	66.7
	4.50	7	7.5	7.5	74.2
	5.00	9	9.7	9.7	83.9
	5.50	3	3.2	3.2	87.1
	6.00	8	8.6	8.6	95.7
	6.50	2	2.2	2.2	97.8
	7.00	2	2.2	2.2	100.0
	Total	93	100.0	100.0	

Child-Father PARCHISY Negative Affect Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	68	73.1	73.1	73.1
	2.00	23	24.7	24.7	97.8
	3.00	2	2.2	2.2	100.0
	Total	93	100.0	100.0	

Child-Father PARCHISY Noncompliance Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	77	82.8	82.8	82.8
	2.00	13	14.0	14.0	96.8
	3.00	3	3.2	3.2	100.0
	Total	93	100.0	100.0	

Child-Father PARCHISY Autonomy Play

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	3	3.2	3.2	3.2
	3.00	8	8.6	8.6	11.8
	4.00	29	31.2	31.2	43.0
	5.00	29	31.2	31.2	74.2
	6.00	22	23.7	23.7	97.8
	7.00	2	2.2	2.2	100.0
	Total	93	100.0	100.0	