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Elucidating the Effect of Mother-Child Interactional Synchrony: Relations between Synchrony, Mutuality, Parenting Attitudes, and Preschool Adjustment

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Elucidating the Effect of Mother-Child Interactional Synchrony: Relations between Synchrony,

Mutuality, Parenting Attitudes, and Preschool Adjustment

by

Cassandra A.L. Pasiak

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ABSTRACT

The present study examined the association between the quality of parent-child interaction and child outcomes. Specifically, global interactional synchrony, the individual synchrony components of mutual initiation and mutual compliance, and mother's attitudes towards parenting (satisfaction with parenting, involvement, and communication) were examined as predictors of young children's social skills and aggression. One hundred and thirty-one preschool-aged children (3-6 years) and their mothers engaged in a videotaped free play task and a structured task. These interactions were coded for global mother-child interactional synchrony and the individual synchrony components of mutual initiation and mutual compliance. The results revealed that higher levels of mother-child mutual initiation and mutual compliance were associated with higher levels of interactional synchrony. Higher levels of interactional synchrony and mutual compliance were associated with lower levels of child physical aggression, whereas higher levels of mutual initiation were associated with higher levels of child physical and relational aggression. Higher levels of interactional synchrony were associated with higher ratings of child assertion skills. Higher self-report ratings of maternal involvement were associated with lower levels of child physical aggression. Higher ratings of satisfaction with parenting, parent-child involvement and communication were associated with higher ratings of child social skills. Finally, ratings of communication were associated with higher levels of interactional synchrony and higher ratings of satisfaction with parenting were associated with higher levels of mutual initiation, whereas higher levels of satisfaction and involvement were associated with lower levels of mutual compliance. The findings help clarify the construct of interactional synchrony and shed light on the role of parent-child interaction in children's social development—providing insights into interventions with aggressive young children.

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CHAPTER I

Introduction

Study Context and Rationale

Externalizing problems in early childhood set a developmental course for negative child outcomes. Termed developmental cascades, early failures in developing foundational social skills set the course for negative developmental trajectories. For example, behavior difficulties in young children result in disruptions of developmental processes and deficiencies in fundamental abilities (Guttmann-Steinmetz & Crowell, 2006; Landy & Menna, 2006a), including the ability to form attachments (Greenberg, 1999), empathy (Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000), emotion regulation (Cassidy, 1994), and delay of gratification (Olson & Hoza, 1993). The theory of developmental cascades postulates that symptoms or problems in one domain (e.g., externalizing behavior) undermine functioning in one or more other domains (e.g., academic achievement), which may in turn exacerbate the initial problem and lead to additional problems (e.g., internalizing symptoms; Masten, Burt, & Coatsworth, 2006).

With respect to aggression and antisocial behavior, two developmental trajectories have garnered considerable empirical support—an adolescence limited and life-course-persistent presentation (Moffitt, 1993). An adolescent limited presentation refers to individuals whose antisocial behavior is limited to the developmental period of adolescence, whereas a life-course-persistent presentation refers to individuals who demonstrate antisocial behavior in some form across stages of development. Although there is some evidence for differential trajectories in females (for review, see Fontaine, Carbonneau, Vitaro, Barker, & Tremblay, 2009), there is clear consensus in the literature that the poorest outcomes for both males and females are associated with life-course persistent anti-social behavior with an early childhood onset (Fontaine et al.,

2008; Frick, 2006; Huesmann, Dubow, & Boxer, 2009; Moffitt, 1993). For example, children who exhibit aggression in early childhood are at increased risk for school failure (Coie & Dodge, 1998), internalizing problems (Ladd & Troop-Gordon, 2003), oppositional defiant disorder and conduct disorder (Renk, 2008), substance use (Lynne-Landsman, Graber, Nichols, & Botvin, 2011), delinquency (Asendorpf, Denissen, & van Aken, 2008), antisocial personality disorder (Simonoff et al., 2004), and escalating forms of aggression in adulthood, including workplace harassment, sexual harassment, intimate partner violence, child abuse, and elder abuse (e.g., Huesmann, Eron, & Dubow, 2002; Temcheff et al., 2008).

To put the problem of developmental trajectories of aggression in perspective within the context of Canadian society, an international survey of youth bullying involvement, including overt (i.e., physical and verbal) and covert (i.e., relational) aggressive behavior, placed Canada at the rank of 26th out of 35 countries with respect to perpetration and 27th in terms of victimization (Craig & Harel, 2004). Thirty-six percent of Canadian youth in grades 6 to 10 reported victimization and 20% reported both perpetration and victimization (Public Health Agency of Canada, 2011). Even more disconcerting, violent offences among youth aged 12 to 17 accounted for nearly one-quarter of all court cases and between 2012/2013 and in 2013/2014 some violent offences increased, including sexual assault (+8%), homicide (+6%), and criminal harassment (+3%; Statistics Canada, 2015). The severity of problems arising from aggressive behavior necessitates research into the factors that shape and maintain externalizing problems in early childhood.

Both theory and research support the intergenerational transmission of behavior, including aggression and externalizing behavior problems (Burke, Loeber, & Birmaher, 2002; Farrington, 2005; Guttmann-Steinmetz & Crowell, 2006; Silverman & Lieberman, 1999;

Tremblay, 2010), empathy and self-control (Enns et al., 2016), and social problem solving (Martin, Stack, Serbin, Ledingham, & Schwartzman, 2012). Transmission occurs through genetic and environmental contributions, including epigenetic mechanisms—the changing of genetic expression through environmental influences on the programming of gene functioning without modifying gene sequence (Tremblay, 2010). An intergenerational perspective provides promising targets for intervention through investigation of the aspects of the parent-child relationship that engender and perpetuate aggressive behavior in the child. Research indicates that interventions targeting parent-child interaction are, in fact, some of the most effective (Landy & Menna, 2006a; Landy, Menna, & Sockett-Dimarco, 1997; Webster-Stratton, Reid, & Hammond, 2001). A substantial body of research has identified facets of the parent-child relationship that contribute to childhood aggression (for review, see Davenport & Bourgeois, 2008); however numerous questions remain unanswered. The present study aimed to extend this research by filling in several gaps in the literature through further elucidation of aspects of the parent-child relationship that predict early childhood aggression.

Organization of the Review

The literature review for this study will begin with an overview of the research pertaining to aggression in early childhood and the two main types of aggression—physical and relational. Social competence in early childhood will then be reviewed, followed by the process of child socialization through parent-child interaction. One prominent parent-child relationship construct, interactional synchrony, will then be introduced. In addition, empirical links between interactional synchrony and child aggression and social competence will be outlined, as well as criticisms of synchrony set forth in the literature. Subsequently, an individual component of interactional synchrony, mutuality, will be introduced and the benefits of investigating this

component as a means of addressing the criticisms of synchrony will be highlighted. Following this review, an alternative parent-child relationship construct, parenting attitudes (i.e., satisfaction with parenting, involvement, communication) will be introduced as an indicator of parent-child relationship quality and a possible predictor of child outcomes. Finally, the objectives and hypotheses of the present study will be presented.

Literature Review

Physical and Relational Aggression in Early Childhood

Aggression is generally defined as any behavior directed toward another person that is carried out with the intent to cause harm (Anderson & Bushman, 2002; Coie & Dodge, 1998). Two forms of aggression are distinguished in the literature: (a) physical aggression and (b) relational aggression, also referred to as social, indirect, or covert aggression. Physical aggression involves the use of physical force or the threat of physical force (e.g., hitting, kicking, biting; Ostrov & Crick, 2007), whereas relational aggression involves damaging another's interpersonal relationships or social status (e.g., spreading gossip, lies, or secrets; the "silent treatment;" peer exclusion; Archer & Coyne, 2005; Crick & Grotpeter, 1995). The majority of research on childhood aggression has focused solely on the physical form of aggression, partly due to its salience and ease of measurement; however relational aggression as gained prominence in the literature in recent years (Ostrov & Crick, 2007).

A considerable amount of research supports gender differences in the manifestation of childhood aggression. For example, teacher, peer, and observational measures have all documented that boys are significantly more likely to engage in physically aggressive behavior than girls, whereas girls are significantly more likely to engage in relationally aggressive behavior (e.g., Archer, 2004; Crapanzano, Frick, & Terranova, 2010; Crick, Casas, & Mosher,

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1997; Ostrov & Crick, 2007; Smith, Rose, & Schwartz-Mette, 2010). The importance of distinguishing and assessing both subtypes of aggression was highlighted in a study by Crick and Grotpeter (1995). Four hundred and ninety-one school-aged children were evaluated for both overt (i.e., physical and verbal) and relational aggression through peer nominations. The results indicated that boys were more likely to be identified as overtly aggressive and girls were more likely to be identified as relationally aggressive. Notably, contrary to prior research that supported the idea that aggression is more prevalent in boys than girls, aggression was identified with nearly equal gender frequency (27.0% of boys, 21.7% of girls) when both physical *and* relational aggression were taken into consideration (Crick & Grotpeter, 1995). An important implication of these findings is that aggressive behavior in girls may be overlooked if only overt physical aggression is examined. Moreover, longitudinal research suggests a trend of increasing relational aggression over time (Ojanen & Kiefer, 2013).

Although there has been extensive research on aggression in elementary-aged children, adolescents, and adults, particularly with regard to the prevention of bullying, delinquency, and violence, there has been comparatively little exploration of aggression in preschool-aged children. Further research is essential because disruptive behavior problems are one of the primary reasons for preschooler referrals for mental health services (Luby & Morgan, 1997; Niccols, 2004). Additionally, as previously mentioned, there is growing evidence that interventions conducted during the preschool years may be more effective than interventions conducted during later childhood and adolescence (Landy & Menna, 2006a; Landy et al., 1997; Presnall, Webster-Stratton, & Constantino, 2014; Webster-Stratton et al., 2001). It has been hypothesized that the preschool years are optimal for intervention because of emergent capacity for behavioral control during this developmental period yet behavior patterns, including

disruptive behavior, are less entrenched (Keenan & Wakschlag, 2000). Compounded with evidence for the stability of externalizing behavior, early intervention and continued research are crucial.

Social Competence in Early Childhood

Social competence is commonly defined as a set of skills that enable successful social interactions and the formation of meaningful relationships (Trentacosta & Fine, 2010). Such skills include the ability to solve interpersonal conflicts and the capacity to adapt social behavior across differing situations (Lillvist, Sandberg, Björck-Åkesson, & Granlund, 2009). Emotional knowledge and regulation skills are also widely held as central to social competence, including the ability to understand, send, and receive emotional messages (Halberstadt, Denham, & Dunsmore, 2001) and the ability to regulate and express emotions in a situationally and culturally appropriate manner (Eisenberg, Cumberland, & Spinrad, 1998). Social competence is a dynamic ability, conceptualized as evolving across developmental stages. For example, the expectations for competent social behavior of a toddler would differ from the expectations for an elementary-aged child (Lillvist et al., 2009). Just as early behavior problems set a negative developmental course, early social success sets a course for success at later developmental stages.

As such, achieving social competence is considered one of the most important developmental tasks of early childhood (Black & Logan, 1995). Establishing social competence in childhood is essential for the formation of satisfying relationships, which, in turn, contributes to both physical and psychological well-being across the lifespan (Cacioppo, 2002). Children who fail to develop social competence are at an increased risk for peer rejection, which has been linked to a variety of negative child outcomes, such as delinquency (Higgins, Piquero, &

Piquero, 2011), higher levels of the human stress hormone, cortisol (Peters, Riksen-Walraven, Cillessen, & de Weerth, 2011), and mental health difficulties (Beeri & Lev-Wiesel, 2012). Research indicates that rejected children are more likely to be aggressive, whereas popular children are more likely to be positive and cooperative with peers (Black & Logan, 1995).

The relations between parent and child are widely recognized as fundamental in the development of children's social competence and behavioral adjustment (Scaramella & Leve, 2004). However, questions remain regarding the specific aspects of parent-child interaction that either foster or hinder social competence and aggression. The role of parent-child interaction in the children's social development will now be reviewed in more depth.

Parent-Child Interaction

Parent-child interaction has long been considered central to child development, particularly in the fostering of healthy, normative development, or, conversely, child maladjustment (Davenport & Bourgeois, 2008). The earliest social interactions occur within the family of origin, particularly between parent and child. Research has linked parent-child interaction to the development of child social and emotional competence, which are critical in the prevention of externalizing problems in childhood (Landy & Menna, 2001). As a result, a considerable body of research has investigated and supported a relation between children's parent-child interactions and interactions outside the family, particularly amongst peers (Lindsey & Mize, 2001; Lindsey, Mize, & Pettit, 1997; Scaramella & Leve, 2004).

The socialization of children has been conceptualized and studied in many ways. For example, social learning theory postulates that children learn prosocial or antisocial behavior through parental modelling and reinforcement (Bandura, 1977). Research demonstrates that noncompliant and aggressive children are more likely to have parents who model aggressive

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behavior through their own aggressive parenting and use of punitive punishment, including derogative criticism, intrusive requests, physical aggression, and threats of physical aggression (e.g., Conger, Neppl, Kim, & Scaramella, 2003; Grunzeweig, Stack, Serbin, Ledingham, & Schwartzman, 2009; Stormshak, Bierman, McMahon, & Lengua, 2000). Research has also found that parent reinforcement can shape, maintain, and even escalate aggressive child behavior. For example, parents may positively reinforce aggressive behavior through attention, laughter, or other overt signs of approval or may negatively reinforce behavior through escape-conditioning (i.e., suspending discipline when child behavior escalates; Patterson, DeBaryshe, & Ramsey, 1989). Bandura's original research tended to focus on overt physical aggression; however, recent research has found support for relational aggression, as well. For example, in a study of 117 children, ages 11 to 17, and their parents, Lau and colleagues (2016) found that parents who themselves reported engaging in relational aggression were more likely to have children who demonstrated relational aggression.

In contrast, cognitive theories, such as social information-processing theory, emphasize perceptions, attributions, and beliefs during social interactions (Crick & Dodge, 1994). Six sequential steps for social information-processing have been proposed: (a) selectively attending to and encoding social cues into memory, (b) cue interpretation, (c) selection of goal or desired outcome (e.g., staying out of trouble, getting even with a provocateur), (d) behavioral response generation, (e) response evaluation and selection, and (f) behavioral enactment (Crick & Dodge, 1994). Parent-child interaction is thought to play a role in this process through the foundation of neural pathways in the child in response to early social interactions with parents. As these pathways are repeatedly used, they gain efficiency and become more automatic. Over time the pathways develop into mental structures or lenses through which future social interactions are

encoded and interpreted (Crick & Dodge, 1994). Research on social information-processing has largely focused on errors in the social information-processing process, particularly with respect to the first two steps of social cue encoding and interpretation. Specifically, aggressive children have been found to be susceptible to a hostile attribution bias in which they are biased towards perceiving hostility in the actions of others, which in turn results in the more frequent selection of hostile responses (Crick & Dodge, 1994). In addition, parents of aggressive children have themselves been found to hold hostile attributions of their children's behavior. Specifically, misbehavior is interpreted as intentional and attributable to stable personality traits beyond the parents' control (Baden & Howe, 1992; Halligan, Cooper, Healy, & Murray, 2007; Werner, 2012). These negative attributions have been linked to coercive parenting behavior, as well as parental withdrawal in the face of escalating child aggression, both of which have been linked to further escalation of child aggression (Baden & Howe, 1992).

On the other hand, psychodynamic theories, such as attachment theory, assert that repeated early interactions with caregivers develop into internal working models of attachment and relationships that are then used when forming new relationships (Bowlby, 1991; Scaramella & Leve, 2004). Children with secure attachments tend to have parents who are able to understand, tolerate, and respond sensitively to their emotional responses. Research has found that children with secure attachment demonstrate greater compliance, social competency with peers, and received higher ratings on sociometric popularity measures (Marcus & Kramer, 2001). In contrast, children with insecure-avoidant patterns tend to have parents who are insensitive and rejecting, children with insecure-ambivalent patterns tend to have parents who are inconsistent and unpredictable, and children with insecure-disorganized patterns tend to have parents who are punishing in response to their child's emotional distress (Landy & Menna, 2001). Children with

insecure attachment patterns have higher parent and teacher reported internalizing problems and externalizing problems, particularly aggressive behavior (Moss, Bureau, Cyr, Mongeau, & St-Laurent, 2004). The poorest outcomes have consistently been found for children with insecure-disorganized patterns of attachment and represent a large proportion of children with behavior disorders (Landy & Menna, 2001).

Although the major theories of child socialization differ with respect to their emphases, there are two aspects of the parent-child relationship that have gained widespread support. First, although once viewed as unidirectional (with the parent influencing the child), parent-child interaction has increasingly been recognized as bidirectional. In fact, the majority of current socialization research acknowledges that parent-child relationships are influenced by the interaction of parent and child characteristics and characterized by patterns of reciprocal influence over time (Pettit & Lollis, 1997). With respect to child aggression, a review of the literature conducted by Davenport and Bourgeois (2008) found evidence for a cyclical pattern of negative, or coercive, parent-child interactions during early childhood. This negative cycle of interaction was characterized by aversive child behavior and inconsistent and ineffective parenting responses. Moreover, it was found that, with repetition, interaction patterns became entrenched and both partners' negative expectations contributed to further escalation of child behavior. Over time, this coercive interaction pattern has been associated with the withdrawal of the parent from attempts to connect with and guide the child (Davenport & Bourgeois, 2008). Scaramella and Leve (2004) hypothesized that parent rejection may result in the child later failing to use their caregiver to assist in soothing and regulation of negative emotions. These bidirectional influences of parent-child interaction consequently inhibit the development of social and emotional competence, and place children on a developmental trajectory of increased

risk for aggressive behavior throughout childhood and adolescence (Davenport & Bourgeois, 2008; Scaramella & Leve, 2004). In a study of 361 low-income mothers of school-aged children, Barbot, Crossman, Hunter, Grigorenko, and Luthar, (2014) found evidence of multiple reciprocal influences over time between parenting variables (e.g., involvement, control, rejection, and stress) and child adjustment (e.g., internalizing problems, externalizing problems, social competence). For example, baseline maternal rejection predicted children's internalizing problems at follow-up, approximately five years later. Reciprocally, higher ratings of child social competence predicted decreases in mothers' parenting stress, increases in effective limit setting, and increases in parental involvement (Barbot et al., 2014).

The second aspect of the parent-child relationship that has gained widespread support is the quality of interaction as a critical factor in child adjustment or maladjustment. Interactional quality has largely been researched with respect to the content of the interactions (e.g., play, teaching, conflict) or parenting attributes (e.g., punitive discipline, inconsistency, warmth); however, rather than asking, "What is going on in the interaction?" researchers have been increasingly asking, "How is it going on?" (Harrist & Waugh, 2002). This shift in focus in the analysis of interactional quality acknowledges that parent-child interactions are dyadic in nature, with both partners as active participants, and emphasis is placed on the unfolding of the interaction itself (e.g., smooth-flowing vs. disjointed).

The present study aimed to augment the literature on parent-child interaction through the examination of interactional synchrony, a parent-child relationship construct that has gained prominence in the literature as a measure of the quality of parent-child interaction that takes into account the bidirectional nature of dyadic interactions. Although a popular measure of relationship quality, interactional synchrony has faced criticism in recent years due to

disagreement over its conceptualization as a global construct. Therefore, the present study aimed to elucidate this construct through the systematic examination of global interactional synchrony, as well as its discrete constituent components: mutual initiation and mutual compliance.

Interactional Synchrony

Interactional synchrony is defined as a dyadic interaction between parent and child in which partners maintain a joint focus, share affect, and exhibit a high degree of responsiveness to each other's cues (Harrist & Waugh, 2002; Mize & Pettit, 1997). Interactional synchrony has gained preeminence among researchers as a measure of parent-child relationships for numerous reasons.

First, the former belief that parent-child interactions were unidirectional led researchers to focus on individual characteristics of the parent, such as parenting style and discipline strategies (Lindsey, Mize, & Pettit, 1997). However, as support grew for the conceptualization of parent-child interaction as co-constructed and shaped by reciprocal influence (Pettit & Lollis, 1997), measures that accommodated the bidirectional nature of dyadic interaction emerged. A principal feature of interactional synchrony as a measure of parent-child interaction is that it assesses the interaction style of both parent and child rather than the individual behavior of either partner (Harrist, Pettit, Dodge, & Bates, 1994; Harrist & Waugh, 2002; Lindsey et al., 1997). Of note, aggression has been conceptualized as a dyadic phenomenon that is characterized by a repeated pattern of interaction between aggressor and victim (Card & Hodges, 2010). Consequently, the dyadic nature of interactional synchrony makes it a singularly adept measure for assessing social interactions, particularly with regard to aggression research. In order to achieve a synchronous interaction, partners must adapt and respond appropriately to each other's behavior (Barber, Bolitho, & Bertrand, 2001; Lindsey, Colwell, Frabutt, Chambers, &

MacKinnon-Lewis, 2008). The bidirectional conceptualization of parent-child interaction has, in fact, been supported by research that has found the unique contribution of interactional synchrony to child outcome, over and above individual parenting characteristics (for review, see Harrist & Waugh, 2002). For example, in a study of 122 families, Criss, Shaw, and Ingoldsby (2003) found that the relation between synchrony and child aggression was significant even after controlling for individual factors, such as parental monitoring and harsh discipline. Similarly, in a study of 43 mother-child dyads, Mize and Pettit (1997) found that interactional synchrony accounted for a greater proportion of the variance in child outcome (i.e., teacher ratings of child social skills and aggression) than the traditional gauge of parent-child relationship quality, maternal warmth.

A second reason that interactional synchrony has gained favor among researchers as a measure of parent-child interaction, is that synchrony is an indicator of the quality of interaction (Harrist & Waugh, 2002). As mentioned earlier in this review, interaction quality has increasingly been recognized as central to child adjustment over the content of interactions (e.g., play, teaching, conflict). Measures of interactional synchrony were developed to address this shift in research focus from content to quality through the microanalytic analysis of the interaction (e.g., smooth-flowing vs. disjointed, turn-taking vs. interrupting/ignoring, shared vs. mismatched affect). In doing so, interactional synchrony evaluates how the interaction is going as it unfolds.

A final reason why interactional synchrony has gained prominence as a measure of parent-child interaction is that it measures the quality of the interaction on a continuum rather than as all-or-none phenomena (i.e., synchrony vs. nonsynchrony; Harrist & Waugh, 2002). In this way, interactional synchrony allows for the differentiation of high synchrony interactions,

moderate synchrony interactions, low synchrony interactions, and even no synchrony interactions. For example, in a highly synchronous interaction partners may share a joint focus of attention, demonstrate balance in leading, following, and responsiveness, and frequently share affect (e.g., laugh together). In a moderately synchronous interaction, partners may share a joint focus and demonstrate some balance in leading and following, but there may be obvious miscues, such as interrupting. In a low synchrony interaction, partners may not share a focus of attention, and may interact, but talk over each other or make irrelevant responses. Finally, in an asynchronous interaction partners may be engaged in parallel activities with no engagement of each other. By measuring the quality of parent-child interaction on a continuum, interactional synchrony adequately samples a variety of interaction patterns and avoids the loss of valuable data.

Links between Interactional Synchrony and Child Aggression

A substantial body of research has found parent-child interactional synchrony to be negatively associated with externalizing behavior in early childhood. For example, in a study of 36 mother-child dyads (18 toddlers with receptive language delays and 18 comparison children) Rescorla and Fechnay (1996) did not observe differences between groups in the degree of interactional synchrony or child compliance during a videotaped free play task; however, patterns emerged across groups in which high interactional synchrony was predictive of high child compliance and, conversely, low child synchrony was predictive of low child compliance.

Moreover, Feldman, Greenbaum, and Yirmiya (1999) found evidence for the lasting impact of interactional synchrony (i.e., shared affect, balance in leading and following) on child self-control, including compliance and the ability to delay acts upon parental request. Mother-child synchrony during a free play task at age 9 months was related to higher child self-control at

age 2 years. This relation remained significant even after controlling for maternal parenting style (i.e., warmth, degree of control), child temperament, and child IQ.

Kochanska and Murray (2000) similarly found evidence for the lasting effect of interactional synchrony in a longitudinal study of 83 mother-child dyads. The dyads were videotaped during interactions at toddler age (*M* age = 32.86 months), preschool age (*M* age = 46.01 months), and early school age (*M* age = 65.89 months). Interactional synchrony (i.e., cooperation, mutual responsiveness, shared positive affect) at toddler and preschool ages was predictive of children's future conscience (e.g., internalization of maternal request, internalization of experimenter rules, prosocial/moral cognitions), even after controlling for the continuity of child consciousness at toddler and preschool ages (Kochanska & Murray, 2000).

Harrist and Waugh (2002) hypothesized that children are more likely to comply during synchronous interactions because parental requests are more likely to be related to the child's present activity. Parents are also more likely to be attuned to the child's internal emotional state, and therefore, able to engage the child responsively. Furthermore, within the context of interactional synchrony children learn to internalize parental values and substitute other-control (i.e., parental requests) with self-control (Harrist & Waugh, 2002). The relation between interactional synchrony and child compliance is important because persistent noncompliance by the age of 2.5 to 5 years has been linked to poor parent-child relationships, poor internalization of prosocial values, and an increased likelihood for externalizing behavior problems (Dix, Stewart, Gershoff, & Day, 2007).

In addition to child compliance, interactional synchrony has been linked to child social information-processing. As previously mentioned, social information-processing theory asserts that children with positive attributions of others are more likely to interpret peer behavior as

benign, whereas children with negative attributions of others are more likely to interpret peer behavior as hostile, and subsequently, feel justified in aggressive retaliation (Crick & Dodge, 1994; Dodge & Somberg, 1987). In a study of 122 mother-child dyads, Criss and colleagues (2003) found that interactional synchrony (i.e., harmony, reciprocity, responsiveness, joint focus, shared affect) during videotaped discussions of family conflicts was associated with lower levels of aggressive responses by children on a social information-processing task. The authors hypothesized that children who experience synchronous interactions with caregivers may develop more prosocial worldviews, and as a result, engage in more positive social information-processing.

Interactional synchrony also has been linked to attachment status. For example, in a study of 128 parent-toddler dyads, Lindsey and Caldera (2015) found that securely attached parent-toddler dyads spent more time in synchronous interactions and less time in asynchronous interactions than insecurely attached parent-toddler dyads. Similarly, Kim, Boldt, and Kochanska (2015) observed 100 children (and their parents) from toddler-age to preadolescence and found that history of synchronous parent-child interactions predicted both mother-child and father-child attachment security.

Along with child compliance, social information-processing, and attachment, interactional synchrony has been associated with a reduced likelihood of affiliation with deviant peers. For example, Criss and colleagues (2003) found that higher levels of mother-child interactional synchrony predicted lower levels of child and best friend antisocial behavior (e.g., stealing, getting into fights, etc.). This association remained significant even after controlling for child antisocial behavior two years earlier.

Finally, there is also research directly linking interactional synchrony to child aggression.

For example, in a study involving 30 preschool-aged children and their mothers, Harrist and colleagues (1994) found that positive synchrony (i.e., extended, connected, non-negative interactions) during two 2-hour home observation sessions was predictive of lower levels of teacher-rated and peer-rated overt, physical aggression in the child. Conversely, negative synchrony (i.e., interactions characterized by mutually negative affective tone) was predictive of higher levels of child aggression.

Likewise, Mize and Pettit (1997) conducted two studies assessing interactional synchrony in mother-child dyads with preschool children. In the first study, interactional synchrony was coded on a 5-point scale during a free play task and a single global synchrony score was ascribed to each interaction. Synchrony was measured as the extent to which mother and child demonstrated joint focus, reciprocity, and responsiveness (Mize & Pettit, 1997). In the second study, the initial rating scale was refined with the addition of concrete scale points to facilitate the microanalytic (every 30-second) analysis of synchrony during the free play interactions. Both studies found that interactional synchrony in mother-child dyads was associated with lower levels of teacher-rated overt, physical aggression in the child (Mize & Pettit, 1997).

Furthermore, Deater-Deckard, Atzaba-Poria, and Pike (2004) investigated synchrony in a socioeconomically and ethnically diverse sample of 125 parent-child dyads. Synchrony was measured during home observations of a structured interaction task (i.e., copying a picture of a house with an Etch-A-Sketch). Higher levels of interactional synchrony (i.e., responsiveness, reciprocity, and cooperation) were predictive of lower overt, physical aggression in the child. These findings were consistent across gender, age, and ethnic and socioeconomic groups, particularly when interactions involved shared positive affect (Deater-Deckard et al., 2004).

Moreover, Ambrose and Menna (2013a) investigated the relation between interactional

synchrony and physical aggression in preschool children. Seventy-three mother-child dyads were videotaped during two interaction contexts—a free play task and a structured block design task. The interactions were then coded for interactional synchrony. The results indicated that the level of interactional synchrony (i.e., joint focus; balance in leading and following, eye contact, shared affect) in the free play task was predictive of parent-rated physical aggression in the child (Ambrose & Menna, 2013a). In addition, task differences were observed, with significantly greater levels of interactional synchrony exhibited during the free play task than the structured block task. The researchers hypothesized that the structured task was more likely to elicit guiding behavior from the mother, in contrast to the balance of leading and following necessary for higher levels of interactional synchrony (Ambrose & Menna, 2013a).

Together, these findings demonstrate that interactional synchrony in parent-child interactions contributes to child social development through relations with child compliance, social information-processing, affiliation with deviant peers, and aggressive behavior. Moreover, these relations have been observed over and above traditional parent-child relationship constructs (e.g., parental discipline, monitoring, and warmth), and therefore, demonstrate that interactional synchrony accounts for unique variance in child outcome (Criss et al., 2003).

Links between Interactional Synchrony and Child Social Competence

A considerable body of research has also identified positive relations between interactional synchrony and child social competence. In a review of the literature, Harrist and Waugh (2002) hypothesized that interactional synchrony fosters child social competence by training children to become adept social partners. The impact of interactional synchrony in the development of child social competence has been supported by numerous studies that have found children from highly synchronous parent-child dyads to be rated as highly socially competent by parents, teachers, and

peers. For example, in a study of 35 dyads comprised of preschoolers and their parents, Lindsey and colleagues (1997) found that children from dyads that were rated as highly synchronous (i.e., demonstrated joint attention, reciprocity, responsiveness) during a videotaped free play task were rated by teachers as more socially competent and were better liked by peers, as assessed through sociometric interviews.

In a study of 43 mother-child dyads, Mize and Pettit (1997) also found that preschoolers from dyads that were highly synchronous during a free play interaction were rated highly on social skills and peer acceptance by teachers, as well as on peer acceptance through sociometric ratings by peers. In a second study examining 62 mother-child dyads with a revised coding scheme, Mize and Pettit (1997) again found that preschoolers who participated in more synchronous interactions were rated more highly on social skills and peer acceptance by teachers and better accepted by peers on sociometric ratings.

In addition, Lindsey, Cremeens, and Caldera (2010) investigated whether the context in which synchrony occurs impacts children's peer relationships. Sixty-three toddlers partook in videotaped interactions with their mothers and fathers during a free play task and a caregiving task (i.e., eating a snack). A composite of prosocial behavior was created by combining the highly correlated teacher-ratings of peer competence with researcher observations of prosocial behavior (e.g., expressions of empathy, helping, hugging peer) during peer interactions in the childcare setting. The results indicated that synchrony (i.e., balance in compliance to initiations, shared positive affect) in both mother-child and father-child interactions was predictive of child prosocial behavior, with higher ratings of prosocial behavior for children of more synchronous dyads (Lindsey et al., 2010). The direction of the findings remained consistent; however, some differences that were observed related to the differing interaction contexts. For example, both

mother-child and father-child dyads tended to display higher levels of interactional synchrony during the free play task than the caregiving task. Father-child dyads also displayed more shared positive affect in the free play context (Lindsey et al., 2010). The researchers concluded that synchrony in parent-child interactions has important implications for children's social competence regardless of the context in which it occurs.

A consensus among researchers is that the relation between interactional synchrony and child social competence can be conceptualized as synchrony providing a supportive context for the acquisition of social skills. Harrist and colleagues (1994) asserted that interactional synchrony serves as the optimal context for social learning through the modelling of social skills and the transfer of social knowledge. For example, synchronous parent-child interactions teach children to respond contingently and to appropriately pace interactions, as well as to generalize these skills in interactions with others. Children are also hypothesized to be more receptive to the transfer of social knowledge within the context of synchrony (Harrist et al., 1994). In contrast, asynchronous interactions may impede adaptive social learning through the teaching of asynchronous social behavior (e.g., interrupting, ignoring, dominating interactions), which may then be generalized to peer interactions. Even adaptive social teachings may be lost if the parent is not attuned to the child (i.e., ensuring the child is paying attention, responding to the child's nonverbal cues) during the delivery of the lesson (Harrist et al., 1994). This conceptualization of interactional synchrony and child social competence is consistent with the previously mentioned bidirectional view of parent-child relations. Within the bidirectional view, partners are not only impacted by mutual influence, but are hypothesized to be *more open* to each other's overt influence when interactions are characterized by mutuality and responsiveness (Criss et al., 2003).

This hypothesis has, in fact, been supported by research. In a study of 99 mother-child dyads Kochanska (1997) investigated the relation between interactional synchrony (i.e., mutual responsiveness, shared cooperation, shared positive affect) and early child socialization. Dyads were videotaped engaging in several tasks (e.g., free play, snack, and baking muffins) and the interactions were coded for synchrony. Child socialization was evaluated through children's internalization of maternal values and rules as reported by mothers and as observed by researchers. Child observations took place across three tasks that assessed the following: child compliance with a maternal prohibition in her absence, child compliance to a maternal request in her absence, and child resistance to violation of standard rules of conduct in mother's absence when encouraged by examiner (Kochanska, 1997). Consistent with the previously mentioned conceptualization of synchrony and child socialization, the results indicated a higher degree of socialization success (i.e., both maternal report and observation of internalization of maternal rules) in children of dyads that were higher in interactional synchrony.

Further evidence for interactional synchrony as an optimal context for social learning was found in a study by Pasiak and Menna (2015). Fifty-nine mother-child dyads (29 clinically aggressive, 30 nonaggressive) were videotaped during a free play and a structured teaching task. The relation between mother-child interactional synchrony during the structured task and child overt, physical aggression was partially mediated by maternal ratings of child social skills. It was hypothesized that the mechanism through which synchronous parent-child interactions impact the development or absence of aggressive behavior was children's social skills (Pasiak & Menna, 2012). That is to say, synchronous interactions were thought to increase child receptivity to the transfer of knowledge regarding appropriate social behavior, which in turn accounted for the negative association between interactional synchrony and child aggression.

In sum, these findings demonstrate that parent-child interactional synchrony plays a key role in the development of social competence, both by directly influencing socialization and by providing the ideal context for socialization. Together, the findings outlined in this review illustrate the contribution of interactional synchrony to social development, and particularly, highlight its significance in the study of behavioral and social competence in early childhood.

Criticisms of Interactional Synchrony

Although the preceding review highlighted the substantial body of evidence supporting the impact of interactional synchrony on child adjustment and the many advantages of this construct, there is some discord among researchers related to how this construct is best conceptualized and measured. Researchers have generally regarded synchrony as a global construct that captures a constellation of related phenomena. Most commonly, these related phenomena have included such interactional behavior as shared affect, joint attention, and verbal turn-taking (Harrist & Waugh, 2002). The global conceptualization of interactional synchrony has been linked to child aggression (e.g., Deater-Deckard et al., 2004; Harrist et al., 1994; Mize & Pettit, 1997) and social competency (e.g., Lindsey et al., 1997; Lindsey et al., 2010; Mize & Pettit, 1997). However, evidence has begun to emerge that the global construct of interactional synchrony and the discrete constituent components of which it is comprised may make differential contributions to child adjustment (Lindsey, Cremeens, Colwell, & Caldera, 2009).

Take, for example, shared affect—one of the most thoroughly researched individual components of interactional synchrony. Many studies provide evidence for the positive impact of shared affect during parent-child interactions on child adjustment. For example, in a study of 103 mother-child dyads, Kochanska and Aksan (1995) evaluated shared positive affect across three interaction contexts (e.g., home clean-up task, lab clean-up task, and prohibited toy task). The

results indicated that shared positive affect during interactions was predictive of higher child compliance to maternal requests. In this example the valence of shared affect was specified as shared *positive* affect; however, this has not always been the case. Some researchers have included positive affect in the operationalization of interactional synchrony (e.g., Criss et al., 2003; Harrist et al., 1994), but often the valence of shared affect is not specified (e.g., Keown & Woodward, 2002; Mize & Pettit, 1997). In fact, there is evidence that parent-child interactions that are synchronous but marked by shared negative affect may be maladaptive (Harrist & Waugh, 2002). For example, in a study of 41 parent-child dyads, Carson and Parke (1996) evaluated shared negative affect during an interactive play task. The results indicated that shared negative affect during parent-child interactions was negatively associated with child peer competency, as rated by teachers. Specifically, children from dyads characterized by shared negative affect were more unsociable, uncooperative, and aggressive in interactions with peers (Carson & Parke, 1996).

If shared affect is to be included in the global conceptualization of interactional synchrony, research must clarify the way it is operationalized; however, few studies to date have been able to evaluate shared affect as an individual component of interactional synchrony due to the low occurrence of negative affect in the parent-child interactions examined (e.g., Lindsey et al., 2009; Mize & Pettit, 1997). Nonetheless, shared negative affect was successfully observed in one study of 59 mother-child dyads with a sample of clinically aggressive preschool-aged children and a comparison group (Pasiak & Menna, 2015). Global interactional synchrony, shared positive affect, and shared negative affect were coded during a videotaped free play task and a structured teaching task. Shared negative affect was observed in 10% of the free play interactions and 17% of the structured interactions. The results indicated that global interactional synchrony and

shared positive affect were negatively associated with child aggression, whereas shared negative affect was positively associated with child aggression (Pasiak & Menna, 2015). Similarly, global interactional synchrony and shared positive affect were both positively associated with child social competence as reported by mothers; however, shared negative affect was not predictive of child social competence. Aside from differential associations to child outcome, shared positive and shared negative affect also exhibited differences in their relations to the global measure of interactional synchrony. Shared positive affect was positively correlated with global interactional synchrony across the two interaction tasks, providing support for shared positive affect as an important component of synchrony (Pasiak & Menna, 2015). In contrast, shared negative affect during the structured task was negatively correlated with both interactional synchrony and shared positive affect during the structured task; however, shared negative affect during the free play task was not correlated with interactional synchrony or shared positive affect for either task (Pasiak & Menna, 2015). Together, these findings provided some evidence that shared negative affect is interactional behavior that is distinct from shared positive affect and global interactional synchrony in that it captures negative aspects of the parent-child interaction. This is particularly problematic when measures of interactional synchrony do not specify the valence of shared affect, and consequently, both shared positive and negative affect contribute to higher interactional synchrony ratings (e.g., Keown & Woodward, 2002; Mize & Pettit, 1997).

As these findings illustrate, there is validity to criticisms of the current conceptualization of interactional synchrony as a global construct. Moreover, it stands to reason that evidence for the differential contribution of shared affect to child outcome necessitates the empirical evaluation of the other components of interactional synchrony, as well. In fact, there has been a call in the literature for the systematic examination of the components of synchrony (Lindsey et al., 2008;

Lindsey et al., 2009). The present study aimed to answer this call for further research through the examination of another prominent component of interactional synchrony: mutuality.

Mutuality in Parent-Child Interaction

Mutuality, also commonly referred to as reciprocity, equality, or harmony, is characterized by a balanced pattern of initiations and responses between parent and child during interactions (Lindsey et al., 2009). In early childhood, mutuality is evidenced by shared eye contact, matched facial expressions, and coordinated body movements, but as language ability develops mutuality shifts to more verbal exchanges (Lindsey et al., 2008). Rapid development in toddlerhood enhances communication, facilitating the child's more active and equal role in initiating and maintaining social interactions (Harrist & Waugh, 2002; Rutter & Durkin, 1987). Parent-child interactions are hypothesized to provide opportunities to practice these burgeoning communication skills, such as the regulation of pace, focus, and affective tone (Lindsey et al., 1997). In this way, early parent-child interactions are thought to model patterns of social interaction that are then generalized to interactions with peers. More specifically, parent-child interactions that are high in mutuality are thought to prepare children for successfully establishing positive, reciprocal relationships with peers (Lindsey & Mize, 2000). This hypothesis has, in fact, been supported by research. For example, in a study of 43 preschool children, Black and Logan (1995) observed mother-child interactions, father-child interactions, and dyadic, as well as triadic peer interactions during free play. Microanalytic analysis of the interactions indicated that patterns of communication demonstrated during parent-child interactions were associated with patterns of communication during peer interactions. In particular, children from parent-child dyads that exhibited communication patterns high in mutuality (e.g., turn-taking, responsiveness) demonstrated consistent patterns of communication

when interacting with peers and received higher ratings by peers on a sociometric measure of popularity. These preschoolers were more likely than children from parent-child dyads characterized by low mutuality to acknowledge peers' initiations and to take turns, and were less likely to ignore or respond noncontingently (Black & Logan, 1995).

However, it remains unclear how mutual initiation and mutual compliance contribute to mutuality as a component of interactional synchrony because research indicates that the two are not necessarily related to one another and make independent contributions to children's social competence. For example, in a study of 35 preschoolers and their parents, Lindsey and colleagues (1997) observed mother-child and father-child dyadic interactions during free play. Interactions were coded for initiations (i.e., related to play or not, offered a choice for partner to comply or not) and responses (e.g., comply, comply with expansion, reject, reject with alternative, ignore). The results indicated that mutual compliance in both mother-child and father-child interactions was associated with teacher ratings of child social competence and peer acceptance or peer sociometric ratings. In contrast, neither mother-child nor father-child mutual initiation was associated with child social competence or peer acceptance. Furthermore, there were mixed findings with regard to mutuality as an individual component of interactional synchrony. Father-child mutual initiation was significantly predictive of father-child synchrony; however, mother-child mutual initiation and both mother-child and father-child mutual compliance approached, but did not significantly predict interactional synchrony ratings (Lindsey et al., 1997).

Mixed findings in the associations between the synchrony variables were likewise observed in a study of 80 toddlers and their parents, with mutual initiation, but not mutual compliance in both mother-child and father-child interactions predicting ratings of interactional

synchrony (Lindsey et al., 2009). With these mixed findings, the role of mutuality as an individual component of synchrony remains unclear. This is problematic because both mutual initiation and mutual compliance are often included and emphasized in the operationalization of global interactional synchrony (e.g., Keown & Woodward, 2002; Mize & Pettit, 1997). Moreover, no study to date has examined mutuality as an individual component of interactional synchrony with respect to early childhood aggression and social competence. Therefore, research investigating interactional synchrony as a global measure of parent-child relationship quality would benefit from the further exploration of mutuality as a constituent component. In this way, the present study aimed to augment the literature by clarifying how interactional synchrony is best conceptualized, with respect to mutuality.

Parenting Attitudes

In addition to direct observation and analysis of parent-child interaction, such as with interactional synchrony, another indicator of parent-child relationship quality is parental attitudes towards childrearing. Defined as cognitions (e.g., biases, evaluations) about various subjects including child rearing (Landy & Menna, 2006b), parenting attitudes may reflect childrearing practices, parent perceptions of relationship quality, and parental attitudes toward discipline (Gerard, 1994). Parenting attitudes are significant because children are exposed to them from a young age and because they have demonstrated relative stability (Gillis-Arnold, Crase, Stockdale, & Shelley, 1998). Three notable parenting attitudes that are relevant to the present study—parenting satisfaction, parental involvement, and communication—will now be reviewed in more depth.

Parenting satisfaction. The construct of parenting satisfaction has been defined as parents' perceived gratification from the parenting role (Thompson & Walker, 2004). Research

has linked low parenting satisfaction to dysfunctional parenting practices, child internalizing and externalizing problems, and parent mental health concerns (Dunning & Giallo, 2012). For example, in a study of 110 parent-couples of children, age 5 to 12 years old, Ohan, Leung, and Johnston (2000) found that parents, who were more satisfied in the parenting role, also reported a more easy-going, low-conflict parenting style. In contrast, in a review of the literature, Carpenter and Donohue (2006) identified low parenting satisfaction as a prominent predictor of parental use of harsh discipline strategies, as well as parental perpetration of child abuse and neglect. For example, in a study of 52 parents who were referred by Child Protective Services following reports of physical abuse or frequent harsh physical punishment, Mammen, Kolko, and Pilkonis (2003) found that low parental satisfaction correlated significantly with aggressive parental behavior directed toward the child.

Likewise, in a study of 82 mothers who were referred for treatment by the Department of Family Service for child neglect and comorbid substance use disorders, Bradshaw, Donohue, Cross, Urgelles, and Allen (2011) found that parenting satisfaction was associated with lower potential for child abuse (i.e., physical abuse, neglect). This relationship remained significant even after controlling for social desirability in responding (Bradshaw et al., 2011). Coleman and Karraker (1998) asserted that even milder forms of parental dissatisfaction, expressed through everyday negativity and disinterest may have subtle, yet insidious, effects on child development.

Low parenting satisfaction has also been linked with negative child and parent mental health outcomes. For example, Ohan and colleagues (2000) found that low parenting satisfaction was associated with greater parent-report of child internalizing and externalizing problems. Additionally, in a study of 849 mothers and 329 fathers of children 6 months to 15 years of age, Rogers and Matthews (2004) found that higher parenting satisfaction was associated with lower

parental depression, anxiety, and stress.

Parental involvement. Parental involvement refers to time spent in children's daily care and activities, including sharing meals, assisting with homework, taking the child to or from activities, daily physical care, and emotional support (Coyl-Shepherd & Newland, 2013). As a parenting attitude, parental involvement reflects parents' interest in their children and concern for their welfare (Gerard, 1994). Research has linked parental involvement to children's academic motivation and achievement (for review, see Gonzalez-DeHass, Willems, & Holbein, 2005). In a study of 708 preschoolers, Marcon (1999) found that teacher-rated parent involvement (e.g., attended parent-teacher conference, extended class visit by parent, parental help with class activity) was associated with higher child mastery of early basic school skills (e.g., mathematics/science, verbal, social, and physical skills) as evidenced by children's report cards.

In addition, there is evidence for the long-term impact of parent involvement on children's academic achievement. In a longitudinal study of 1,165 children from 1986-2000, Barnard (2004) found that parental involvement during the elementary school years both at home (e.g., read to their child) and at school (e.g., participated in school activities) was associated with lower rates of high school dropout, increased on-time high school completion, and highest grade completed. These relations remained significant even after controlling for risk factors for school failure (e.g., race, gender, child cognitive ability in kindergarten, parent education; Barnard, 2004).

Research also has linked parental involvement with children's social competence and emotional regulation. For example, in a study of 307 low-income, ethnic minority children and their caregivers, McWayne, Hamptom, Fantuzzo, Cohen, and Sekino (2004) found that more-

involved parents who actively promoted learning in the home (e.g., talked with their child about the importance of school, helped them practice what they were learning at school), had direct and regular contact with the school, and experienced fewer barriers to involvement (e.g., familial stress, work responsibilities) had children who were observed by parents and teachers to be more cooperative, self-controlled, and prosocial during peer play in both home and school environments than children of less-involved parents. In addition, the children of more-involved parents evidenced greater achievement in reading and mathematics than children of less-involved parents (McWayne et al., 2004). Moreover, lower parental involvement was associated with higher child internalizing and externalizing problems (McWayne et al., 2004).

Similarly, in a study of 60 preschool children with a range of conduct problems (i.e., high, medium, and low levels of conduct problems) and their mothers, Gardner, Ward, Burton, and Wilson (2003) found that spontaneous mother-child joint play observed during naturalistic, unstructured observations in the home at age 3 predicted improvement in child conduct problems at age 4. This association remained significant after controlling for other risk factors for conduct problems, including initial level of child conduct problems and hyperactivity, social class, maternal depression, and frequency of negative mother–child interactions (Gardner et al., 2003). In contrast, the amount of time the child spent unoccupied and not interacting with mother predicted worsening of conduct problems over time (Gardner et al., 2003).

In addition to child outcome, there is evidence that low parental involvement is associated with child maltreatment. For example, in a longitudinal study of 644 families across 17 years, Brown, Cohen, Johnson, and Sazinger (1998) found that low parental involvement (both mother and father) was associated with reports of child physical abuse as indicated by child maltreatment data obtained from the New York State Central Registry for Child Abuse and

Neglect and self-report of child abuse by the youth at follow-up.

Likewise, a meta-analysis of 23 studies comparing maltreating and non-maltreating parents, Wilson, Rack, Shi, and Norris (2008) found that non-maltreating parents were, on average, between one-half and two-thirds of a standard deviation higher in displaying involvement during parent–child interactions than maltreating parents. Specifically, non-maltreating parents were significantly more likely to exhibit behaviors that indicated responsiveness, cooperation, or interest in the child or the child's agenda than maltreating parents, particularly maltreating parents with a documented history of child neglect (Wilson et al., 2008).

Communication. With respect to parenting attitudes, communication refers to parents' perceptions of their ability to communicate with their child (Aring & Renk, 2010). The vast majority of research pertaining to parent perceptions of communication has been conducted with parents of adolescent children; however, emerging research has identified parental perceptions of communication as an indicator of relationship quality in parent-child relationships involving young children. For example, in a study of 49 parents of children, ages 2 to 6 years old, Aring and Renk (2010) found that parent-report of higher levels of communication was associated with more positive parental perceptions of their children (e.g., reported feeling proud of, caring toward, grateful for their child).

Parent perceptions of communication with their children also have been linked to child adjustment. In a study of 129 families with a child diagnosed with cancer and a 4- to 16-year-old healthy sibling, Cohen, Friedrich, Copeland, and Pendergrass (1989) found that higher parent-reported communication with the healthy sibling was associated with higher levels of social and school competence in these same siblings.

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In contrast, in a study of 93 children, ages 2 to 9 years, referred for psychological services, Renk (2011) found that higher maternal perceptions of parent-child communication were related to lower child behavior problems. The author hypothesized three possible explanations for the findings: (a) mothers who communicate less with their children may have children who developed higher levels of behavior problems, (b) mothers' communication is more likely to be disrupted when children have higher levels of behavior problems, or (c) children who experience higher levels of behavior problems are less receptive to communication with their mothers (Renk, 2011). Similarly, in a study of 610 children in grades 5, 8, and 11, Reidler and Swenson (2012) found that low maternal perceptions of parent-child communication (e.g., selecting "not at all true" that "My child tells me private things a lot") were associated with poorer child behavioral functioning. Specifically, maternal perceptions of low communication were associated with higher levels of child externalizing behavior. Notably, children's perceptions of communication were also assessed, and higher discrepancy between mothers' and youths' perceptions of communication was associated with lower levels of child externalizing behavior (Reidler & Swenson, 2012). The authors hypothesized that higher disagreement in perceptions of communication reflected poorer parent-child communication, and consequently, contributed to mother's reduced awareness of their children's adjustment problems.

Limitations of Parenting Attitudes Research

As outlined in the above review, the parenting attitudes of satisfaction with parenting, involvement, and communication are important due to their links with parenting behavior (e.g., parenting style, discipline practices, child maltreatment), parent mental health, and child outcome (such as internalizing and externalizing problems, academic achievement, and social competence). Although there is some evidence that these parenting attitudes are associated with

child outcome, this is an area of research that has received relatively little attention, particularly with respect to child aggression (both physical and relational) and social competence.

It also is unclear how the parenting attitudes of satisfaction with parenting, involvement, and communication are associated with interactional synchrony, mutual initiation, and mutual compliance. These relations are of interest because the aforementioned parenting attitudes represent parental self-report of parent-child relationship quality, whereas interactional synchrony, mutual initiation, and mutual compliance represent observational measures of relationship quality. To the best of this author's knowledge, no research to date has compared these divergent methods of assessing parent-child relationship quality. Moreover, these parenting attitudes contain features that, at face value, would be expected to exhibit associations with the interactional synchrony variables (e.g., quality of communication). The present study aimed to fill this gap in the literature by evaluating both observational measures of parent-child relationship quality and parent report of relationship quality as predictors of child outcome.

Objectives and Advantages of the Present Study

The purpose of the present study was to expand understanding of parent-child relationships by elucidating the effect of a prominent measure of parent-child relationship quality, parent-child interactional synchrony. This was to be achieved through the systematic evaluation of global interactional synchrony, the individual component of mutuality—an alternative measure of relationship quality—and maternal self-report of specific parenting attitudes (i.e., satisfaction with parenting, involvement, and communication). These parent-child relationship variables were analyzed with respect to their impact on child physical aggression, relational aggression, and social skills.

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The majority of research regarding parent-child interaction has assessed interactions between mothers and their children because mothers tend to be the primary caregivers. For the present study, attempts were made to recruit fathers, but the researchers were not successful. Therefore, similar to past research, the present study evaluated mother-child interactions.

In addition, mother-child interactional research commonly evaluates interactions across two interaction tasks—a free play task and some form of structured task. These tasks provide different interaction contexts that vary considerably in their goals and degree of behavioral constraint (for review, see Harrist & Waugh 2002). Consistent with the methodology of previous research, the present study also evaluated mother-child interaction across a free play task and a structured teaching task. Together, both tasks resulted in approximately twenty minutes of observed interaction.

The present study differed from previous studies in order to provide advantages over past research in this area. Namely, this study examined both physical aggression and relational aggression. Although there is considerable research investigating childhood aggression, the vast majority of this research has focused solely on overt, physical forms of aggression (Ostrov & Crick, 2007). This bias toward the evaluation of overt, physical aggression is problematic in light of evidence for gender differences in the manifestation of childhood aggression (e.g., Crick et al., 1997). Therefore, the present study examined both overt, physical and covert, relational aggression in order to avoid gender bias and adequately measure the full spectrum of aggressive behavior in the present sample of preschool girls and boys.

The following four objectives guided this study: (a) elucidate the conceptualization of interactional synchrony by assessing the constituent component of mutuality, (b) examine the link between interactional synchrony and aggression by way of child social skills, (c) investigate

the relations between parenting attitudes (i.e., satisfaction with parenting, involvement, communication) and child outcome, and (d) investigate the relations between parenting attitudes and the interactional synchrony variables (i.e., global interactional synchrony, mutual initiation, mutual compliance).

More specifically, the first objective aimed to address criticisms of interactional synchrony regarding its questionable conceptualization as a global construct. This objective also aimed to resolve issues related to the individual component of mutuality, including mixed findings regarding the relations of mutual initiation and mutual compliance to global interactional synchrony. To achieve this aim, the present study examined both global interactional synchrony and the individual component of parent-child mutuality, as well as evaluated the synchrony variables (i.e., global interactional synchrony, mutual initiation, and mutual compliance) with respect to child outcome (physical aggression, relational aggression, and social skills).

The second objective was to examine the relationship between interactional synchrony and child aggression through the mediating effect of child social skills. Previous research has found evidence for this mediation model (e.g., Pasiak & Menna, 2012); however, this study only examined physical aggression. The present study aimed to extend these findings through the examination of both overt, physical aggression and covert, relational aggression. Included in this objective was the evaluation of whether this pathway would hold true for the interactional synchrony constituent component of mutual compliance. Presumably, a component that is highly associated with the global measure of interactional synchrony should result in a similar mediating pathway. In a similar manner to interactional synchrony, parent child interactions characterized by reciprocity of responsiveness would be expected to provide the optimal

interactional context for social learning and it follows that children with developed social skills would demonstrate less aggression. Moreover, mutual compliance may provide more than just an optimal context, but may directly related contribute to the development of key social skills, such as cooperation. The evaluation of the constituent component of mutual initiation within the mediation model was not presently a focus because the link between mutual initiation and global interactional synchrony has yet to be clarified.

The third and fourth objectives aimed to expand the methodology involved in parent-child interaction research through the evaluation of both observational measures of parent-child relationship quality (i.e., interactional synchrony, mutuality) and parent report of perceptions of relationship quality (i.e., satisfaction with parenting, involvement, communication). In particular, the third objective aimed to investigate evidence for direct links between parenting attitudes (i.e., satisfaction with parenting, involvement, and communication) and child outcome (i.e., child aggression and social skills). The fourth objective aimed to investigate the relation between observational measures of parent-child relationship quality and parental report of relationship quality. Through these objectives and methodological advances, the present study aimed to extend and refine the literature regarding interactional synchrony.

Study Hypotheses and Research Questions

The following section will outline the objectives of the present study and list the associated hypotheses and research questions that were proposed based on the previously presented literature review.

Objective 1: Elucidate the conceptualization of interactional synchrony by assessing the constituent component of mutuality. See Figure 1.

a. Higher levels of mother-child mutual initiation will be associated with higher levels of

global interactional synchrony. The relation between mother-child mutual compliance

and interactional synchrony will be explored.

b. Higher levels of global interactional synchrony will be associated with lower levels of

child physical and relational aggression, as well as higher ratings of child social skills.

c. Higher levels of mother-child mutual compliance will be associated with lower levels of

child physical and relational aggression, as well as higher ratings of child social skills.

d. The relation between mother-child mutual initiation and child outcome will be explored.
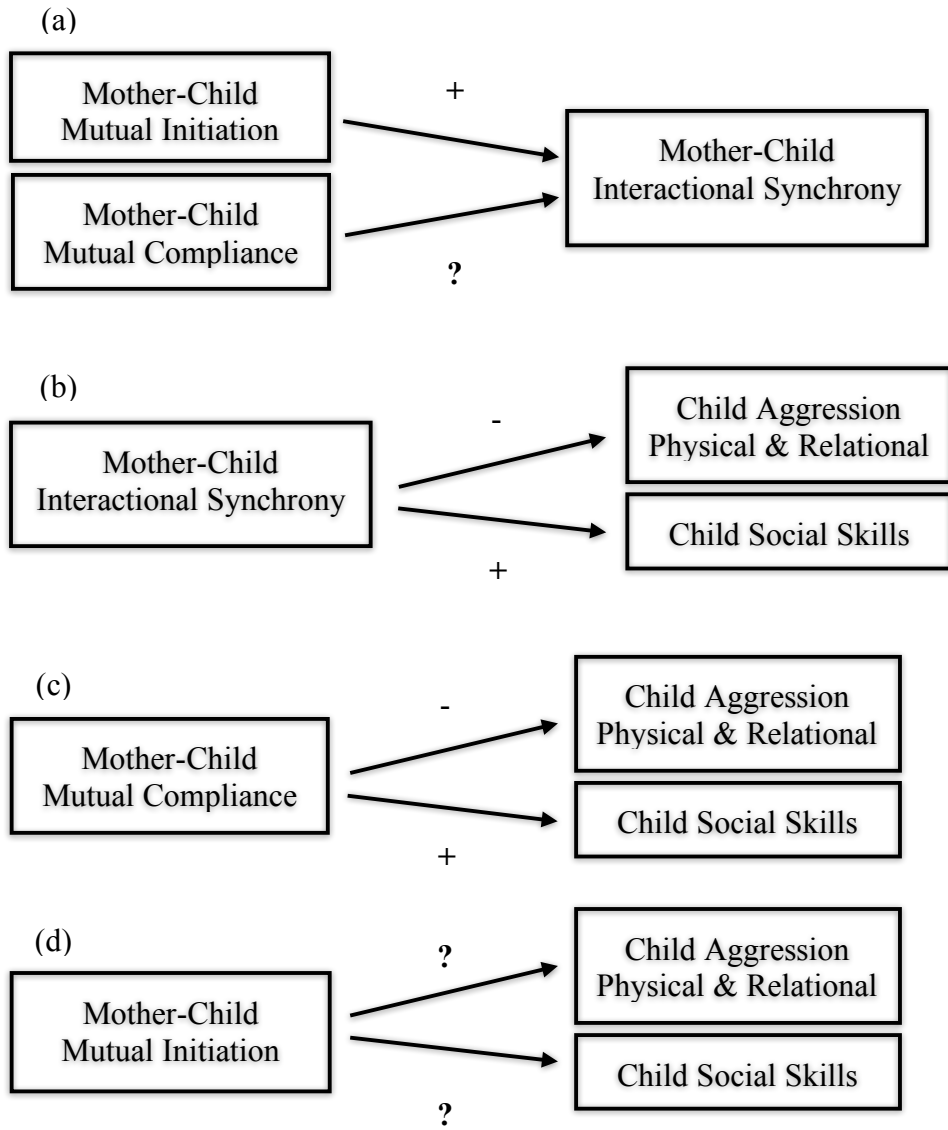
Figure 1. Objective 1: Hypotheses and research questions a, b, c, & d. Proposed relations

between (a) the interactional synchrony variables (mutual initiation, mutual compliance, and

global interactional synchrony), (b) global interactional synchrony and child outcome (children's

physical aggression, relational aggression, and social skills), (c) mutual compliance and child

outcome, and (d) the relation between mutual initiation and child outcome to be explored.

Objective 2: Examine the link between interactional synchrony and aggression by way of child social skills.

a. The relation between interactional synchrony and child aggression will be mediated by child social skills. Specifically, higher ratings of interactional synchrony will predict lower ratings of child aggression by way of higher ratings of child social skills.

b. The relation between mother-child mutual compliance and child aggression will be mediated by child social skills. Specifically, higher ratings of mutual compliance will predict lower ratings of child aggression by way of higher ratings of child social skills.

(a)

+ Child Social Skills -

Mother-Child
Interactional Synchrony

Physical Aggression

Relational Aggression

-

(b)

+ Child Social Skills -

Mother-Child
Mutual Compliance

Physical Aggression

Relational Aggression

-
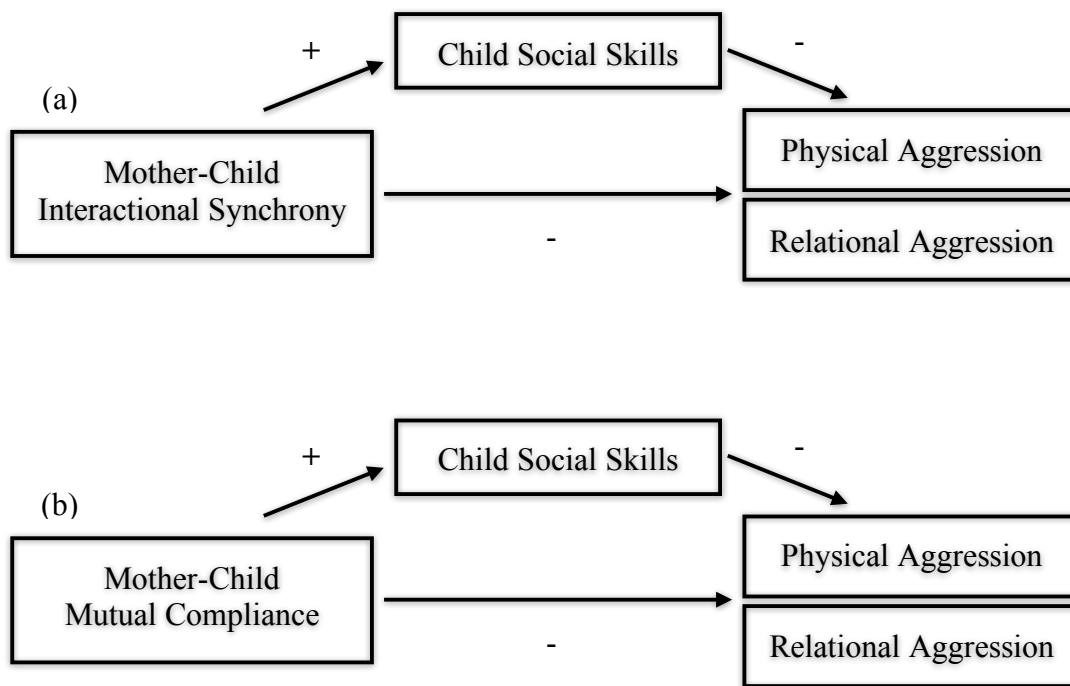
Figure 2. Objective 2: Hypotheses a & b. Proposed mediation models with child social skills mediating the relationship between (a) global interactional synchrony and child aggression, and (b) mutual compliance and child aggression.

Objective 3: Investigate the relations between parenting attitudes and child outcome.

a. Higher ratings of maternal-reported satisfaction with parenting, involvement, and communication will be associated with lower levels of child physical and relational aggression.

b. Higher ratings of maternal-reported satisfaction with parenting, involvement, and communication will be associated with higher ratings of child social skills.

Satisfaction with Parenting

Involvement

Communication

-

+

Child Aggression
Physical & Relational

Child Social Skills
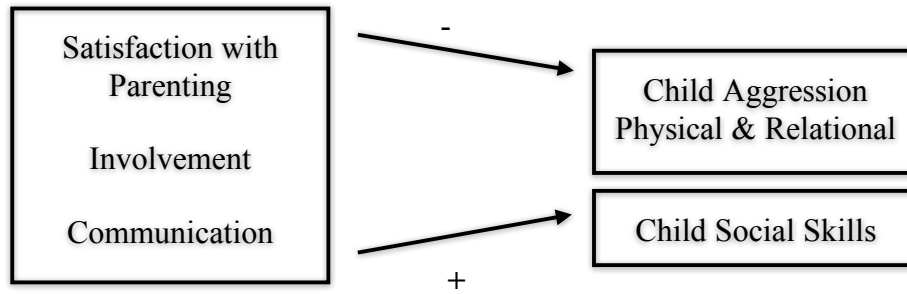
Figure 3. Objective 3: Hypotheses a & b. Proposed relations between maternal report of satisfaction with parenting, involvement with their child, communication with their child, and child outcome (children's physical aggression, relational aggression, and social skills).

Objective 4: Investigate the relations between parenting attitudes and the interactional synchrony variables (i.e., global interactional synchrony, mutual initiation, mutual compliance).

a. Higher ratings of maternal-reported satisfaction with parenting, involvement, and communication will be associated with higher levels of interactional synchrony.

b. Higher ratings of maternal-reported satisfaction with parenting, involvement, and communication will be associated with higher levels of mutual initiation.

c. The relations between mutual compliance and satisfaction with parenting, involvement, and communication will be explored.
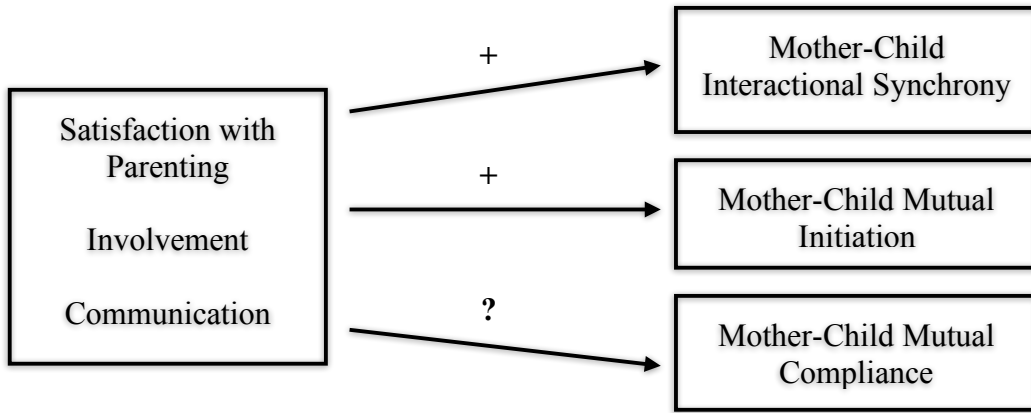
Figure 4. Objective 4: Hypotheses and research question a, b, & c. Proposed relations between maternal report of satisfaction with parenting, involvement with their child, communication with their child, and the interactional synchrony variables (mutual initiation, mutual compliance, and global interactional synchrony).

CHAPTER II

Method

Participants

The present study used an archival dataset, which included videotaped mother-child interactions during a structured task and a free play task. The videotaped interactions were previously used in research related to interactional synchrony (Ambrose & Menna, 2013a; Ambrose 2013b); however, the current examination of the mother-child interactions marked the first time these data were coded for mutual initiation and mutual compliance.

Participants were mothers and their children (age 3 to 6 years) recruited from a mid-size city in south-western Ontario for a larger study investigating the early childhood correlates of the development of social competence. Participants were recruited through community agencies, children's community events, local advertisements (on a parenting website and in a parenting magazine), word of mouth, and the University of Windsor Psychology Department Participant Pool. The Participant Pool is a research participant recruitment tool through which undergraduate students enrolled in eligible psychology courses may earn academic credits through participation in research studies.

Participants were excluded if the child had a prior diagnosis of a developmental delay or pervasive developmental disorder, the child achieved a standard score below 80 on the intelligence measures embedded in the study battery (i.e., Kaufman Brief Intelligence Test– Second Edition [KBIT-2] and Wechsler Preschool and Primary Scale of Intelligence–Third Edition [WPPSI-III]), or less than 70% of the study battery was completed. One dyad was removed from analyses due to the child's prior diagnosis of Fetal Alcohol Syndrome, four dyads were removed as a result of the child scoring below a standard score of 80 on the KBIT-2, and 18

dyads were removed for completing less than 70% of the study battery. Missing data were primarily the result of participants either failing to attend the second session of the study or failing to return completed measures (n = 18). After participants were removed for violating the study inclusion criteria, the dataset was reduced from 154 dyads to a final sample size of 131 mother-child dyads. A priori power analysis using G*Power 3.1.2 (Faul, Erdfelder, Lang, & Buchner, 2009), determined that this sample size was large enough to detect a large effect size (f^2 = .35; Cohen, 1992), with a statistical power level of .8 with up to ten independent variables in the regression equations. Participants included in the final sample and those cut from the sample did not significantly differ on key demographic variables, aside from household income, X^2 (1, n = 138) = 5.15, p = .02. Specifically, there was a higher mean household income among participants retained in the sample.

There were 77 male and 54 female children and their ages ranged from 3 to 6 years (M = 58.53 months, SD = 10.8). Male (M = 58.26 months, SD = 10.9) and female children (M = 58.93 months, SD = 10.7) did not differ significantly in age, t(129) = -.346, p = .740. The majority of the children attended school, day care, or some form of preschool programming (93.1%).

Mothers' ages ranged from 24 to 52 years (M = 35.43 years, SD = 5.12). The majority of mothers were married or reported living with their partner (91.6%) at the time of participation in the study. The ethnicity of the mothers was predominantly Caucasian (78.6%). The majority of mothers completed some or graduated from college, university, or professional school (94.7%). Household income was normally distributed, with the average household income ranging between $61,000 and $100,000 (29%). The majority of participants were from families with two children (58.0%). Detailed demographic information of the participants is provided in Table 1.

Table 1
Demographic Characteristics of the Sample (N = 131)

Characteristic	*n*	*%*
Child gender		
Male	77	58.8
Female	54	41.2
Child education		
Preschool or daycare	30	22.9
Junior kindergarten	44	33.6
Senior kindergarten	37	28.2
Grade 1	11	8.4
Not in school	8	6.1
Missing data	1	0.8
Mother marital status		
Married	112	85.5
Living together	8	6.1
Divorced or separated	8	6.1
Other	3	2.3
Mother ethnicity		
Caucasian	103	78.6
South Asian	6	4.6
Native Canadian	5	3.8
East Asian	3	2.3
Biracial	3	2.3
African	1	0.8
Hispanic	1	0.8
Arabic	1	0.8
Other	8	6.1

Table 1 (Cont.)

Characteristic	*n*	*%*
Mother education		
Junior high	1	0.8
Graduated high school	6	4.6
Some college or university	22	16.8
Graduated college or university	75	57.3
Graduate or professional school	27	20.6
Household income		
Below $30,000	15	11.5
$30,000 to $60,000	27	20.6
$61,000 to $100,000	38	29.0
$101,000 to $150,000	33	25.2
$151,000 to $250,000	13	9.9
Above $250,000	1	0.8
Missing data	4	3.1
Family structure		
One child	12	9.2
Two children	76	58.0
Three children	36	27.5
Four children	6	4.6
Five children	1	0.8

Procedure

The larger study was approved by the Research Ethics Board at the University of Windsor and took place over two sessions lasting approximately 1.5 hours each (PI: R. Menna). During each session, participating dyads engaged in a variety of tasks, with a break midway through during which the child was provided with a snack. In the first session, mothers completed consent forms, verbal assent was obtained from the children, the mother-child dyads engaged in videotaped interaction tasks, and mothers began the questionnaire battery while their children engaged in individual tasks with the examiner.

The mother-child interaction tasks consisted of a 5-minute warm-up task, a 10-minute structured block task, a 10-minute free play task, and a 10-minute planning task. Dyads first engaged in the warm-up task in order to adjust to the setting and videotaping. The order of the subsequent tasks was counterbalanced. All mother-child interactions were videotaped in a room with a one-way observation mirror. The researcher gave instructions to the dyad and then watched from the observation room to provide and remove materials as necessary for each task (e.g., blocks, free play toys). For the purposes of this study, only the structured teaching task and the free play task were analyzed. Consistent with the methodology of the literature, these two tasks were selected for analysis because these tasks provided interaction contexts that varied in terms of their goals and degree of behavioral constraint (for review, see Harrist & Waugh 2002) and have been evidenced to elicit changes in parenting behavior (e.g., Davenport, Hegland, & Melby, 2008).

For the warm-up task, the mother and child were provided with a small variety of toys and instructed to play as they normally would at home. For the structured block task, the mother and child were provided with a box of colored one-inch blocks and four block design cards

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deemed likely too difficult for the child to complete on his or her own. Mothers were instructed

by the researcher to build a tower of nine blocks, then a bridge with three blocks, and then to

have their child make designs with the blocks that matched the designs on the cards. For the free

play task, the mother and child were provided with a variety of age-appropriate toys, including

blocks, a castle with figures, Play-Doh, Mr. Potato Head, and cars. A few toys were also

included to encourage aggressive play, such as dinosaur figures. Mothers and children were

informed that it was free play time and were asked to play as they normally would. Following the

interaction tasks, children took a snack break before engaging in individual tasks with the

examiner (e.g., cognitive testing), while mothers were given a counterbalanced battery of

questionnaires to complete in a separate room.

The second session, which took place on a different day, involved the completion of the

unfinished tasks, including any remaining questionnaires from the battery given to mothers and

individual tasks with the children (i.e., KBIT-2 or WPPSI-III). The majority of participants

completed both sessions within a period of two weeks.

Mothers were given ten dollars to cover parking and transportation costs and a five-dollar

gift card to a popular coffee chain. Participants recruited through the University of Windsor

Participant Pool received bonus marks toward one psychology course of their choosing. Children

were also given a small token at the end of each visit (e.g. stickers, skipping rope, toy car, small

plush animal).

Measures

Background information. Mothers completed a demographics questionnaire, which

included information regarding mother's age, marital status, family structure, household income,

ethnicity, education, and child's age, gender, education, number of siblings, and psychological

and medical history (see Appendix A).

    Cognitive ability. The Kaufman Brief Intelligence Test–Second Edition (KBIT-2; Kaufman & Kaufman, 1997) was used to assess child participants' cognitive abilities. The KBIT-2 is a standardized, individually administered measure of intelligence for individuals, ages 4 through 90. It consists of three subtests: Verbal Knowledge, Riddles, and Matrixes, that measure verbal, nonverbal, and overall cognitive abilities. A Verbal IQ score is derived from the Verbal Knowledge and Riddles subtests. The Verbal Knowledge subtest consists of 60 items that measure receptive vocabulary. On the Verbal Knowledge subtest, the examiner says a word and the examinee points to the matching picture. The Riddles subtest consists of 48 items that measure verbal comprehension. On the Riddles subtest, the examiner says a riddle and the examinee points to the picture that shows the answer to the riddle or says a single word that answers the riddle. A Nonverbal IQ score is derived from the Matrices subtest. The Matrices subtest consists of 46 items that measure nonverbal reasoning. On the Matrices subtest, the examinee is directed to choose a picture from an array that best fits with the relationship or rule of the stimulus (e.g., a mitten goes with a hand). Children's raw scores on these three subtests are compared to age- and gender-based norms to compute standard scores. Both the standard scores and the IQ composites have a mean of 100 and a standard deviation of 15.

    The KBIT-2 has demonstrated adequate reliability and validity. Internal-consistency reliabilities for individuals aged 4 to 18 were .90 for the Verbal scale, .86 for the Nonverbal scale, and .92 for the IQ composite (Kaufman & Kaufman, 1997). Test-retest reliability over an average interval of four weeks was .88, .76, and .88, respectively (Kaufman & Kaufman, 1997). With respect to validity, the KBIT-2 has been found to be strongly correlated with other frequently used measures of intelligence, including the Wechsler Intelligence Scale for Children–

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Fourth Edition (WISC-IV). Correlation coefficients were .79, .56, and .77 for the two tests'

verbal, nonverbal, and total IQ composite (Kaufman & Kaufman, 1997).

Participants who were too young to complete the KBIT-2, completed two subtests of the

Wechsler Preschool and Primary Scale of Intelligence–Third Edition [Canadian] (WPPSI-III[CDN];

Wechsler, 2002). The WPPSI-III is a standardized, individually administered measure of

intelligence for children aged two years, six months through seven years, three months. The two

subtests were selected to assess verbal ability (Information) and nonverbal ability (Object

Assembly). The Information subtest consists of 34 items that measure general fund of

knowledge. On the Information subtest, examinees answer questions related to general factual

information. The Object Assembly subtest consists of 14 items that measure nonverbal

reasoning. On the Object Assembly subtest, examinees are presented with puzzle pieces and

must fit the pieces together to form a meaning whole within a time limit.

The WPPSI-III has demonstrated adequate reliability and validity. The internal

consistency reliability coefficients for children aged 2 years, 6 months to 3 years 11 months were

0.92 for the Information subtest and .87 for the Object Assembly subtest (Weschler, 2002). Test-

retest reliability coefficients were .90 and .74, respectively (Weschler, 2002). With respect to

validity, the WPPSI-III has been found to be strongly correlated with other frequently used

measures of intelligence, including the Wechsler Intelligence Scale for Children–Third Edition

(WISC-III). Correlation coefficients between the WPPSI-III and the WISC-III were .63 for the

Information subtest, .46 for the Object Assembly subtest, and .89 for the two tests' total IQ

composite (Weschler, 2002).

Child aggression. The Preschool Social Behavior Scale (PSBS; Crick, Casas, & Mosher,

1997) is a 25-item questionnaire that assesses physical aggression, relational aggression,

prosocial behavior, depressed affect, and peer acceptance in preschool-aged children (Crick et al., 1997). For the larger study, two items were added to further assess physical aggression, in addition to general overt aggression, bringing the total number of items to 27. The two additional items were "This child pokes peers" and "This child punches peers." The PSBS was originally developed for completion by teachers, but the neutral language (e.g., "This child…") and the scope of the behaviors assessed was thought to make the scale appropriate for mothers. Ratings were made on a 5-point Likert-type scale ranging from 1 (*never or almost never true of this child*) to 5 (*always or almost always true of this child*). The physical aggression subscale consisted of seven items, including behaviors such as hitting, kicking, and threatening other children. The relational aggression subscale consisted of eight items, including behaviors such as peer exclusion and threatening the friendship to get their way. The prosocial behavior subscale consisted of four items, including behaviors such as sharing, turn-taking, and helping others. The depressed affect subscale consisted of three items that assessed outward signs of low mood, such as negative affect and low enjoyment. One item assessed acceptance by same sex peers and one item assessed acceptance by other sex peers. In the present study, total scores on the physical aggression subscale were used as a measure of overt/physical aggression and total scores on the relational aggression subscale were used as a measure of covert/relational aggression. Higher scores indicated higher levels of aggression. Numerous studies have demonstrated the reliability of the PSBS, including Cronbach's alphas ranging from .88 to .96 (Crick et al., 1997; Estrem, 2005; Hart, Nelson, Robinson, Olsen, & McNeilly-Choque, 1998; Johnson & Foster, 2005). In the present study, the following Cronbach alpha coefficients were obtained: .84 (physical aggression) and .61 (relational aggression). Due to the low internal consistency of the relational aggression subscale, the reliability of individual items was assessed. Reliability analyses

indicated that removing one item ("This child walks away or turns his/her back when he/she is mad at another peer") from the subscale items from the responsibility subscales would only minimally improve the internal consistency (.62); therefore, all items were included in the analyses.

Child social skills. The Social Skills Rating System (SSRS; Gresham & Elliott, 1990) was used to assess children's social skills. The SSRS Parent Form Preschool Level was completed by mothers of 3- and 4-year-old children, and the SSRS Parent Form Elementary Level was completed by mothers of 5- and 6-year-old children. Standardized scores were used for all analyses of the present study. The SSRS is a 40-item measure that contains statements about children's behaviors and the frequency of these behaviors is rated on a 3-point Likert-type scale ranging from 0 (*never*) to 2 (*very often*). The SSRS yields an overall rating of children's social skills, as well as scores on four social skill subscales: cooperation, assertion, responsibility, and self-control. Each subscale consists of 10 items. The cooperation subscale includes behaviors such as helping others, sharing, and complying with rules and directions. The assertion subscale includes initiating behaviors, such as introducing oneself, asking others for information, and responding to the actions of others. The responsibility subscale includes behaviors that demonstrate the child's ability to communicate with adults and exhibit respect toward property or work. The self-control subscale includes behaviors demonstrated during conflict situations (e.g., responding appropriately to teasing) and in nonconflict situations that require compromising and turn-taking. The total social skills score consists of the sum of all items and ranges from 0 to 80, with higher scores reflecting greater social skills.

The SSRS Preschool Level and Elementary Level have demonstrated adequate psychometric properties with internal consistency ranging from .65 to .90 and test-retest

reliability ranging from .77 to .91 (Gresham & Elliott, 1990). Comparisons between the SSRS

Elementary Level and the Child Behavior Checklist (CBCL) have provided support for the

criterion-related validity of the SSRS with negative correlations between the SSRS scales and the

CBCL Externalizing Problems and Internalizing Problems scales (Achenbach & Rescorla, 2000,

2001). In the present study, the following Cronbach alpha coefficients were obtained: .72

(cooperation), .70 (assertion), .68 (responsibility), .76 (self-control), and .83 (total social skills)

on the SSRS Preschool Level and .75 (cooperation), .85 (assertion), .69 (responsibility), .86

(self-control), and .88 (total social skills) on the SSRS Elementary Level. Due to the low internal

consistencies of the responsibility subscales of both the SSRS Preschool Level and Elementary

Level, the reliability of individual items of each subscale was assessed. Reliability analyses

indicated that removing items from the responsibility subscales would not improve internal

consistency; therefore, all items were included in the analyses.

Maternal parenting attitudes. The Parent Child Relationship Inventory (PCRI; Gerard,

1994) was used to assess mothers' attitudes toward parenting and their child. The PCRI is a 78-

item self-report questionnaire for mothers or fathers of 3- to 15-year-old children. Ratings are

made on a 4-point Likert-type scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*).

Responses are used to calculate seven subscales. The Parental Support subscale assesses a

parent's perceived level of emotional and social support. The Satisfaction with Parenting

subscale assesses the pleasure and sense of fulfillment a parent experiences from their parental

role. The Involvement subscale assesses a parent's level of interaction with and knowledge of

their child. The Communication subscale assesses a parent's perception of their effectiveness in

communicating with their child. The Limit Setting subscale assesses a parent's perceptions of

disciplining their child. The Autonomy subscale assesses a parent's ability to promote their

child's independence. The Role Orientation subscale assesses a parent's attitudes about gender roles related to parenting. For the present study, the subscales of Satisfaction with Parenting, Involvement, and Communication were examined. The Satisfaction with Parenting subscale consists of 10 items that measure the amount of pleasure and fulfillment respondents derive from being a parent. The Involvement subscale consists of 14 items that assess the level of the parents' interaction with and knowledge of their children. The Communication subscale consists of 9 items that assess parents' perceptions of how they communicate with their children.

The PCRI also contains two validity indicators, including 5 items used to assess response Social Desirability (e.g., I have never had any problems with my child) and 10 pairs of items used to assess response Inconsistency (e.g., Women should stay home and take care of the children. Having a full-time mother is best for a child). Higher scores indicate "good parenting attitudes" (Gerard, 1994).

The PCRI has demonstrated adequate reliability with internal consistency ranging from .70 on the Parental Support subscale to .88 on the Limit Setting subscale. Test-retest reliability ranged from .44 on the Autonomy subscale to .71 on the Parental Support and Role Orientation subscales (PCRI; Gerard, 1994). In the present study, the following Cronbach alpha coefficients were obtained: .67 for the Satisfaction with Parenting subscale, .87 for the Involvement subscale, and .95 for the Communication subscale. Due to the low internal consistency of the Satisfaction with Parenting subscale, the reliability of individual items was assessed. Reliability analyses indicated that removing several individual items would only minimally improve the internal consistency (+ .16 max); therefore, all items were included in the analyses.

Videotape Coding

The parent-child videotaped 10-minute structured teaching tasks and the 10-minute free play tasks, were coded using two rating scales: (a) mother-child interactional synchrony and (b) mother-child mutuality. Coding the interactions for interactional synchrony was completed by the author of the present study, a graduate student, and two undergraduate psychology students, whereas coding for mother-child mutuality was completed by two graduate and two undergraduate psychology students. The author of the present study trained all of the coders in coding mother-child mutually, but did not directly code videotapes for this study. Coders were blind to information pertaining to the participants whose interactions they coded.

Coding training for interactional synchrony and mutuality followed a similar process. First, the coders reviewed the respective coding manuals (e.g., Keown & Woodward, 2002; Lindsey & Mize, 2001), which contained the definitions of the variables, detailed descriptions of each code, and concrete examples of associated behaviors for each code. Second, the coders met to discuss and to clarify any questions about their respective coding schemes. During this meeting, videotapes were randomly selected from the sample and portions of video were viewed in order to practice the application of the coding scheme and to discuss discrepancies in the ratings among coders. Third, the coders rated one videotape separately and then discrepancies among the coders' ratings were discussed until an agreement was reached. Fourth, coders continued to rate videotapes separately and then discuss their ratings until an agreement was reached on any discrepancies. A total of nine videotaped mother-child interactions were used for training in the coding of interactional synchrony and eight interactions were used for training in the coding of mutuality. Interrater agreement on the total synchrony score (i.e., the total scores within 0.5 of each other) ranged from 75-88%, but with discussion reached 100%. With respect

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to mutuality, interrater agreement ranged from 92-97% for the identification of an event as an initiation and 80-83% for the correct classification of the responses; however, with discussion, 100% agreement was reached.

Mother-child interactional synchrony. The coding system created by Mize and Pettit (1997) and adapted by Keown and Woodward (2002) was used to code the mother-child interactions in order to assess interactional synchrony. Each videotaped interaction was divided into 30-second intervals in accordance with Lindsey and colleagues' (1997) recommendation that this span of time is optimal to reliably assess parent-child interaction at the microanalytic level. Each 30-second interval of videotaped interaction was then rated on a 6-point scale, ranging from 0 to 5, with each point of the rating scale anchored by concrete behavioral examples. For example, interactions were given a rating of 0 when the mother and child were engaged in parallel activities and there was no interaction between partners. Interactions were given a rating of 1 when mother and child interacted but did not appear to be on the same wave-length and the interaction was asynchronous and disjointed (e.g., partners talked over each other, made irrelevant responses, or did not share a focus of attention). A rating of 2 was given when the majority of the interaction appeared synchronous, but there were obvious miscues (e.g., interrupting, ignoring) or when the dyad was primarily focused on the toys, as opposed to each partner's emotional and behavioral cues. Interactions were given a rating of 3 when the dyad shared a joint focus of attention, partners were responsive to each other, and there was some balance in the leading and following, but this balance was not perfect. A rating of 4 was given when the mother-child partners shared a joint focus; there was a considerable amount of balance and mutuality in leading, following, and responsiveness; and dyads exhibited eye contact and/or shared affect. Interactions were given a rating of 5 when dyads shared a joint focus; were

mutually balanced in leading, following, and responsiveness; demonstrated equal responsibility for maintaining the interaction; and exhibited a considerable amount of shared affect and/or eye contact and/or physical closeness (Keown & Woodward, 2002). Therefore, high ratings of synchrony were associated with interactions in which the mother and child shared the same focus of attention, demonstrated shared affect, and were responsive to each other's cues, whereas low ratings were associated with interactions in which mother and child did not share a common focus, demonstrated mismatched affect, and interrupted each other or were unresponsive to each other. A total interactional synchrony score for each 10-minute interaction task was produced by averaging the ratings across intervals.

The interactional synchrony coding system has exhibited acceptable levels of interrater reliability in the past, from kappa of .66 (Keown & Woodward, 2002) to r of .75 (Mize & Pettit, 1997). The interrater reliability for the present study was based on a random selection of 20% of the mother-child interactions. An equal number of comparisons were made between the four coders and an equal proportion of structured block and free play tasks were included in the reliability sample. The coding scheme exhibited strong interrater reliability, ranging from .79 to .92 between the four coders. Intraclass reliability above .55 is considered sufficient for these types of data (Mitchell, 1979).

Mother-child mutuality. The coding system developed by Black and Logan (1995) and adapted by Lindsey and Mize (2001) was further adapted to code the mother-child interactions for mutuality. This coding scheme focuses on the dyadic quality of communication in mother-child interactions by assessing the extent to which both partners are equal participants in the interaction. Specifically, the scale measures the degree to which partners mutually initiate interaction and mutually comply with each other.

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With this coding system, coders watched the videotaped interaction and recorded the time of each initiation/response event, indicated which partner made the initiation or response (i.e., mother or child), and recorded the response as accurately as possible. Verbal statements were written out verbatim, and behaviors were briefly described. Coders then identified the event as one of five verbal initiation types, one of three nonverbal initiation types, or one of five response types. Verbal initiation codes consisted of leads, requests for permission, requests for information, polite commands, and imperatives. Verbal initiations ended when the speech ended. A verbal initiation event was coded as a *lead* when the initiation offered the partner a choice of whether or not to comply (e.g., "Let's play with the dinosaurs!"). A verbal initiation event was coded as a *request for permission* when the initiation was phrased as a question that asked the partner's permission to perform an action (e.g., "Do you want me to go next?"). A verbal initiation event was coded as a *request for information* when the initiation asked the partner a question that implied no action on the part of the partner other than a verbal response (e.g., "Who does this look like?"). A verbal initiation event was coded as a *polite command* when the initiation offered the partner no choice in compliance, but was phrased politely (e.g., "Pass me the baby please."). A verbal initiation event was coded as an *imperative* when the initiation offered the partner no choice in compliance and was power assertive (e.g., "Gimme that!").

Nonverbal initiations included gestures intended to initiate interaction or influence the partner's behavior in the absence of verbal communication. Nonverbal initiations ended when the gesture ended. Nonverbal initiation codes consisted of requests, imperatives, and leads. A nonverbal initiation event was coded as a *request* when the nonverbal behavior consisted of conventional requesting gesture or facial expression which clearly communicated a question (e.g., points towards toy and raises eyebrows to partner). A nonverbal initiation event was coded

as an *imperative* when the nonverbal behavior implied action on the part of the partner and offered no choice in compliance (e.g., intrudes upon partner's personal space and repeatedly points towards an object). A nonverbal initiation event was coded as a *lead* when the nonverbal behavior consisted of gazes or gestures intended to initiation interaction, but were neither requests nor imperatives (e.g., looks from partner to toy and points to self to indicate possession).

Response codes consisted of comply, comply with turnabout, reject, reject with turnabout, and ignore. Responses could be either verbal or nonverbal and ended when the speech or behavior ended. A response event was coded as *comply* when the partner complied with the initiation (e.g., parent says, "Let's make lunch," and child replies, "OK."). A response event was coded as *comply with turnabout* when the partner complied with the initiation and offered an alternative initiation that elaborated on the play theme (e.g., parent says, "Let's make lunch," and child replies, "OK, you can make a pizza and I'll make a treat."). A response event was coded as *reject* when the partner refused to comply with the initiation (e.g., parent says, "Let's make lunch," and child replies, "No."). A response event was coded as *reject with turnabout* when the partner refused to comply with the initiation, but offered an alternative initiation (e.g., parent says, "Lets make lunch," and child replies, "No, let's play with the dinosaurs!"). A response event was coded as *ignore* when the partner gave no response to the initiation (e.g., parent says, "Let's make lunch," and child continues to play with dinosaurs). When responses involved a turnabout (i.e., new initiation), a single event was coded as both a response and an initiation. For example, a child's response to the parent's suggestion to make lunch with "OK, you can make a pizza" was coded as a response (*comply with turnabout*) and as a new initiating event (*polite command*) for which the parent's response was then coded (e.g., parent complies by starting to make pizza).

Each initiation also was identified as either a play initiation or a nonplay initiation. An event was coded as a *play initiation* when the initiation was related to ongoing play activity (e.g., "Should I open the blue Play-Doh too?"), whereas an event was coded as a *nonplay initiation* when an event was not related to ongoing play activity (e.g., "We're going to pick up your brother on our way home.").

For the present study, coders also recorded the valence of the overall emotional tone of each event. Events were coded as having a positive emotional tone when characterized by affection, joy, enthusiasm, humor, etc. or were neutral, but positive (e.g., content with no outward signs of emotional distress). Events were coded as having a negative emotional tone when the event was characterized by anger, criticism, disgust, threats, intrusiveness, sadness, tension, defensiveness, whining, etc.

Six individual scores were created by summing the frequency count of each type of event for each partner: (a) mother initiations (both verbal and nonverbal), (b) child initiations, (c) mother compliance responses (i.e., comply and comply with turnabout), (d) child compliance responses, (e) mother negative responses (i.e., reject, reject with turnabout, and ignore), and (f) child negative responses. An initiation rate was created for each partner by dividing the frequency of initiations by the number of minutes in the interaction (approximately 10 minutes). Similarly, a compliance response rate and a negative response rate were created for each partner by dividing the frequency of compliance events and negative response events, respectively, by the number of minutes in the interaction. Compliance responses and negative responses were mutually exclusive; therefore, the negative response rate scores did not provide additional information over and above the compliance response rate scores. For example, if a mother initiated a total of 50 times in 10 minutes (a rate of 5 initiation events per minute) the child,

correspondingly, would have responded a total of 50 times in 10 minutes. If the child

demonstrated a compliance response 40 times in 10 minutes (a rate of 4 compliance response

events per minute), the child would, therefore, have demonstrated a negative response 10 times

in 10 minutes (a rate of 1 negative response event per minute). Because the same information

could be gleaned from the compliance response rate scores and negative response rate scores,

only compliance response rate scores were used in the creation of dyadic variables.

Dyadic scores for mutual initiation and mutual compliance were then computed from the

individual partners' initiation rate and compliance rate scores. First, a dyadic initiation imbalance

score was created for each dyad by calculating the difference between mothers' initiations rates

divided by children's initiation rates and children's initiation rates divided by mothers' initiation

rates. Next, a mutual initiation score was calculated for each dyad by computing 1 minus the

value of dyadic initiation imbalance. Dyads that demonstrated more balance in initiations (i.e.,

mothers and children who relatively equally initiated interactions) had mutual initiation scores

closer to 1. Second, a dyadic compliance imbalance score was created for each dyad by

calculating the difference between mothers' compliance rates divided by children's initiation

rates and children's compliance rates divided by mothers' initiation rates. Next, a mutual

compliance score was created for each dyad by computing 1 minus the value of dyadic

compliance imbalance. Dyads that demonstrated more balance in compliance to initiations (i.e.,

mothers and children who relatively equally complied to their partner's initiations) had mutual

compliance scores closer to 1 (Lindsey & Mize, 2001).

The mutuality coding system has exhibited acceptable levels of interrater reliability in the

past, from kappa of .89 for initiation and .80 for responses (Black & Logan, 1995) and .95 for

initiation and .89 for responses (Lindsey & Mize, 2001). The interrater reliability for the present

study was based on a random selection of 20% of the mother-child interactions. An equal

number of comparisons were made between the four coders and an equal proportion of structured

block and free play tasks were included in the reliability sample. The coding scheme exhibited

good interrater reliability, with kappas ranging from .90 to .96 for initiations and .82 to .84 for

responses between the four coders. A summary of the study variables and corresponding

measures is presented in Table 2.

Table 2

Summary of Study Variables and Measures

Construct	Measure	Completed By	Variable Type
Child variables			
Child aggression	Preschool Social Behavior Scale	Mother	Criterion
	Physical Aggression		
	Relational Aggression		
Child social skills	Social Skills Rating System	Mother	Criterion
	Cooperation		
	Assertion		
	Responsibility		
	Self-Control		
	Total Social Skills		
Parent variable			
Maternal parenting attitudes	Parent Child Relationship Inventory	Mother	Predictor
	Satisfaction with Parenting		
	Involvement		
	Communication		
Interactional variables			
Mother-child interactional synchrony	Interactional synchrony (Keown & Woodward, 2002; Mize & Pettit, 1997)	N/A	Predictor
Mother-child mutuality	Parent-child mutuality (Black & Logan, 1995; Lindsey & Mize, 2001)	N/A	Predictor
	Mutual initiation		
	Mutual compliance		

CHAPTER III

Results

Planned Analyses

IBM SPSS Statistics Version 24 was used for all statistical analyses. Alpha levels were set at .05 to test significance; however, exact *p*-values are also reported to allow for more precise interpretation of the data. To test the hypotheses, correlation, regression, and mediation analyses were conducted. Bivariate correlations were used to assess relations between the independent, dependent, and any potentially confounding variables (i.e., demographic variables). Hierarchical regression analyses were used to assess the relations between child outcome (i.e., physical aggression, relational aggression, and social skills) and global interactional synchrony, mutuality, and maternal parenting attitudes (i.e., satisfaction with parenting, involvement, and communication). Mediation analyses were conducted using the Process Macro developed by Hayes (2016). This method was chosen because it simultaneously tests each step of the mediation procedure outlined by Baron and Kenny (1986) and reduces error associated with violations of normality and smaller samples sizes through bootstrapping (5000 re-samples for the present study). Mediation analyses were used to assess whether children's social skills mediated the relation between global interactional synchrony and child aggression, as well as the relation between mutual initiation and child aggression.

Data Screening and Preparation

Missing data. Of the 131 participant dyads, 3% were missing data on the SSRS, 11% on the PCRI, and 5% on the PSBS. With respect to the interaction variables, 3% of participants were missing data on mother-child interactional synchrony and 4% on mother-child mutuality. The result of Little's MCAR test suggested that data were missing in a random manner, X^2 (175,

n = 202) = 185.95, *p* = .27. Expectation maximization (EM) was used to estimate the values of

the missing data, as EM is considered a superior method of data estimation in that it produces

unbiased estimates when data are MCAR and less biased estimates when data are MAR (for

review, see El-Masri & Fox-Wasylyshyn, 2005).

Assumption analyses. The data were analyzed to test the assumptions of correlational

and regression analyses, including adequate sample size, normality, absence of outliers, absence

of influential observations, independence of errors, absence of multicollinearity and singularity,

homoscedasticity, linearity, and independence of observations.

A sample size of 10 to 15 participants per predictor is recommended to detect true effects

(Field, 2009). The present study consisted of a sample size of 131 participant dyads, therefore,

the sample size was adequate to include up to thirteen predictor variables in the regression

analyses.

The assumption of normality was assessed through the examination of the skewness and

kurtosis, as well as through visual inspection of the histograms of the variables. Distributions

were assumed normal when skewness fell within the range of ±2 and kurtosis fell within ±3. All

variables fell within the normal range with respect to skewness and kurtosis, with the exception

of mothers' perceptions of communication with their child (PCRI Communication subscale;

kurtosis = 6.52) and mother-child mutual compliance during the free play task (kurtosis = 6.02),

which were leptokurtic. Several transformations were attempted (e.g., logarithmic, square root,

and reciprocal), but none improved kurtosis. As the visual inspection of the histograms revealed

relatively normal distributions and the results were bootstrapped, the nontransformed scores were

used in the analyses.

The assumption of absence of outliers was assessed by inspecting the predictor and outcome variables. Outliers on the predictor variables were assessed by examining the Leverage Values using the formula of three times the value of $(k+1)/n$) recommended by Field (2009) to calculate a cut-off value. This method identified two outliers. In addition, the Mahalanobis distance values were calculated and examined. A cut-off of 21.67 was identified using the critical values of the chi-square distribution table with 9 degrees of freedom (df = number of predictor variables) and $p < 0.01$. This method identified five multivariate outliers. The analyses were conducted both with and without the outliers; however, as the final results were bootstrapped, thereby minimizing the impact of outliers, these values were retained in the final analyses.

The dependent variables were then examined for outliers by checking the studentized deleted values. One outlier was found for the SSRS total, two outliers were found for the PSBS Physical Aggression subscale, and one outlier was found for the PSBS Relational Aggression subscale. To address the identified outliers, the data were Winsorized. This method preserves data, thereby maximizing power, by re-coding outlying data points at the tails of a distribution to the next highest/lowest value that is not an outlier.

The assumption of absence of influential observations was assessed by examining Cook's Distance values. Abiding by the recommended cut-off of 1 (Field, 2009), no influential observations were identified, indicating that this assumption was met. The assumption of independence of errors was assessed by examining the Durbin-Watson statistic. All Durbin-Watson values fell in between 1.5 and 2.5 as recommended by Field (2009), indicating that this assumption was met.

The assumptions of absence of multicollinearity and singularity were assessed by examining the correlation matrix of the predictor variables (< 0.9), Tolerance values (> 0.1), and

VIF values (< 10) using the cutoffs recommended by Field (2009). All values fell within the respective cutoffs, indicating that these assumptions were met.

The assumptions of linearity and homoscedasticity were assessed by examining the scatterplots of the predicted outcome values plotted against the residual values. The scatterplots for each regression did not form a curved shape and the band of residuals was approximately equal in width at all values of the dependent variables, indicating that both assumptions were met.

Finally, the assumption of independence of observations was assumed based upon the methodology of the study. For example, each mother-child dyad participated in the study at a separate time, minimizing the likelihood of dyads influencing each other (e.g., maternal ratings, mother-child interactions). Ten mothers participated in the study with more than one child. Mothers completed separate questionnaires for each child and were encouraged to interact with each child as they normally would. The analyses were conducted with data relating to the second children excluded; however, the pattern of results was consistent with when these cases were included, therefore, the cases were retained to maximize power.

Preliminary Analyses

The means, standard deviations, and ranges of the independent and dependent variables are presented in Table 3. Bivariate correlations between the primary study variables and demographic variables were conducted in order to identify possible covariates to control for during the primary analyses. These correlations are presented in Table 4.

Table 3

Mean, Standard Deviation, and Range of Study Variables (N = 131)

Measure	M	SD	Range Potential	Range Actual
PCRI				
Satisfaction	55.11	7.86	0-80	28-66
Involvement	53.31	9.74	0-80	25-77
Communication	50.94	8.61	0-80	10-62
Interactional synchrony				
Free play task	2.46	0.49	0-5	0.90-3.60
Structured block task	2.30	0.38	0-5	1.00-3.05
Mutual initiation				
Free play task	-1.96	1.49	*N/A*[a]	-5.76-0.90
Structured block task	-3.32	1.80	*N/A*[b]	-8.12-0.77
Mutual compliance				
Free play task	0.86	0.11	*N/A*[c]	0.25-1.00
Structured block task	0.87	0.10	*N/A*[d]	0.52-1.00
SSRS				
Cooperation	12.81	3.31	0-20	3-19
Assertion	14.77	3.09	0-20	4-21
Responsibility	11.80	3.25	0-20	3-18
Self-Control	12.59	3.50	0-20	4-20
Total Social Skills	51.86	9.58	0-80	26-70
PSBS				
Physical aggression	10.04	3.45	7-35	7-20
Relational aggression	11.35	2.43	8-40	8-18

[abcd] Due to the event-based nature of the mutuality coding system there are no set upper or lower limits to the level of balance or imbalance possible during interactions.

Table 4

Correlations among Study Variables and Demographic Variables (N = 131)

Measure	Child Age	Child Gender	Maternal Age	Maternal Education	Family Structure	Family Income
PCRI						
Satisfaction	0.17*	-0.03	0.29**	0.11	-0.02	0.14
Involvement	0.04	-0.12	0.18	0.19*	-0.10	0.23**
Communication	0.06	-0.02	0.26**	0.20*	-0.09	0.32**
Interactional synchrony						
Free play task	-0.17	0.10	-0.05	0.06	-0.09	0.20*
Structured block task	0.15	-0.07	-0.02	0.02	0.07	0.16
Mutual initiation						
Free play task	0.37**	0.13	0.22*	-0.02	0.20*	-0.07
Structured block task	0.41**	-0.02	0.21*	0.03	0.13	0.03
Mutual compliance						
Free play task	-0.08	-0.06	0.10	-0.02	0.01	0.11
Structured block task	-0.12	-0.09	-0.03	-0.03	-0.22*	0.05
SSRS						
Cooperation	-0.18*	0.04	-0.14	0.01	0.10	-0.06
Assertion	0.09	0.02	0.15	0.06	-0.01	0.18*
Responsibility	0.13	0.13	-0.00	-0.16	-0.06	-0.03
Self-Control	-0.12	0.18*	0.04	0.07	0.15	0.18
Total Social Skills	-0.06	0.12	-0.01	0.04	-0.14	0.11

Table 4 (Cont.)

Measure	Child Age	Child Gender	Maternal Age	Maternal Education	Family Structure	Family Income
PSBS						
Physical aggression	0.05	-0.21*	0.02	-0.22*	0.19*	-0.20*
Relational aggression	0.27**	0.01	0.18	-0.14	0.30**	-0.10

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

Mothers of older children rated themselves as having greater satisfaction with parenting and rated their children as demonstrating more relational aggression than mothers of younger children. In addition, dyads with older children demonstrated higher levels of mutual initiation in interactions during both the structured and unstructured tasks than dyads with younger children. Conversely, younger children were rated as more cooperative by their mothers.

Male children were rated by their mothers as demonstrating more physical aggression than female children, whereas female children were rated as demonstrating more self-control than male children. Gender data are presented in Table 5.

Older mothers rated themselves as having greater maternal satisfaction with parenting and more positive perceptions of communication with their children than younger mothers. In addition, dyads with older mothers demonstrated higher levels of mutual initiation during the structured and unstructured tasks than dyads with younger mothers.

Mothers with higher levels of education reported greater involvement with their children and more positive perceptions of communication with their children than younger mothers. In addition, mothers with higher levels of education rated their children as demonstrating less physical aggression.

Mother-child dyads from two-parent households demonstrated more mutual initiation in interactions during the unstructured task than dyads from single-parent households, whereas dyads from single-parent households demonstrated more mutual compliance during the unstructured task than dyads from two-parent households. Children from two-parent households

Table 5

Gender Differences in Study Variables

Measure	Male (*n* = 77)		Female (*n* = 54)		
	M	*SD*	*M*	*SD*	*t*(df = 129)
PCRI					
Satisfaction	55.27	7.62	54.88	8.27	0.28
Involvement	54.29	8.88	51.92	10.79	1.37
Communication	51.07	8.47	50.74	8.88	0.22
Interactional synchrony					
Free play task	2.42	0.49	2.52	0.48	-1.16
Structured block task	2.32	0.39	2.27	0.37	0.74
Mutual initiation					
Free play task	-2.12	1.52	-1.73	1.42	-1.51
Structured block task	-3.30	1.91	-3.36	1.66	0.19
Mutual compliance					
Free play task	0.86	0.11	0.85	0.12	0.68
Structured block task	0.88	0.10	0.86	0.11	1.00

Table 5 (Cont.)

Measure	Male (*n* = 77)		Female (*n* = 54)		
	M	*SD*	*M*	*SD*	*t*(*df* = 129)
SSRS[a]					
Cooperation	12.69	3.52	12.98	2.10	-0.48
Assertion	14.71	3.32	14.85	2.77	-0.26
Responsibility	11.45	3.25	12.30	3.20	-1.46
Self-Control	12.05	3.84	13.34	2.84	-2.07*
Total Social Skills	50.89	10.50	53.24	8.00	-1.39
PSBS					
Physical aggression	10.64	3.64	9.19	2.98	2.41*
Relational aggression	11.32	2.28	11.39	2.66	-0.15

[a] *df* = 126 for SSRS subscales.
*$p < .05$.

were also rated by their mothers as more physically and relationally aggressive than children from single-parent households.

Mothers from families with higher household income reported more involvement with their children and more positive perceptions of communication with their children than mothers from lower-income families. Mother-child dyads with higher household income also demonstrated more interactional synchrony during the unstructured task than dyads with lower household income. In addition, children from families with higher household income were rated by their mothers as more assertive and less physically aggressive than children from families with lower household income. A summary of the control variables is presented in Table 6. To avoid overcontrolling the data, demographic variables were only included in analyses as covariates when correlated to both the outcome and the predictor variables.

Primary Analyses

Bivariate correlations among the independent and dependent variables were conducted in order to examine the relations among the primary variables. These correlations are presented in Table 7.

Objective 1: Elucidate the conceptualization of interactional synchrony by assessing the constituent component of mutuality.

Hypothesis and research question 1a. It was hypothesized that higher levels of mother-child mutual initiation would be associated with higher levels of global interactional synchrony. As predicted, higher levels of mutual initiation during the structured block task were significantly related to higher levels of interactional synchrony during the block task. Conversely, mutual initiation during the block task was not related to interactional synchrony

Table 6

Summary of Control Variables for Each Primary Study Variable

Measure	Child Age	Child Gender	Maternal Age	Maternal Education	Family Structure	Family Income
PCRI						
Satisfaction	✓		✓			
Involvement				✓		✓
Communication			✓	✓		✓
Interactional synchrony						
Free play task						✓
Structured block task						
Mutual initiation						
Free play task	✓		✓		✓	
Structured block task	✓		✓			
Mutual compliance						
Free play task						
Structured block task					✓	
SSRS						
Cooperation	✓					
Assertion						✓
Responsibility						
Self-Control		✓				
Total Social Skills						
PSBS						
Physical aggression		✓	✓		✓	✓
Relational aggression	✓				✓	

Table 7

Bivariate Correlations among Independent and Dependent Variables (N = 131)

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. PCRI Satisfaction	0.57**	0.62**	-0.00	0.15	0.19*	0.15	-0.18*	-0.05	0.13	0.18*	0.14	0.16	0.23**	-0.08	0.12
2. PCRI Involvement		0.67**	0.13	0.11	0.02	0.00	-0.20*	0.07	-0.01	0.11	0.06	0.20*	0.12	-0.19*	0.01
3. PCRI Communication			0.23**	0.19*	-0.01	0.07	-0.11	0.02	0.08	0.30**	0.11	0.30**	0.26**	-0.26**	0.04
4. IS play task				0.23**	-0.10	-0.06	0.12	0.21*	-0.00	0.18*	0.12	0.15	0.14	-0.19*	-0.08
5. IS block task					0.17	0.24**	0.04	0.08	0.06	0.18*	0.11	0.02	0.14	0.01	0.16
6. MI play task						0.51**	-0.07	-0.05	-0.13	0.08	0.07	-0.06	-0.02	0.19*	0.23**
7. MI block task							0.02	-0.11	-0.04	0.14	0.12	-0.03	0.08	-0.02	0.02
8. MC play task								0.13	0.02	0.06	-0.03	0.05	0.02	-0.10	0.02
9. MC block task									-0.04	0.02	0.02	0.14	0.05	-0.17*	-0.03
10. SSRS Cooperation										0.30**	0.29**	0.44**	0.71**	-0.24**	-0.19*
11. SSRS Assertion											0.45**	0.36**	0.71**	-0.18*	-0.07
12. SSRS Responsibility												0.29**	0.70**	-0.16	0.03
13. SSRS Self-Control													0.73**	-0.49**	-0.27**
14. SSRS Total														-0.37**	-0.19*
15. PSBS Physical Agg.															0.43**
16. PSBS Relational Agg.															

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

during the free play task, nor was mutual initiation during the free play task related to

interactional synchrony in either task (see Table 7). Relations between mother-child mutual

compliance and interactional synchrony were explored. As depicted in Table 7, higher levels of

mutual compliance during the block task were significantly related to higher levels of

interactional synchrony during the free play task. Mutual compliance during the block task was

not related to interactional synchrony during the

block task, nor was mutual compliance during the free play task related to interactional

synchrony in either task.

Hypothesis 1b. It was hypothesized that higher levels of global interactional synchrony

would be associated with lower levels of child physical and relational aggression, as well as

higher ratings of child social skills. As predicted, higher levels of interactional synchrony during

the free play task were significantly related to lower maternal ratings of child physical

aggression. In addition, higher levels of interactional synchrony during both the structured and

unstructured tasks were significantly related to higher child assertion, as rated by the children's

mothers. Conversely, interactional synchrony during both the play task and structured block task

was not related to maternal ratings of child relational aggression, cooperation, responsibility,

self-control, or overall social skills, nor was interactional synchrony during the block play task

related to child physical aggression (see Table 7).

Hypothesis 1c. It was hypothesized that higher levels of mutual compliance would be

associated with lower levels of child physical and relational aggression, as well as higher ratings

of child social skills. As predicted, higher levels of mutual compliance during the structured

block task was significantly related to lower maternal ratings of child physical aggression.

Conversely, mutual compliance during both the play task and structured block task was not

related to maternal ratings of child relational aggression, cooperation, assertion, responsibility, self-control, or overall social skills, nor was mutual compliance during the play task related to child physical aggression (see Table 7).

Research question 1d. The relation between mother-child mutual initiation and child outcome were explored. Higher levels of mutual initiation during the play task were significantly related to higher maternal ratings of child physical and relational aggression. Conversely, mutual initiation during both the play task and structured block task was not related to maternal ratings of child cooperation, assertion, responsibility, self-control, or overall social skills, nor was mutual initiation during the play task related to child aggression (see Table 7).

Objective 2: Examine the link between interactional synchrony and aggression by way of child social skills.

Hypothesis 2a. It was hypothesized that the relation between interactional synchrony and child aggression would be mediated by child social skills. In order to reduce the likelihood of Type I error, child assertion was selected as the measure of children's social skills based on a priori correlations (see Table 7) rather than run individual regressions for each social skills subscale. Similarly, a composite variable of interactional synchrony was created by combining interactional synchrony during the play task and block task. Each step of the mediation analysis was tested simultaneously using the Process Macro developed by Hayes (2016). A mediation analysis was conducted to assess child physical aggression and child relational aggression as outcome variables. This hypothesis was not supported due to the nonsignificant prerequisite pathways. As Figure 5 demonstrates, pathway c was not significant when testing the model with child physical aggression as the outcome variable and neither pathway b nor c was significant when child relational aggression was the outcome variable.

(a)

$b = 2.11, p = 0.001**$

Child Social Skills
(Assertion)

$b = -0.17, p = 0.01**$

a

b

$b = -1.48, p = 0.11$

c

Mother-Child
Interactional Synchrony

Child
Physical Aggression

c′

$b = -1.13, p = 0.23$

(b)

$b = 2.11, p = 0.001**$

Child Social Skills
(Assertion)

$b = -0.06, p = 0.38$

a

b

$b = 0.10, p = 0.88$

c

Mother-Child
Interactional Synchrony

Child
Relational Aggression
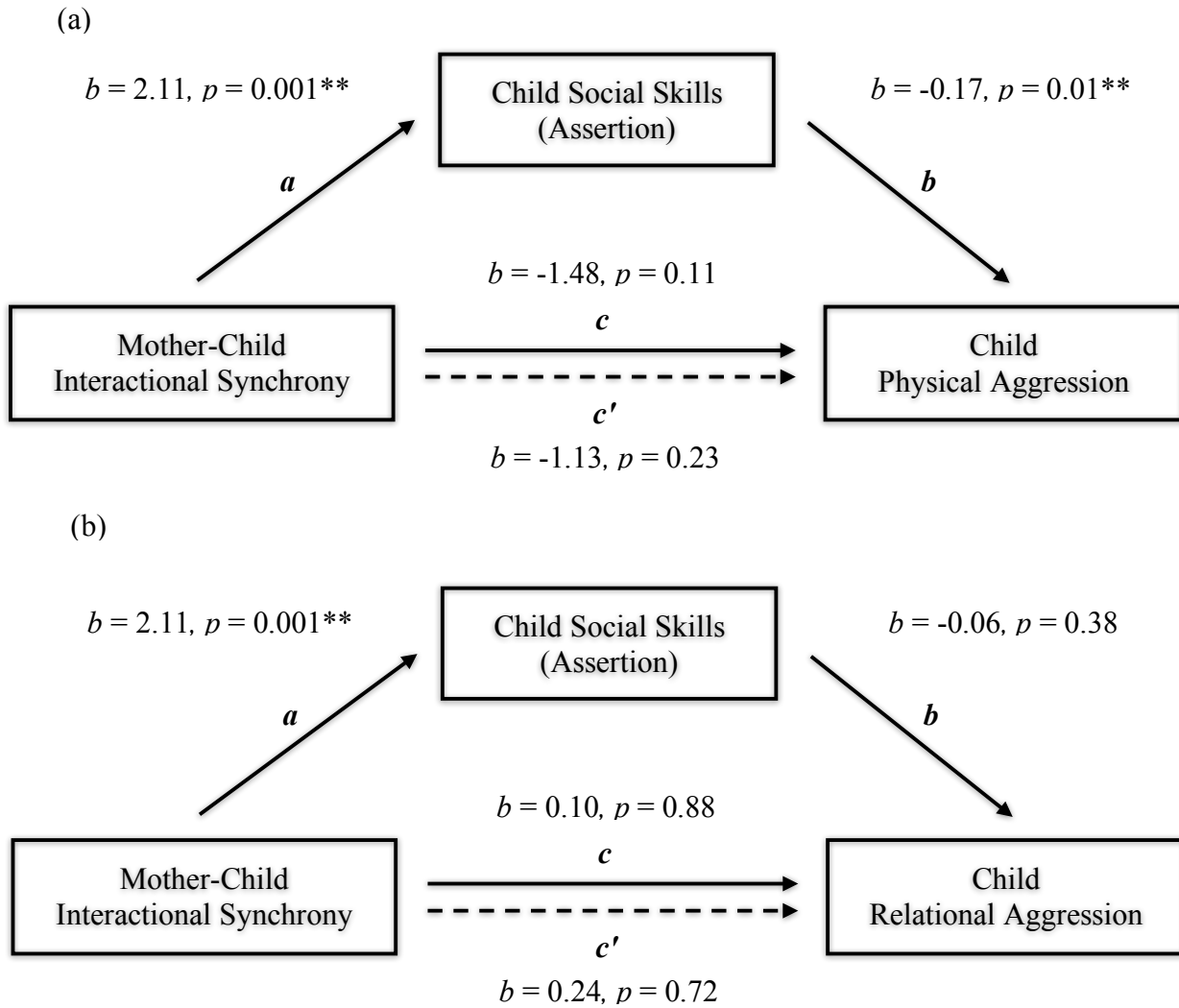
c′

$b = 0.24, p = 0.72$

Figure 5. Hypothesis 2a: Mediation model results. Results of the proposed model of child social skills mediating the relationship between (a) global interactional synchrony and child physical aggression, and (b) global interactional synchrony and child relational aggression. *$p < .05$. **$p < .01$.

Hypothesis 2b. It was hypothesized that the relation between mutual compliance and child aggression would be mediated by child social skills. In order to reduce the likelihood of Type I error, the composite scale of overall social skills was selected as the measure of children's social skills based on the high degree of correlation between the social skills subscales and the similar correlation pattern with mutual compliance (see Table 7). The creation of a composite variable of mutual compliance was not possible due to the lack of correlation between mutual compliance during the play task and the block task (see Table 7). Therefore, mediation analyses were conducted for each predictor variable (i.e., mutual compliance play task, mutual compliance block task) with each outcome variable (i.e., physical aggression and relational aggression). The hypothesis was not supported due to nonsignificant prerequisite pathways. As Figure 6 demonstrates, when child physical aggression was the outcome, pathways a and c were not significant with mutual compliance during the play task as the predictor nor was pathway a significant with mutual compliance during the block task as the predictor. Similarly, when child relational aggression was the outcome, pathways a and c were not significant for either predictor variable (see Figure 7).

Objective 3: Investigate the relations between parenting attitudes and child outcome.

Hypothesis 3a. It was hypothesized that higher ratings of maternal-reported satisfaction with parenting, involvement, and communication would be associated with lower levels of child physical and relational aggression. As predicted, higher maternal ratings of involvement and communication with their children were significantly related to lower levels of child physical aggression. Conversely, maternal ratings of satisfaction with parenting were not related to child physical aggression, nor were satisfaction with parenting, involvement, or communication
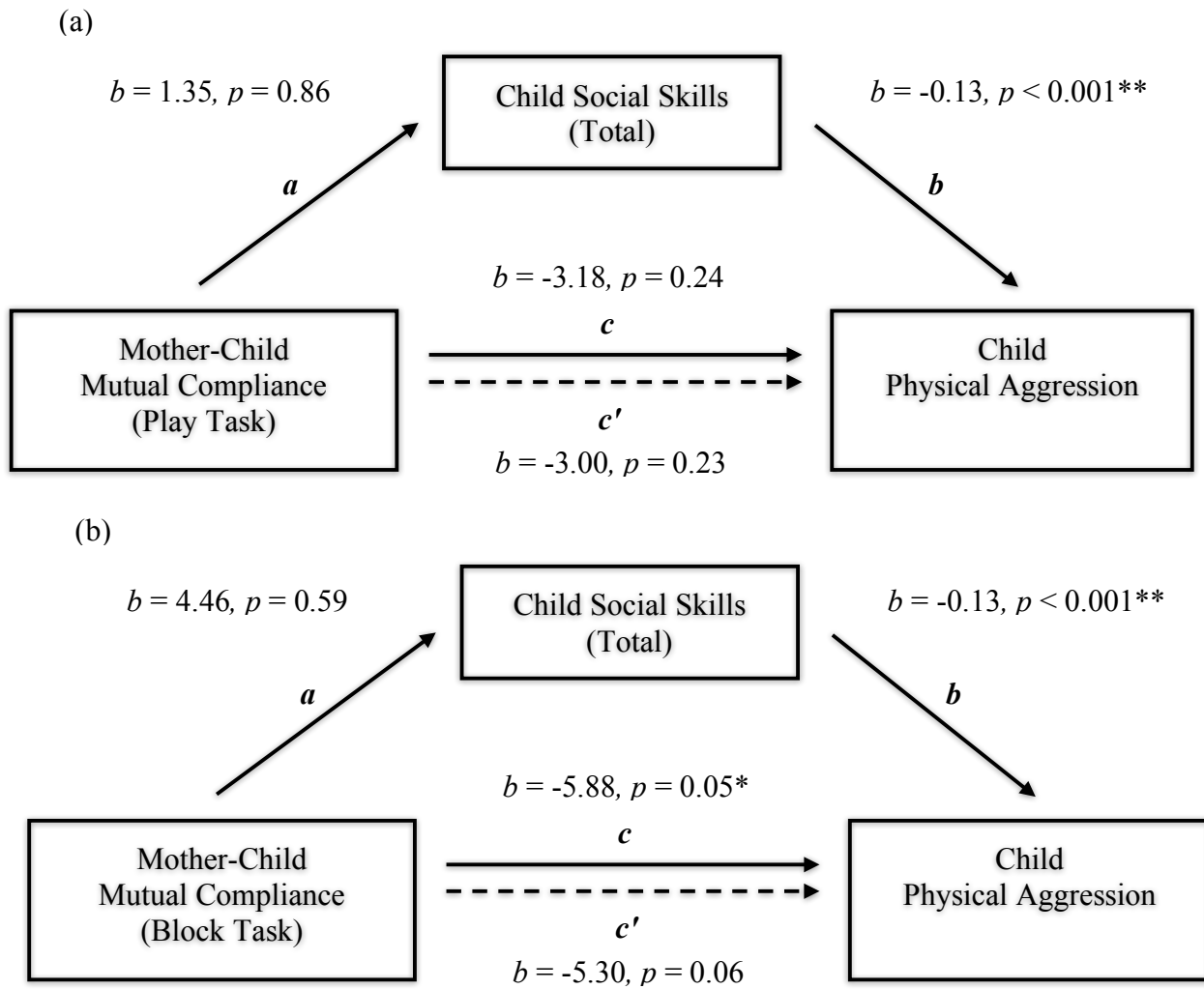
82

(a)

(b)

Figure 6. Hypothesis 2b: Mediation model results. Results of the proposed model of child social skills mediating the relationship between (a) mutual compliance during the play task and child physical aggression, and (b) mutual compliance during the block task and child physical aggression.

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

(a)

$b = 1.35, p = 0.86$

Child Social Skills (Total)

$b = -0.05, p = 0.04*$

a

b

Mother-Child Mutual Compliance (Play Task)

$b = 0.49, p = 0.80$

c

Child Relational Aggression

c'

$b = 0.55, p = 0.77$

(b)

$b = 4.46, p = 0.59$

Child Social Skills (Total)

$b = -0.05, p = 0.04*$

a

b

Mother-Child Mutual Compliance (Block Task)

$b = -0.82, p = 0.70$

c

Child Relational Aggression
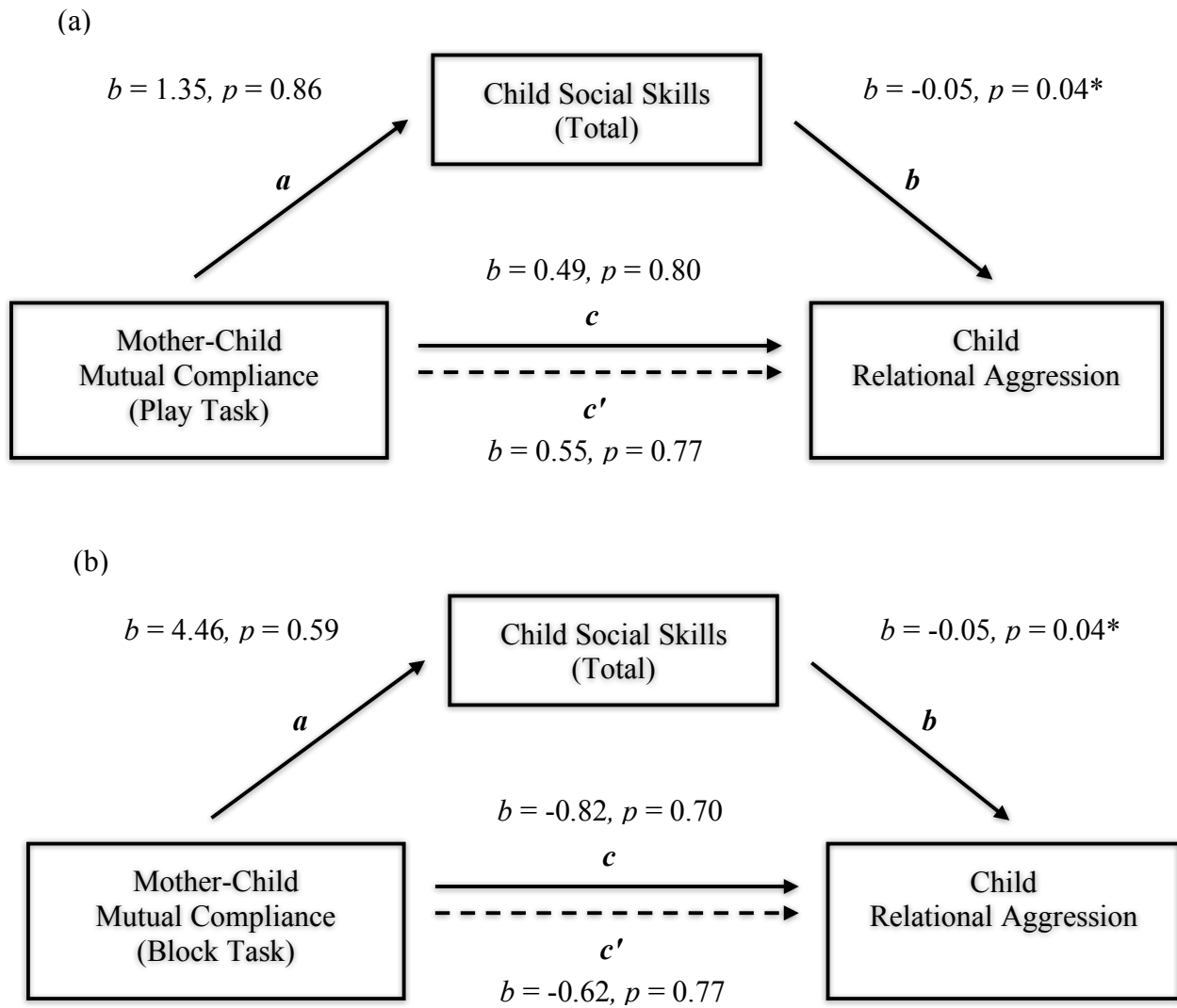
c'

$b = -0.62, p = 0.77$

Figure 7. Hypothesis 2b: Mediation model results continued. Results of the proposed model of child social skills mediating the relationship between (a) mutual compliance during the play task and child relational aggression, and (b) mutual compliance during the block task and child relational aggression.

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

related to child relational aggression (see Table 7).

Hypothesis 3b. It was hypothesized that higher ratings of maternal-reported satisfaction with parenting, involvement, and communication would be associated with higher ratings of child social skills. As predicted, higher maternal ratings of satisfaction with parenting and communication with their children were significantly related to higher ratings of child assertion and overall social skills. In addition, higher maternal ratings of communication and involvement were significantly related to higher ratings of child self-control. Conversely, maternal satisfaction with parenting was not related to child self-control, nor was involvement related to child assertion or overall social skills. Finally, satisfaction, involvement, and communication were not related to maternal ratings of child cooperation or responsibility (see Table 7).

Objective 4: Investigate the relations between parenting attitudes and the interactional synchrony variables (i.e., global interactional synchrony, mutual initiation, mutual compliance).

Hypothesis 4a. It was hypothesized that higher ratings of maternal-reported satisfaction with parenting, involvement, and communication would be associated with higher levels of interactional synchrony. As predicted, higher maternal ratings of communication with their children were significantly related to higher levels of interactional synchrony during both the free play and the structured block tasks. Conversely, maternal satisfaction with parenting and involvement were not related to interactional synchrony during either the structured or unstructured tasks (see Table 7).

Hypothesis 4b. It was hypothesized that higher ratings of maternal-reported satisfaction with parenting, involvement, and communication would be associated with higher levels of mutual initiation. As predicted, higher ratings of maternal satisfaction with parenting were

significantly related to higher levels of mutual initiation during the free play task. Conversely, satisfaction with parenting was not related to mutual initiation during the structured block task, nor were maternal ratings of involvement or communication related to mutual initiation during either task (see Table 7).

Research question 4c. The relations between mutual compliance and satisfaction with parenting, involvement, and communication were explored. Higher ratings of maternal satisfaction with parenting and involvement with their children were significantly related to lower ratings of mutual compliance during the free play task. Conversely, maternal ratings of communication with their children were not associated with mutual compliance during the free play task, nor were satisfaction, involvement, or communication related to mutual compliance during the structured block task (see Table 7).

Additional Analyses

As Table 7 demonstrates, several significant relationships were revealed between the study variables which were not explicitly addressed by the hypotheses of the present study. In order to better understand the relationships between these study variables, additional regression analyses were conducted.

Child physical aggression. First, the independent variables of the present study were explored as predictors of child physical aggression. Maternal report of involvement and communication with their children, as well as interactional synchrony and mutual initiation during the free play task were significantly correlated with maternal reports of child physical aggression. Due to the significant correlation between involvement and communication (see Table 7), a composite variable was created and included in the subsequent regression analysis to reduce the likelihood of Type II error. The results indicated that both the composite of

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communication and involvement, and mutual initiation during the free play task accounted for significant variability in child physical aggression, over and above the variability accounted for by family income. An examination of the standardized beta weights demonstrates that, as the composite of communication and involvement increased by one standard deviation, child physical aggression decreased by 0.20 standard deviations. Conversely, as mutual initiation increased by one standard deviation, child physical aggression increased by 0.18 standard deviations. Interactional synchrony was not a significant predictor of child physical aggression (see Table 8).

Next, social skills were explored as a possible predictor of child physical aggression. Maternal ratings of children's cooperation, assertion, self-control, and overall social skills were significantly negatively correlated with maternal reports of child physical aggression. Due to the significant correlation among the subscales of the social skills rating system, only the composite measure of overall child social skills was included in subsequent analyses, in order to reduce the likelihood of Type II error. The results indicated that maternal report of children's social skills accounted for significant variability in child physical aggression, over and above the variability accounted for by family income. An examination of the standardized beta weights showed that, as overall child social skills increased by one standard deviation, child physical aggression decreased by 0.36 standard deviations (see Table 9).

Child social skills. Finally, predictors of child social skills were explored. In order to minimize the number of analyses, and thereby reduce the likelihood of Type I error, child assertion was selected as the measure of children's social skills based on its significant correlation with the greatest number of possible predictors (see Table 7). Maternal reports of

Table 8

Summary of Hierarchical Regression Analysis for Predicting Child Physical Aggression with a Composite of PCRI Communication and Involvement, Interactional Synchrony, and Mother-Child Mutual Initiation

	B	$SE\ B$	β	p
Step 1				
Family income	-0.58	0.25	-0.20*	0.02
Step 2				
Family income	-0.30	0.26	-0.11	0.24
PCRI composite	-0.08	0.04	-0.20*	0.03
IS play task	-0.92	0.62	-0.13	0.14
MI play task	0.42	0.20	0.18*	0.03

Note. Step 1: $R^2 = 0.04$, adjusted $R^2 = 0.03$, $\Delta R^2 = 0.04$ ($p = 0.02$); Step 2: $R^2 = 0.14$, adjusted $R^2 = 0.11$, $\Delta R^2 = 0.09$ ($p = 0.01$)
*$p < .05$. **$p < .01$.

Table 9

Summary of Hierarchical Regression Analysis for Predicting Child Physical Aggression with Child Social Skills

	B	SE B	β	p
Step 1				
Family income	-0.58	0.25	-0.20*	0.02
Step 2				
Family income	-0.47	0.24	-0.16*	0.05
SSRS Total	-0.13	0.03	-0.36**	0.00

Note. Step 1: $R^2 = 0.04$, adjusted $R^2 = 0.03$ $\Delta R^2 = 0.41$ ($p = 0.02$); Step 2: $R^2 = 0.17$, adjusted $R^2 = 0.16$, $\Delta R^2 = 0.13$ ($p < 0.001$)
*$p < .05$. **$p < .01$.

satisfaction with parenting and communication with their children, as well as interactional

synchrony during both the free play and the block tasks were significantly correlated with

maternal reports of child assertion. Due to the significant correlation between satisfaction and

communication, a composite was created and was included in subsequent analyses to reduce the

likelihood of Type II error. The results indicated that the composite of satisfaction and

communication accounted for significant variability in child assertion, over and above the

variability accounted for by family income. An examination of the standardized beta weights

revealed that, as the composite of satisfaction and communication increased by one standard

deviation, child assertion increased by 0.21 standard deviations. Levels of interactional

synchrony during the free play and block tasks were not significant predictors of child assertion

(see Table 10). A summary of the study results is presented in Table 11.

Table 10

Summary of Hierarchical Regression Analysis for Predicting Child Assertion with a Composite of PCRI Satisfaction and Communication, and Interactional Synchrony

	B	*SE B*	*β*	*p*
Step 1				
Family income	0.48	0.23	0.18*	0.04
Step 2				
Family income	0.22	0.24	0.08	0.37
PCRI composite	0.09	0.04	0.21*	0.02
IS play task	0.80	0.58	0.12	0.18
IS block task	0.81	0.75	0.10	0.29

Note. Step 1: $R^2 = 0.03$, adjusted $R^2 = 0.03$ $\Delta R^2 = 0.34$ ($p = 0.04$); Step 2: $R^2 = 0.11$, adjusted $R^2 = 0.08$, $\Delta R^2 = 0.08$ ($p = 0.02$)
*$p < .05$. **$p < .01$.

Table 11

Results Summary

Hypotheses and research questions	Main findings	Summary
Objective 1:		
a. Higher levels of mutual initiation would be associated with higher levels of global interactional synchrony. The relation between mutual compliance and interactional synchrony would be explored.	• Higher levels of mutual initiation (block task) were associated with higher levels of global interactional synchrony (block task). • Higher levels of mutual compliance (block task) were associated with higher levels of interactional synchrony (play task).	Supported
b. Higher levels of global interactional synchrony would be associated with lower levels of child physical and relational aggression, as well as higher ratings of child social skills.	• Higher levels of global interactional synchrony (play task) were associated with lower levels of child physical aggression. • There was not a significant relation between interactional synchrony and relational aggression. • Higher levels of interactional synchrony (both tasks) were associated with higher ratings of child assertion.	Partially Supported
c. Higher levels of mutual compliance would be associated with lower levels of child physical and relational aggression, as well as higher ratings of child social skills.	• Higher levels of mother-child mutual compliance (block task) were associated with lower levels of child physical aggression. • There were not significant relations between mutual compliance and relational aggression or child social skills.	Partially Supported
d. The relation between mutual initiation and child outcome would be explored.	• Higher levels of mutual initiation (play task) were associated with higher levels of child physical and relational aggression. • Mutual initiation was not found to be significantly related to child social skills.	

Table 11 (Cont.)

Hypotheses and research questions	Main findings	Summary
Objective 2:		
a. The relation between interactional synchrony and child aggression would be mediated by child social skills.	• Interactional synchrony was not a significant predictor of child physical or relational aggression (prerequisite pathway c). • Child assertion was not a significant predictor of child relational aggression (prerequisite pathway b).	Not supported
b. The relation between mutual compliance and child aggression would be mediated by child social skills.	• Mutual compliance during the play task was not a significant predictor of child social skills total (prerequisite pathway a) or child physical and relational aggression (prerequisite pathway c). • Mutual compliance during the block task was not a significant predictor of child social skills total (prerequisite pathway a) or child relational aggression (prerequisite pathway c).	Not supported
Objective 3:		
a. Higher ratings of maternal-reported satisfaction with parenting, involvement, and communication will be associated with lower levels of child physical and relational aggression.	• Higher maternal ratings of involvement and communication with their children was significantly related to lower levels of child physical aggression. • There were not significant relations among satisfaction, involvement, and communication and relational aggression.	Partially Supported
b. Higher ratings of maternal-reported satisfaction with parenting, involvement, and communication will be associated with higher ratings of child social skills.	• Higher maternal ratings of satisfaction with parenting and communication with their children were significantly related to higher ratings of child assertion and overall social skills. • Higher maternal ratings of communication and involvement were significantly related to higher ratings of child self-control.	Supported

Table 11 (Cont.)

Hypotheses and research questions	Main findings	Summary
Objective 4:		
a. Higher ratings of maternal-reported satisfaction with parenting, involvement, and communication will be associated with higher levels of interactional synchrony.	• Higher maternal ratings of communication were associated with higher levels interactional synchrony (both tasks).	Supported
b. Higher ratings of maternal-reported satisfaction with parenting, involvement, and communication will be associated with higher levels of mutual initiation.	• Higher ratings of maternal satisfaction with parenting were significantly related to higher levels of mutual initiation (play task).	Supported
c. The relations between mutual compliance and satisfaction with parenting, involvement, and communication will be explored.	• Higher ratings of maternal satisfaction with parenting and involvement with their children were significantly related to lower ratings of mutual compliance (play task).	
Additional analyses:		
• Child physical aggression	• A composite of maternal ratings of communication and involvement with their child, mutual initiation during the free play task, and child self-control were all significant predictors of child physical aggression.	
• Child social skills	• A composite of maternal ratings of satisfaction with parenting and communication was a significant predictor of child assertion.	

CHAPTER IV

Discussion

The purpose of the present study was to refine our understanding of parent-child relationship quality by clarifying the construct of interactional synchrony. The present study has added to the interactional synchrony literature by shedding light on the current conceptualization of interactional synchrony as a global construct demonstrating the complexity of the constituent component of mutuality. In addition, this study has extended the literature on parent-child relationship quality by evaluating both observational measures and parental report of relationship quality. The findings will now be discussed in depth.

Elucidating the Conceptualization of Interactional Synchrony

The first, and overarching, objective of this study was to clarify the conceptualization of interactional synchrony. Similarly to past research (e.g., Pasiak & Menna, 2015), this was achieved through the examination of a central constituent component of global interactional synchrony, in this case, mutuality. First, the relations between global interactional synchrony and the constituent components of mutual initiation and mutual compliance were examined. Due to inconsistent findings of past research, it was hypothesized that higher levels of mother-child mutual initiation would be associated with higher levels of global interactional synchrony, whereas the relation between global synchrony and mutual compliance was to be explored. As expected, higher levels of mutual initiation during the structured block task were significantly related to higher levels of global interactional synchrony during the block task. The positive correlation between mutual initiation and global synchrony was consistent with findings from past research (e.g., Lindsey, Cremeens, Colwell, & Caldera, 2009; Lindsey, Mize, & Pettit, 1997). In contrast, the literature has lacked consistency with respect to the relation between

mutual compliance and global interactional synchrony. For example, Lindsey and colleagues (1997) did not find significant associations between father-child or mother-child mutual compliance and parent-child synchrony ($p > .05$), whereas Lindsey and colleagues (2009) found that father-child, but not mother-child, interactions demonstrated significant positive correlations between mutual compliance and parent-child synchrony. The present study found that higher levels of mother-child mutual compliance during the structured block task were significantly associated with higher levels of interactional synchrony during the free play task. These findings provide some support for the inclusion of both mutual initiation and mutual compliance in the current conceptualization of global interactional synchrony. However, not all findings were consistent with the study hypotheses. The results suggest that mutual initiation and mutual compliance differed by task type, and in particular, were more prevalent during the structured task.

Second, the relations between the interactional synchrony variables (i.e., global interactional synchrony, mutual initiation, and mutual compliance) and child outcomes (i.e., child aggression and social skills) were examined. Higher levels of global interactional synchrony were hypothesized to be associated with lower ratings of child physical and relational aggression, as well as higher ratings of child social skills. As expected, higher levels of interactional synchrony during the free play task were associated with lower ratings of child physical aggression and higher levels of interactional synchrony during both tasks were associated with higher ratings of child assertion. Higher levels of mother-child mutual compliance were hypothesized to be associated with lower ratings of child aggression and higher ratings of child social skills; however, due to the inconsistent associations of mutual initiation and child outcomes in past research, the relations between mutual initiation and child outcomes

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were to be explored. The hypotheses were partially supported. As predicted, higher levels of mutual compliance during the block task were significantly associated with lower ratings of child physical aggression—once again suggesting that mutual compliance is amenable to structured interaction contexts. However, mutual compliance was not significantly related to child social skills. This latter finding differs from past research that found both mother-child and father-child mutual compliance was positively associated with ratings of child social competence and peer acceptance (Lindsey et al., 1997). Interestingly, the findings of the present study indicated that higher levels of mutual initiation during the free play task were significantly associated with *higher* ratings of child physical and relational aggression. Similar to past research (Lindsey et al., 1997), the present study did not find significant relations between mutual initiation and ratings of child social skills.

These finding are notable in that several prominent measures of global interactional synchrony (e.g., Keown & Woodward, 2002; Mize & Pettit, 1997) include and emphasize both mutual initiation and mutual compliance in their operationalizations of synchrony. Although the present study found that both mutual initiation and mutual compliance were positively correlated to global interactional synchrony, they were not significantly related to each other. Moreover, the differing patterns of relations between the synchrony variables and child outcomes call into question the inclusion of mutual initiation as a component of synchrony, let alone a prominent component. The current findings suggest that mutual initiation may represent a distinct construct, given its positive correlation with child aggression. It may be that mutual initiation is a construct with a variable impact on child outcomes across the stages of child development. For example, it may reflect normative child development for there to be less mutual initiation exhibited between parents and their preschool-aged children, whereas greater balance in initiation may be expected

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in later stages of development, such as adolescence. Longitudinal research could clarify whether mutual initiation in parent-child interactions varies over the course of child development.

Regardless of why mutual initiation demonstrated inverse relations with child outcomes compared to mutual compliance and global interactional synchrony, the present study provides support to those who have called into question the current conceptualization of interactional synchrony (e.g., Lindsey et al., 2009; Pasiak & Menna, 2015).

Child Social Skills as a Mediator of the Association between Interactional Synchrony and Child Aggression

The second objective of the study was to examine possible mediational pathways. The present study hypothesized that child social skills would mediate the associations between global interactional synchrony and child aggression (both physical and relational), as well as between mutual compliance and child aggression. The results did not support these hypotheses. When the proposed mediation models were tested, the prerequisite pathways (a, b, and/or c) were not significant, thereby violating the steps necessary to confirm the presence of a mediating relationship among the variables.

In contrast, one past study found support for this mediation model. With a sample of clinically aggressive preschoolers and a comparison group, Pasiak and Menna (2012) found evidence that children's social skills mediated the relation between interactional synchrony and child physical aggression. Moreover, this indirect pathway held true when another prominent component of interactional synchrony, shared affect, was included in the model (Pasiak & Menna, 2012). That is to say, children's social skills mediated the relation between shared affect and child physical aggression.

It is unclear why the present study did not similarly find mediating relationships among these variables. A possible reason may be the differences between the two samples. The clinical sample used in the Pasiak and Menna (2012) study may have afforded greater effect sizes and greater power to detect significant effects. As Harrist and colleagues (1994) suggested that parent-child synchrony provides the optimal context for social learning, future research should continue to explore these pathways to clarify the relations among children's social skills, interactional synchrony, and child aggression. Clarifying these relations will help to shed light on the theoretical model of interactional synchrony and, particularly, its role in children's social development. Future research may wish to explore these relations with another measure of children's socials skills. Alternatively, constructs associated with social skills may provide alternative mediators. For example, the Social Skills Improvement System Rating Scales (Gresham & Elliott, 2008), is an update of the Social Skills Rating System (Gresham & Elliott, 1990) used in the present study. Moreover, this measure provides new subscales, including a subscale for empathy, which in particular, may represent a promising target to explore as a potential mediator.

Maternal Parenting Attitudes and Child Outcomes

The third objective of the present study was to extend the literature on parent-child relationship quality by examining parental report of relationship quality. To do so, first the relations between parenting attitudes and child outcomes were investigated. Specifically, it was hypothesized that higher ratings of maternal-reported satisfaction with parenting, involvement with their children, and communication with their children would be associated with lower ratings of child physical and relational aggression. The results were partially supported. As predicted, higher maternal reports of involvement and communication with their children were

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significantly related to lower ratings of child physical aggression. These results are consistent with studies that have found associations between higher maternal involvement and perceptions of communication with their children and lower levels of children's externalizing behavior (e.g., Gardner, Ward, Burton, & Wilson; 2003; Reidler & Swenson, 2012; Renk, 2011).

With respect to children's social skills, higher levels of maternal satisfaction with parenting and communication with their children were significantly associated with higher ratings of child assertion and overall social competence. In addition, higher ratings of maternal communication and involvement with their children were associated with higher ratings of child self-control. This is consistent with past studies that have found associations between higher parental reports of involvement and communication with their children and higher ratings of children's social competence (e.g., Cohen, Friedrich, Copeland, & Pendergrass, 1989; McWayne, Hamptom, Fantuzzo, Cohen, & Sekino, 2004). Together, the results of the present study add further support to the importance of parenting attitudes in children's social development.

Observational and Parent-Report Measures of Parent-Child Relationship Quality

The final objective of the present study consisted of extending the literature on parent-child relationship quality through the investigation of the relations between observational measures and parental report measures of relationship quality. It was hypothesized that higher ratings of maternal-reported satisfaction with parenting, involvement, and communication would be associated with higher levels of interactional synchrony and mutual initiation. The relations between parenting attitudes and mutual compliance were explored. These hypotheses were partially supported. As predicted, higher maternal ratings of communication with their children were significantly related to higher levels of interactional synchrony during both the free play

and the structured block tasks. In addition, higher ratings of maternal satisfaction with parenting were significantly related to higher levels of mutual initiation during the free play task. Interestingly, higher ratings of maternal satisfaction with parenting and involvement with their children were significantly related to *lower* ratings of mutual compliance during the free play task. This unusual finding may be a function of the developmental level of the children in the present sample. Specifically, preschool children may generally be less compliant to a parent's request during an unstructured task; however, mothers who are particularly involved with their children and satisfied with parenting may be more inclined to comply with their child's request, even in the absence of child compliance, resulting in greater compliance imbalance. Alternatively, this finding could reflect a mismatch between mother's perceptions of the quality of the parent-child relationship and the objective observations of the quality of mother-child interactions.

To the best of this author's knowledge, this study represents the first time parental self-reports were compared to observational measures and the present findings add to parent-child relationship quality research in two ways: (a) by confirming that there are direct relations between parental-self reports and observational measures of parent-child relationship quality, and (b) by revealing that there are differing patterns of association with parent-report measures among the interactional synchrony variables. Due to the correlational nature of the present analyses, it remains to be seen whether parenting attitudes cause behavioral changes that lead to differing parent-child interactions or whether more (or less) synchronous interactions lead to changes in parents' perceptions of relationship quality. It may be the case that the relations between parent perceptions and parent-child interactions bidirectionally influence each other as

the parent-child relationship unfolds. Therefore, longitudinal research would be beneficial in illuminating how parenting attitudes and parent-child interactions evolve over time.

In addition, as outlined above, the present study demonstrated that both maternal self-report and observational measures of relationship quality were associated with child aggression and social skills. Moreover, the additional analyses identified several significant predictors of child outcomes. Specifically, higher maternal ratings on a composite of communication and involvement with their child predicted lower child physical aggression, whereas higher levels of mutual initiation during the free play task significantly predicted higher child physical aggression. Higher maternal ratings on a composite of parenting satisfaction and communication with their child also was a significant predictor of child assertion. Once again, interpretation of the results is limited by the cross-sectional nature of the study design. It is, therefore, unclear if negative parenting attitudes and problematic parent-child interactions *cause* deficits in social skills and aggressive behavior in children or whether children's social development difficulties lead to more negative parenting attitudes and problematic parent-child interactions. Given the prevailing theoretical model of parent-child relationships as bidirectional in nature (Pettit & Lollis, 1997), it is likely that parent-child relationship factors and child outcomes (i.e., social skills, aggression) reciprocally influence each other over time. Although there is evidence to support the reciprocal influence of negative parent-child interactions and child aggression (for review, see Davenport & Bourgeois, 2008), future longitudinal research would be beneficial to clarify, specifically, how parenting attitudes, parent-child interactions, and child outcomes interact and evolve over time.

In sum, the present study has demonstrated that both maternal self-reports and observational measures of parent-child interaction provide important information about the

quality of parent-child relationships. Moreover, each provide unique and promising targets for intervention with children who exhibit social skills deficits and aggressive behavior.

Demographic Considerations

The results of the present study revealed that there were several demographic factors that were associated with the primary study variables.

Child age. Dyads with older children demonstrated more mutual initiation in interactions during both the free play and the structured block tasks than dyads with younger children. An increase in autonomy is widely thought to be a normative developmental processes of early childhood and may account for this finding. Moreover, older children may be more likely to initiate social interactions through their increased exposure to environments that foster autonomy and peer interaction (e.g., kindergarten classroom). However, longitudinal research is necessary to establish potential trends in mutual initiation across the developmental period of early childhood and beyond.

In addition, mothers of older children reported more satisfaction with parenting. Although there has been research to suggest decreases in parental life satisfaction across early childhood (e.g., Crnic & Booth, 1991), there has been little research into trends in *parenting* satisfaction in early childhood. Because the current study involved a cross-sectional methodology, it is not possible to determine if parenting satisfaction increases over time over if the current results represent a cohort effect.

Mothers also rated older children as more relationally aggressive than younger children. This is consistent with longitudinal research that has identified a trend of increasing relational aggression over time, attributable to children's increasing social awareness and understanding with age (Ojanen & Kiefer, 2013). With this theoretical model of relational aggression, a degree

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of social competence is necessary to manipulate social situations towards aggressive ends. It may be that older children are more likely to engage in relational aggression as a result of natural social maturation processes or through increased opportunities to interact with peers.

Finally, younger children were rated by their mothers as more cooperative than older children. Rather than children's ability to cooperate decreasing with age, it is more likely that mothers' expectations of social behavior increase with age. However, the results of the present study may represent a cohort effect, given that longitudinal research has consistently demonstrated trends of increasing social skills across the preschool years (Takahashi, Okada, Hoshino, & Anme, 2015).

Child gender. Consistent with past research, male children were rated by their mothers as more physically aggressive than female children. Notably, no significant differences were observed between male and female children with respect to relational aggression. The literature examining gender differences in relational aggression during childhood has been mixed. Whereas some studies have found that female children exhibit higher levels of relational aggression than male children (e.g., Bonica, Arnold, Fisher, Zeljo, & Yershova, 2003; Crick & Grotpeter, 1995; Estrem, 2005), the present study is consistent with emerging literature that has found no differences between genders (e.g., Lansford et al., 2012; McEachern & Snyder, 2012).

In addition, female children were rated as exhibiting more self-control than male children. This is consistent with research that has found that female children demonstrate better developed social skills and behavioral control in early childhood. For example, in a longitudinal study of 11,300 children, followed from Kindergarten through Grade 5, DiPrete and Jennings (2012) found that female children began school with more advanced social and behavioral skills than male children. Moreover, this gap between male and female skills increased over time.

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Socioeconomic factors. There were several socioeconomic factors associated with the study variables. Specifically, older mothers reported more satisfaction with parenting and more positive perceptions of communication with their children than did younger mothers. Dyads with older mothers also demonstrated higher levels of mutual initiation during both the structured block and free play tasks. Mothers with higher levels of education reported greater involvement with their children and more positive perceptions of communication with their children than mothers with less education. In addition, mothers with higher levels of education rated their children as demonstrating less physical aggression than mothers with less education. These findings are consistent with the literature that has found that older maternal age and higher maternal educational attainment to be beneficial. For example, older mothers and mothers with higher educational attainment have been found to have greater knowledge of parenting and child development (Bornstein, Cote, Haynes, Hahn, & Park, 2010), talk more and use more diverse vocabulary with their children (Rowe, Pan, & Ayoub, 2005), and are at a reduced risk of engaging in harsh parenting practices (Lee, 2009). In addition, children of older mothers and mothers with higher educational have been found to be less aggressive (Tremblay, 2010).

With respect to family structure, mother-child dyads from two-parent households demonstrated more mutual initiation in interactions during the unstructured task than did dyads from single-parent households. Conversely, dyads from single-parent households demonstrated more mutual compliance during the unstructured task than dyads from two-parent households. Notably, children from two-parent households were rated by their mothers as more physically and relationally aggressive than children from single-parent households. This could be related to the presence of a second adult to act as a second set of eyes in observing and noting aggressive behavior; however, this may also reflect a spurious finding due to the low number of single-

parent households that participated in the present study (6.1%). Past research has found single-parent households to be a risk factor for child aggression (e.g., Pasiak & Menna, 2015; Tremblay et al., 2005).

Finally, mothers from families with higher household income reported more involvement with their children and more positive perceptions of communication with their children than mothers from lower income families. Mother-child dyads from families with higher household income also demonstrated more interactional synchrony during the unstructured task than dyads with lower household income. In addition, children from families with higher household income were rated by their mothers as more assertive and less physically aggressive than children from families with lower household income. Aside from the above noted association between child aggression and family structure, the findings were consistent with the well-established literature outlining the positive associations between these socioeconomic factors, parenting practices, and child outcomes (for review, see Bradley & Corwyn, 2002).

Study Limitations and Future Directions

There are several limitations of the present study that warrant consideration. With respect to external validity, the generalizability of the results is limited due to several features of the study sample. First, only mothers' perspectives were obtained and mother-child interactions analyzed, despite efforts to recruit both mothers and fathers. The lack of father participation is concerning in light of modern trends of increased paternal involvement in caregiving (Statistics Canada, 2007). Relatively few studies have examined father-child interactions, and there is little consensus among those that have, as to whether there are observable differences between mother-child and father-child interactions (for review, see Lindsey, Cremeens, Colwell, & Caldera, 2009). However, differences have been observed between mother-child and father-child

relationships in terms of associations with child outcomes. For example, in a study of 168 preschool-aged children, Ferreira and colleagues (2016) found that the quality of the father-child relationship was directly associated with children's prosocial behavior, whereas quality of the mother-child relationship was indirectly related to children's social behavior through the quality of the teacher-child relationship. In addition, Lindsey and colleagues (2009), found that father-child, but not mother-child, mutual compliance was a significant predictor of children's communication competence. Future research should aim to clarify the possible differences in mother-child and father-child interactions, as well as their relative contributions to children's social development.

A second factor impacting external validity is the relative homogeneity of the current sample. Participants consisted primarily of Caucasian, middle class individuals from two-parent families, and the majority of mothers had post-secondary education. This limits the degree to which the results can be generalized to more diverse families and those more representative of the general population. In addition, given the means of recruitment (e.g., parenting magazines, university courses) and the fact that participants were required to attend the university on two separate occasions, the sample may consist of families that were higher functioning than the general population. This is problematic in that socioeconomic factors have, historically, been conceptualized as extraneous variables to be controlled for in the analyses rather than as core factors in shaping methodology. As a result, the validity and psychometric properties of assessment measures and research methods that have been developed and normed on homogenous populations have been called into question with respect to their generalizability (for review with respect to ethnicity, see Okazaki & Sue, 2016).

Given that multiculturalism has been described as the fourth force of psychology (Pommerantz, 2013) and the observed trends of increasing ethnocultural diversity in Canada (Statistics Canada, 2016), sample diversity should take a more prominent focus in the methodology of future research. Aspects of interactional synchrony, such as shared eye contact, may be biased against dyads from cultures in which social relationships tend to be hierarchical and eye contact may take on a meaning different from that of mainstream Canadian culture. In fact, past research has demonstrated differences in parent-child interactions related to ethnic and socioeconomic factors (e.g., family income, maternal education; Deater-Deckard, Atzaba-Poria, & Pike, 2004; Lindsey, Colwell, Frabutt, Chambers, & MacKinnon-Lewis, 2008). In addition to investigating parent-child interactions with a more ethnically and socioeconomically diverse sample, future research would benefit from more nuanced investigations of multiculturalism, such as exploring cultural values, visible minority status, and levels of acculturation.

The present study was limited by an additional methodological issue—the low internal consistency of some subscales (i.e., PSBS Relational Aggression, SSRS Responsibility, and PCRI Satisfaction). Low internal consistency could indicate that these particular subscales measure more broad constructs, comprised of more diverse thoughts and behaviors than subscales with higher internal consistency. However, some have questioned the utility of Cronbach's alpha as a measure of internal consistency (for review, see Sijtsma, 2009) and have questioned the cut-off of .70, particularly when a scale has other desirable properties (e.g., meaningful scope of content; Schmitt, 1996).

Notably the Preschool Social Behavior Scale was originally developed for use with teachers. The adaptation of this measure for use with mothers in the present study may have limited its utility, particularly in light of the already low rate of relational aggression observed

during the preschool years. In contrast to mothers, teachers are likely to have more opportunities to observe preschool children interacting with peers and, thus, may have a greater ability to detect relationally aggressive behavior in this age group than mothers.

A final limitation of the present study relates to the nature of the research design and statistical analyses. The study used a cross-sectional design and correlational analyses; therefore, the results are limited in terms of drawing causal conclusions about significant relationships (e.g., higher levels of interactional synchrony *cause* lower levels of child aggression). There is a dearth in the literature with respect to longitudinal observations of parent-child interactions; however, such research could shed light on developmental pathways and illuminate the unfolding of developmental cascades towards antisocial behavior.

Practical Implications

The importance of the parent-child relationship in children's early social development is well-established. It is within the context of these early relationships that children's social and emotional competence and behavioral control develop normatively or maladaptively (Davenport & Bourgeois, 2008). As outlined above, the present study provides further evidence to support the significance of the parent-child relationship in children's early socialization. There are several practical implications indicated by the present findings.

First, clinicians working with children and their families would benefit from knowledge of indicators of parent-child relationship quality. Awareness of interactional synchrony, mutuality, and parenting attitudes, and their respective associations amongst each other and with child outcomes, could help clinicians in their initial conceptualization of clients. Specifically, by observing parent-child interactions and obtaining parental reports of perceptions of the parent-child relationship, clinicians could assess the current state of the parent-child relationship and

identify children who may be at risk of social skills deficits and aggressive behavior. If such difficulties are already present, knowledge of these indicators of parent-child relationship quality could give clinicians insight into factors that may be contributing to, or even exacerbating, current difficulties and identify the child's developmental trajectory and risk for developmental cascades prior to beginning treatment. Notably, the present study has called into question the current conceptualization of mutual initiation as a marker of relationship quality during interactions of young children and their mothers. Clinicians would benefit from the knowledge that mutual initiation during the preschool years is, in fact, associated with higher child aggression.

Second, knowledge of interactional synchrony, mutual initiation, mutual compliance, and parenting attitudes (e.g., satisfaction with parenting, communication and involvement with their child) could assist clinicians in identifying areas of strength and weakness in the parent-child relationship. Identifying strengths and weaknesses in the parent-child relationship is important because there is evidence to suggest that interventions targeting parent-child relationships are the most effective (Landy & Menna, 2006a; Landy, Menna, & Sockett-Dimarco, 1997; Webster-Stratton, Reid, & Hammond, 2001). The identification of areas of strength could inform the clinician of aspects of the parent-child relationship to be encouraged and fostered as protective factors, whereas areas of weakness could be identified as targets for intervention. For example, clinicians could help parents to identify their current parenting attitudes and raise parents' awareness of problematic aspects of parent-child interactions (e.g., interrupting, ignoring, and rejecting each other's suggestions). Clinicians could then work with parents towards changing problematic parenting attitudes directly (e.g., increase parental involvement) or indirectly (e.g., increase parenting satisfaction through improving the quality of parent-child interaction).

Clinicians with knowledge of interactional synchrony and mutuality could coach parents in how to interact more synchronously with their children, who could, in turn, model these behaviors during parent-child interactions, as well as coach their children directly.

Finally, the present study identified several risk factors in mothers, children, and the parent-child relationship that could be used to identify those children at the greatest risk for aggressive behavior and social skills deficits. Furthermore, as illustrated above, knowledge of quality indicators in the parent-child relationship can help identify protective factors, as well as targets for intervention. The preschool years may be optimal for prevention and early intervention efforts because this is the developmental period in which children begin to develop the capacity for behavioral regulation, yet problematic behavior patterns are less entrenched (Keenan & Wakschlag, 2000). Moreover, there is evidence to suggest that interventions conducted during the preschool years may be more effective than those conducted in later childhood and adolescence (Landy & Menna, 2006a; Landy et al., 1997; Presnall et al., 2014; Webster-Stratton et al., 2001). Therefore, intervention and prevention efforts would benefit from targeting this developmental period, and the present study has provided several practical suggestions for how to do so.

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APPENDIX A. DEMOGRAPHICS QUESTIONNAIRE

Demographics Questionnaire

The Canadian Psychological Association recommends that researchers report the major demographic characteristics of research participants. To assist us in collecting this information, please complete this brief questionnaire (use the back if needed). All data are confidential and will not be used in any way that identifies you or your child. If you have any questions concerning any of the items, please do not hesitate to ask them.

Child's Name _____

Today's Date _____

Child's birth date (please include day, month, and year) _____

Child's current grade _____

Child's gender _____

Your relationship to child (e.g., mother, father) _____

Parents' Marital Status
- ☐   Married, If so, for how long? _____
- ☐   Divorced
- ☐   Separated
- ☐   Living together, If so, for how long? _____
- ☐   Remarried
- ☐   None of the above (Please Specify: _____)

Who does the child live with most of the time?
- ☐   Mother
- ☐   Father
- ☐   Step-father
- ☐   Step-mother
- ☐   Other (Please Specify: _____)

Father's education
- ☐   Less than 7 years
- ☐   Junior high school (Grade 9)
- ☐   Some high school (Grade 10 or 11)

- ☐   Graduated from high school or equivalent high school diploma
- ☐   Some college or university (at least one year)
- ☐   Graduated from college or university
- ☐   Graduate/professional school (e.g., Master's, Ph.D.)
- ☐   Other _____

Mother's education
- ☐   Less than 7 years
- ☐   Junior high school (Grade 9)
- ☐   Some high school (Grade 10 or 11)
- ☐   Graduated from high school or equivalent high school diploma
- ☐   Some college or university (at least one year)
- ☐   Graduated from college or university
- ☐   Graduate/professional school (e.g., Master's, Ph.D.)
- ☐   Other _____

Please describe stepparents' education if applicable:

Stepmother:
- ☐   Less than 7 years
- ☐   Junior high school (Grade 9)
- ☐   Some high school (Grade 10 or 11)
- ☐   Graduated from high school or equivalent high school diploma
- ☐   Some college or university (at least one year)
- ☐   Graduated from college or university
- ☐   Graduate/professional school (e.g., Master's, Ph.D.)
- ☐   Other _____

Stepfather:
- ☐   Less than 7 years
- ☐   Junior high school (Grade 9)
- ☐   Some high school (Grade 10 or 11)
- ☐   Graduated from high school or equivalent high school diploma
- ☐   Some college or university (at least one year)
- ☐   Graduated from college or university
- ☐   Graduate/professional school (e.g., Master's, Ph.D.)
- ☐   Other _____

Mother's occupation _____

Father's occupation _____

Please describe stepparents' occupations if applicable: _____

_____

Mother's ethnicity: (please choose the one that fits best)
☐   South Asian
☐   East Asian
☐   Caucasian
☐   African Canadian
☐   Caribbean
☐   Hispanic
☐   Native Canadian
☐   Biracial - Please Specify _____
☐   Multi-racial - Please Specify _____
☐   Other – Please Specify _____

Father's ethnicity (please choose the one that fits best):
☐   South Asian
☐   East Asian
☐   Caucasian
☐   African Canadian
☐   Caribbean
☐   Hispanic
☐   Native Canadian
☐   Biracial - Please Specify _____
☐   Multi-racial - Please Specify _____
☐   Other – Please Specify _____

If applicable: Stepfather's ethnicity
☐   South Asian
☐   East Asian
☐   Caucasian
☐   African Canadian
☐   Caribbean
☐   Hispanic
☐   Native Canadian
☐   Biracial - Please Specify _____
☐   Multi-racial - Please Specify _____
☐   Other – Please Specify _____

If applicable: Stepmother's ethnicity

- ☐ South Asian
- ☐ East Asian
- ☐ Caucasian
- ☐ African Canadian
- ☐ Caribbean
- ☐ Hispanic
- ☐ Native Canadian
- ☐ Biracial - Please Specify _____
- ☐ Multi-racial - Please Specify _____
- ☐ Other – Please Specify _____

Has your child been diagnosed with a disability or a psychological disorder? _____

If so, please specify _____

Has your child been suspected of having a learning disorder?

If so, please specify _____

Do you think your child has a disorder of any kind? _____

If so, what do you think the child has? _____

Is your child receiving any psychological services? _____

If so, please describe: _____

Does your child have a serious illness? _____

If so, please specify _____

Is your child currently taking any medications? _____

If so, please specify _____

Approximate total annual income of parent(s) who live with the child

    ☐   Under $30 000
    ☐ $ 30 000 to $60 000
    ☐ $ 61 000 to $100 000
    ☐ $ 101 000 to $150 000
    ☐ $ 151 000 to $250 000
    ☐   Over $250 000

Does your child have any siblings? If so, please indicate gender and date of birth for each child.

_____

_____

How would you describe your child as an infant? (e.g., easy, difficult, slow-to-warm up)

_____

_____

Imagine that your child came to you and told you that another child hit your child while they were playing on the playground. What would you tell your child to do?

_____

_____

_____

Imagine that your child came to you and told you that another child was telling other children not to be friends with your child. What would you tell your child to do?

_____

_____

_____

Please tell us anything else that you think we should know:

_____

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