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Parent-child mutuality and preschoolers' social problem solving in response to
five narratives

by

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Abstract

The current study examined whether: (a) mother- or father-child mutuality predicts social problem-solving (SPS) strategies preschoolers use and (b) boys and girls use varying strategies with different social problems. Fifty-eight parent-child dyads participated (29 girls and 29 boys between 25- and 42-months-old; $M = 32.5$, $SD = 5.4$). Dyads were individually videotaped playing together and were coded for mutuality using the Mutually Responsive Orientation Scale (Aksan, Kochanska, & Ortmann, 2006). One year later, children were videotaped completing stories from the MacArthur Story Stem Battery (Bretherton, Oppenheim, Buchsbaum, Emde, & the MacArthur Narrative Group, 1990). Responses were coded for (a) prosocial, (b) socially negative, and (c) avoidant SPS strategies. Results indicated that parent-child mutuality was not predictive of children's SPS strategies, however boys and girls employed different strategies depending on the story stem. Findings and implications were discussed in light of literature on children's social competence in different contexts.

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Overview of Topic

The parent-child relationship is the first with which human infants will have social experiences, shaping their development for the rest of their lives (Maccoby, 2007). Arguably, parents contribute to children's cognitive, physical, and social-emotional development by ensuring their needs are met and thus allowing them to grow into functioning members of society. Parents accomplish this through several methods, including imparting their knowledge, skills, values, and societal expectations on the child with the hopes they will become their own independent social being. Although it is often thought that parents are the primary shapers and influencers of children, it is now becoming clearer that this relationship is characterized by a constant give-and-take by both parents and children.

The parent-child relationship is more nuanced and bidirectional than originally thought. Parent-child interactions come with a long history of mutual influences, forever changing future encounters. Children and their parents are constantly changing as they interact with each other over time and across settings: parents react to children's behaviours and temperaments, and children react to their parents' affection and disciplining techniques. This reciprocal and bidirectional influence each member has on one another suggests a complex and long-term dynamic relationship where each member affects subsequent behaviours and interactions for the future (Kuczynski, 2003; Maccoby, 2003). Parent-child mutuality is an important feature of caregiver-child attachment and authoritative parenting, as many characteristics overlap (e.g., responsiveness). However, mutuality takes on the dyadic quality of these concepts, by conceptualizing the parent-child relationship as a whole instead of one member's reaction to the other (e.g., Deater-

Deckard, Atzaba-Poria, & Pike, 2004). While individual characteristics of each dyad member have been examined extensively in the literature (e.g., compliance of child, responsiveness of one partner), dyadic properties of the interactions have not been as thoroughly investigated. This dyadic characteristic is of interest in the current study and describes the quality of mutuality in a parent-child relationship, a construct that can only be investigated by studying the dyad as a whole.

Experiences and knowledge gained during the preschool years (i.e., 2 ½ to 5 years old) are crucial to the social development of children. Socialization is a complex process occurring between the child and the key adults in his/her social environment. In the early years, socialization is often the context during which parents share their values, morals, and culture with their child through modeling, guiding, teaching, and sharing experiences with the purpose of creating competent citizens of society (Grusec & Davidov, 2010; Maccoby, 2007). The preschool stage is one of great exploration and development. The child, while still learning and interacting with parents and others, is beginning to become more autonomous in the world. From experiences within the family, infants begin to form expectations about how the world works and how to interact with others. The purpose of socialization is to develop many competencies, for example maintaining conversations, social problem solving, fostering positive relationships, and conflict resolution so children can learn to function among others. The attainment of these social milestones is a crucial step for children's future interactions with others, and it is linked to many facets of adjustment, such as behaviour problems, emotional regulation, and school readiness (e.g., Lemerise & Arsenio, 2000; Rhoades, Warren, Domitrovich, & Greenberg, 2011; Trentacosta & Fine, 2009). One of the main goals of parenting is to foster opportunities

and exchanges so that children have occasions to experience social success. Through these interactions, children gain knowledge that they can transfer to other settings, creating competent beings that can interact with others and develop a healthy well being. The processes by which this knowledge is attained can be measured in many different ways. The present study examines the outcome of one particular competency in children: the ability to solve age-appropriate social problems.

Social problem solving, an indicator of social competence, is an estimate of a child's ability to attain a social goal (e.g., joining in on a game; sharing a toy with another), while meeting the needs and wants of those with whom they are interacting (Rubin & Rose-Krasnor, 1992). Researchers have attempted to learn about the strategies children use when solving social problems as well as their ability to adapt to social situations (e.g., Shure & Spivack, 1980). However, many of the researchers have employed interview techniques (e.g., directly asking children what they would do in a hypothetical situation). The interview method has some clear limitations with a preschool age group because of the heavy reliance on cognitive and verbal abilities, as well as reacting negatively to emotionally charged interview questions (Bettman & Lundahl, 2007). As an alternative, researchers and practitioners have engaged in stories with children as a means of eliciting their perceptions of social interactions (Bretherton & Oppenheim, 2003). In this way, children are able to tell their own story that the researcher has prompted using toys and figures, making the children less reliant on meta-knowledge of problem-solving strategies, as well as minimizing the emotional impact of the interaction. The purpose of the current study is to investigate parent-child mutuality and the variety of responses preschoolers generate to a battery of popular story stems.

This study aims to fill the gaps in the literature regarding investigating parent-child interactions and methodological issues in studying social problem solving in young children.

Literature Review

The following review of the literature investigates relevant themes to the current study, regarding social problem solving as it relates to social competence, an exploration of the use of narratives to explore social problem solving, an overview of the importance of healthy early parent-child relationships including mutuality, as well as the links between parent-child relationships and social competence through social problem solving. In addition, child gender differences in social competence as well as mother and father differences in parent-child mutuality will be reviewed.

Social Competence

Social competence is a general term used to describe a person's ability to interact with others in socially appropriate ways. Many definitions exist in order to capture this complex concept, for instance, social success in terms of effectiveness in social interactions, interacting appropriately with the social environment, or maintaining others' best interests while serving your own goals (for a review see Rose-Krasnor, 1997). A recurring theme in the literature is one of the social ability and adaptability of social functioning in fostering positive social relationships. This is accomplished through the development of social-cognitive skills to react appropriately to an ever-changing environment (Rose-Krasnor). In order to demonstrate social competence, a child must coordinate cues from the environment (e.g., school/home context or peers' actions) and internal cues (e.g., child's own affect, interpretation of environment, previous experience

with similar situations, self-efficacy beliefs, motivation) while determining what the appropriate reaction is for the situation that will lead to furthering social interactions and deepening social relationships (Waters & Sroufe, 1983). Children who have difficulty integrating these aspects are likely to lack social competence, possibly resulting in a lack of social skills or emotional knowledge for instance, which can negatively affect children throughout their social experiences. Several major researchers have developed useful theories in order to better understand social competence.

Theoretical framework. Two particular theories describing the makeup and process of social competence and interactions set the stage for the present observational study. Rose-Krasnor (1997) describes social competence as multidimensional and makes use of a prism to represent its many layers. Beginning from the base of the prism, Rose-Krasnor describes the Skills, Index, and Theoretical Levels. The lowest section, the Skills Level, focuses on the specific abilities children have that allow them to interact with others, such as social problem solving. These are the basis for the other levels to build upon, as skills are being developed and solidified (Rose-Krasnor). The Index Level differentiates between the self and other, describing the delicate balance of looking out for personal interests while connecting with others in meaningful relationships. Finally, at the top of the prism, the Theoretical Level describes the effectiveness of interactions and competence as a general concept and less as a collection of discrete abilities. This theoretical framework provides a more complete conceptualization for understanding the intricacies of social competence.

Crick and Dodge (1994) present another theoretical model by describing the cognitive processes involved when a child has a social encounter, which was later

adapted to include emotional processes (Lemerise & Arsenio, 2000). In the Social Information Processing Mechanism, a child is presented with several cues in a social situation, which he or she has to interpret while considering previous experiences and individual capabilities. Once this is done, the child makes decisions about the goals of the situation and comes up with a possible response as to how to act. Finally, the child chooses the best response based on their self-efficacy of enacting the behavior as well as the expected outcomes, which leads the child to enact the behaviour, ending with an evaluation of the outcome (Crick & Dodge). This is a cyclical pattern which continues with each interaction; additionally, constant feedback is compared to the cognitive stores of the child, including memory, schemas, and social knowledge, in order to improve any future social encounters. Social competence is difficult to measure empirically and various methods exist in the literature to capture this abstract notion.

Researchers have employed a variety of methods in the study of social competence. Some have focused on studying the presence or frequency of discrete skills or characteristics (e.g., maintaining eye contact; saying “Please”) or viewing social competence as a broad, integrative ability to be effective in social interactions (e.g., ability to select a behaviour from a choice of alternatives; Waters & Sroufe, 1983). Each of these has advantages and disadvantages in measuring social competence. For instance, examining social skills is more straightforward because these are observable behaviours that are easily recorded. In addition, they are easier to teach discretely when helping children to improve their interactions with others. However, using discrete social skills (e.g., saying “Hello” when you meet someone) as a measure of social competence is inexact because it does not take into account environment, context or age of the child,

capturing one small portion of social competence. Similarly, measuring social competence as a general construct is difficult to assess because there are no agreed upon criteria; however, this conceptualization makes intuitive sense and can be described in abstract ways (Waters & Sroufe). Social competence is further complicated by the fact that children can be considered competent in one situation (e.g., asking to play with a peer) and not in others (e.g., dealing with an argument), demonstrating that the development of competence is a difficult and on-going process (Masten & Coatsworth, 1998). Therefore, it is crucial to take into account the outcomes of the child's behaviour to determine whether the discrete social skills as well as their perceptions of and reactions to the social environment are performing together in a socially acceptable manner. In this way, other researchers have examined the goals of a social situation, type and variability of strategies used during a social problem, and resolutions of the chosen behaviour, culminating in the social problem-solving process, representing a functional aspect of social competence (Shure & Spivack, 1980). Many current social skills programs follow a cognitive model similar to this, which is important to improving children's social competence, as it is associated with many beneficial outcomes.

Attaining an optimal level of social competence is an important achievement due to its association with various positive outcomes. For instance, as teacher-reported social competence increased, ADHD-related behaviour problems decreased and nonverbal IQ increased in a sample of low-income preschoolers (Lonigan et al., 1999). Similarly, social awareness as measured by emotion knowledge was found to be associated with academic success in disadvantaged preschool children (Rhoades et al., 2011). In addition, preschool boys' internalizing (e.g., anxiety, depression) and externalizing behaviours (e.g.,

opposition, inattentiveness) were associated with lower social competence as reported by teachers and parents (Campbell, 1994). It is clear that social competence is related to many aspects of a child's life, such as interpersonal adjustment, self-regulation, and school readiness and success. Furthermore, if children develop low self-efficacy and confidence in their interpersonal interactions, it can lead to further questionable behaviours, which can exacerbate challenges in their relationships with peers throughout their lives (Rubin & Rose-Krasnor, 1992). Clearly, social competence is multidimensional and has various components, of which social problem solving is one.

Social Problem Solving

Social problem solving (SPS) is considered a functional, cognitive indicator of social competence (Rubin & Rose-Krasnor, 1992; Tisdelle & St. Lawrence, 1986). Specifically, SPS is essential in developing social competence as it focuses on the child's flexibility in adapting to different environments in order to attain a social goal (Rubin & Rose-Krasnor). It speaks to the social functioning and social-cognitive skills a child has in order to interpret and react appropriately to social situations (Walker, Irving, & Berthelsen, 2002). In these situations, children are attempting to achieve a goal that, in order to reach it, requires interacting with others (e.g., sharing a toy with a peer; Rose-Krasnor & Rubin, 1983). SPS is a complex process, described mostly by cognitive information processing models (e.g., Dodge, Laird, Lochman, & Zelli, 2000; Shure & Spivack, 1980). Children may take into account many factors from the environment to select an appropriate social goal as well as deciding on strategies to use to attain the goal depending on the actors involved, the location, and type of relationship with the actors, to name a few (Rubin & Rose-Krasnor). One key element of SPS is the ability of children to

test out or implement a variety of strategies, deciding whether their strategy was ultimately a success, a partial success, or a failure, which affects how they react to similar situations they encounter later (Rubin & Rose-Krasnor). The methods by which children engage in these strategies have been examined in the literature typically by direct interviewing techniques, as is described below.

Measuring social problem solving. There are several similar methods that have been used to measure children's SPS abilities. Typically, a hypothetical social dilemma is presented to the child and is asked to explain what the child him- or herself would do if they were in this situation (e.g., Raikes & Thompson, 2008; Shure & Spivack, 1980). A social cognitive interview such as the Preschool Interpersonal Problem-Solving (PIPS) Test requires the child to come up with as many different solutions as possible when faced with an interpersonal conflict situation (Shure & Spivack, 1980). Using this method, the alternative solutions to various hypothetical situations are totaled to garner a score representing the number of different, relevant solutions. Similarly, in the What Happens Next Game (WHNG) a social situation is presented to the child, and the child is prompted to describe what happens next in the story (Shure & Spivack, 1980). Furthermore, some researchers present an issue that arises frequently between participants and give the peers, siblings, or families an allotted time to discuss how to solve the conflict (Brody, Stoneman, & Gauger, 1996). Children's responses can elicit a lot of information that can be examined in several ways.

Cognitive interviews produce rich data in terms of the child's perceptions of the social situations. In these and similar procedures, the variety, quality, or relevance of responses is investigated. For instance, the number of alternative solutions presented or

the prosocial or aggressive nature of the solutions may be examined (e.g., Pettit, Dodge, & Brown, 1988; Raikes & Thompson, 2008). The variety of solutions is one indicator of social problem-solving skills, which can demonstrate the range of children's problem-solving knowledge as well as the flexibility of the children to implement a variety of solutions to one scenario (Rubin & Rose-Krasnor, 1992). Moreover, the timing of the solutions is important for some. Occasionally, researchers exclude the child's first response because this may represent a socially expected answer (e.g., Walker et al., 2002); others place particular attention on responses following a failed attempt in obtaining a social goal, as this can tap into the child's persistence and flexibility during a challenging social encounter (e.g., Rose-Krasnor & Rubin, 1983). Many of these methods rely on the child being able to represent what *they* would do in a similar situation, which may be a more familiar context for children, a strong advantage of this method.

The above methods, although revealing important details of the child's internal worlds, present with disadvantages as well. First, interview techniques are highly dependent on the child's verbal skills (Bettmann & Lundahl, 2007). Children need to be able to clearly verbalize their experiences to an adult researcher or clinician (Bettmann & Lundahl). Furthermore, due to the possible emotional nature of some of the interview scenarios (e.g., peer conflict), children may have more difficulty giving an answer (Holmberg, Robinson, Corbitt-Price, & Wiener, 2007). Second, the accuracy of the child's responses may be questioned. Because they are young, children may not have developed the cognitive capacity (e.g., perspective taking, Selman, 1975) or memory to understand how they act in certain situations and be able to relate that to a researcher. Alternatively, the child may present only what they believe is the socially accepted

version of how they should act and not what they would typically do in a social situation (Mize & Ladd, 1988; Rubin & Rose-Krasnor, 1992). Finally, although children may be able to tell a researcher what they should do in response to an interview question, it does not reflect the child's actual ability or competence in enacting that behaviour in reality (Tisdelle & St. Lawrence, 1986). These disadvantages are a part of what adds to the appeal of narrative assessments, an alternative to the above methods.

Narrative assessments. Narrative story stem techniques are becoming popular with researchers and clinicians in an attempt to tap into the internal cognitions of children (Robinson, 2007). These formats originated from research on symbolic play and children's development (Bretherton & Oppenheim, 2003). Typically, the researcher or clinician begins a story, using small toys, and the child is asked to complete the story, as they desire. This method has been deemed appropriate for preschool children who have been found to put together simple stories by the age of two using toy people and animals (Bretherton & Oppenheim, 2003). Additionally, the stories describe common, everyday, occurrences with which a child would be familiar. In this way, the child can relate to the story and accurately represent their expectations of social situations (Bretherton & Oppenheim, 2003). The MacArthur Story Stem Battery (MSSB; Bretherton, Oppenheim, Buchsbaum, Emde, & the MacArthur Narrative Group, 1990) is the most frequently used narrative assessment for young children (Bettman & Lundahl, 2007) and follows the above procedures. Many factors contribute to the MSSB's popularity among child development professionals.

The MacArthur Story Stem Battery is attractive to clinicians and researchers alike for various reasons. Story stem techniques were originally developed to fill the gap with

attachment measurements. While Mary Ainsworth's Strange Situation (Ainsworth & Bell, 1970) is typically used with children under three years, it is inappropriate for older children, as they can voice their thoughts on their relationships. Additionally, attachment interviews are best for adolescents or adults and are highly reliant on the participant's more eloquent verbal skills, making them difficult for young children to complete accurately. These two techniques leave researchers and clinicians without appropriate direct methods of assessing preschool and school age children's relationships (Bettman & Lundahl, 2007). Narrative assessments are structured in a way that is open for the child to complete a story stem how they interpret the scenario in a play format, creating a friendly and familiar situation (Bettman & Lundahl). Children can also enact their story by playing with the toys if their verbal skills are not strong (Page, 2001). In fact, manipulatives (i.e., toys) have been found to explain much more of the variance in children's responses to hypothetical scenarios compared to verbally relaying the response, like in an interview situation, demonstrating further empirical evidence that the figures and toys used will aid significantly in determining a child's social problem solving (Mize & Ladd, 1988). Additionally, because children are not directly asked what they would do in certain situations, story stems are less threatening, allowing for children to be authentic in their responses in representing their general beliefs about social encounters (Holmberg et al., 2007; Kelsay & Le Houezec-Jacquemain, 2003; Mize & Ladd, 1988). The MSSB narratives are fairly straightforward, flexible with story content, and quick to administer, making them feasible methods for all professionals.

Narratives are a promising technique for use with clinical assessments (Bretherton & Oppenheim, 2003; Kelsay & Le Houezec-Jacquemain, 2003). Although much research

needs to be conducted regarding the psychometric properties of the MSSB (Holmberg et al., 2007), many studies have indicated that a child's performance in the MSSB is associated with many known factors leading to various behavioural, social, or emotional problems in at-risk populations, such as relationship issues, externalizing or internalizing behaviours, and low self-esteem, among many others (for an overview see Warren, 2003). There are also many positive features of the MSSB that can be attractive to clinicians, which are outlined by Kelsay and Le Houezec-Jacquemain (2003). For instance, clinicians can easily learn the story stems and techniques for administering the MSSB to children. In addition, it is a fairly quick assessment to complete, as well as engaging and enjoyable for the children. Furthermore, because the task can be videotaped, the child's interaction with the task can be shown to parents, making relaying information to parents more concrete. As mentioned, although the MSSB is a promising technique for clinical assessment purposes, it should be mainly used as a starting point or for additional information instead rather than a main assessment technique until further research on its psychometric properties is conducted (Kelsay & Le Houezec-Jacquemain, 2003). Along with being a possible assessment for clinicians to add to their repertoire, the MSSB is also linked to many child development-related outcomes in the preschool age.

The ability to produce relevant and prosocial solutions to a hypothetical dilemma has been associated with behavioural adjustment. Observers' ratings of 4- and 5-year-olds' friendly and assertive behaviours were correlated with strategies used in response to a hypothetical dilemma, where the child was able to act out the story (Mize & Ladd, 1988). Additionally, in the same study, friendly responses to dilemmas were correlated with observer and teacher ratings of children's prosocial and aggressive behaviour,

adding to the evidence supporting the usefulness of these methodologies (Mize & Ladd, 1988). Furthermore, externalizing behaviours can be predicted from various details in the story stem. Specifically, visible distress and aggressive or destructive themes presented by children during the narratives were associated with externalizing, conduct, and hyperactivity/inattention problems when rated by both parents and teachers (von Klitzing, Stadelmann, & Perren, 2007; Warren, Oppenheim, & Emde, 1996). These findings were similar in both studies using the MSSB with 3.5- to 5.5 year olds, in both clinical and community samples, of various socioeconomic statuses, and of primarily European backgrounds. In addition, greater interpersonal conflict themes that emerged from the narratives was related to fewer emotional symptoms (e.g., worry) and higher social initiative (e.g., positive interactions with peers; von Klitzing et al., 2007). In a task examining narratives' relationships to peer behaviour, preschoolers were rated higher on prosocial behaviours, group acceptance, and lower levels of aggression when friendliness was apparent during a narrative task (Mize & Ladd, 1988). Using the Attachment Doll Story Completion Task (ADSCT; Bretherton, Prentiss, & Ridgeway, 1990), researchers found that children who discussed more prosocial themes had parents who rated themselves as using warm parenting techniques. Similarly, these children were rated as having fewer externalizing problems and being more socially competent than children who used aggressive representations of relationships, similar to the above studies, however using a comparable narrative technique (Laible, Carlo, Torquati, & Ontai, 2004). These are promising results for the use of this technique as a dynamic and interesting research tool for studying children. The current study further utilized the

MacArthur Story Stem Battery in order to examine the variability of problem-solving techniques in the stories and the links to parent-child mutuality (i.e., relationship quality).

Gender differences. Some differences between boys and girls have been found in their social development. While young children tend to socialize with same-gendered peers in school, more pronounced gender differences soon emerge. For instance, boys tend to play in larger groups than girls and in more elaborate and competitive games, while girls tend to have more intimate, collaborative play (Pasterski, Golombok, & Hines, 2010; Rose-Krasnor, 1997). These differences in social development, however, do not necessarily represent differences in social competence, so the outcomes of the child's social choices during an interaction is important to consider (Rose-Krasnor). It is clear from the literature that girls and boys react differently to social encounters in both a naturalistic environment and an artificial research interview setting. Walker and colleagues (2002) presented Australian preschool boys and girls with numerous short stories representing several themes: (a) ambiguous and intentional provocation; (b) peer group entry; and (c) social expectations (e.g., sharing). Prompts were used when the child did not respond to the initial story, and only the second responses were used in analysis in the peer group entry situation, as children's initial responses were interpreted as learned social expectations (Walker et al.). It was clear that children's perception of intentionality in peers' actions was crucial to how boys and girls react to a situation. In responding to an ambiguous hypothetical situation (i.e., intention of the other is unclear), girls were much more likely to act prosocially than boys, who were more likely to retaliate aggressively (Walker et al.). A large portion of the sample was also likely to appeal to authority as well as give simple directives in response to a hypothetical scenario. In a

straightforward, intentionally provocative situation, most children tended to use simple directives as a response or appeal to authority. Boys were again more likely to use a retaliatory response than girls, however no children acted prosocially in intentional provocation situations (Walker et al.). Alternatively, Rubin and Rose-Krasnor (1983) did not find gender differences in terms of the types of SPS strategies (e.g., affiliative acts, suggestions, person-agonistic acts) in their preschool participants. These authors studied preschool and kindergarten children of lower-middle to middle-class backgrounds in a large Canadian province. Children were prompted with problems accompanied with pictures wherein they were to obtain a desired object from a peer, while varying both the gender and the age (i.e., older or younger) of the target peer. The authors found that both girls and boys used prosocial strategies as their main reactions. However, boys used agonistic strategies (i.e., fighting, aggressive) significantly more often than the other types of strategies (i.e., adult intervention, trade/bribe, or manipulating using affect), whereas girls only significantly used agonistic strategies more than using affect to manipulate (Rubin & Rose-Krasnor). In this study, girls were also found to use more strategies than boys. Additionally, grade one girls were found to appeal to authority more often than boys, who tended to make demands, disrupt, or engage in physical abuse, among other things (Green, Cillessen, Recheis, Patterson, & Hughes, 2008). Overall, boys and girls differ in their problem-solving strategies, results that are mirrored when examining others' perspectives, as well.

Gender differences also occur in teacher reports of behaviour and social problem solving during hypothetical scenarios. Green and colleagues (2008) investigated Caucasian, middle- to upper-middle class, first grade, students' responses to social

cognitive interviews as used by Rubin (e.g., Rubin & Rose-Krasnor, 1983), Shure (e.g., Shure & Spivack, 1980), and Mize and Ladd (1988) using the peer group entry and object acquisition scenarios. Children could respond to the hypothetical story by using toys and figures, combining the above approaches to engage the child in the task. Teachers' antisocial ratings of grade one children were positively correlated with more coercive strategies in boys' social problem solving and negatively related to passive strategies (e.g., leaving situation, turning to authority) in girls (Green et al.). Furthermore, the level of social competence, as measured by teachers' ratings, seemed to impact how these characteristics are related. If girls had an average social competence rating, then the teachers' antisocial rating had no bearing on the relationship between teachers' perceptions and coercive problem-solving strategies; however girls with high social competence and antisocial ratings produced more coercive responses in girls. Finally, girls with low social competence and antisocial ratings made fewer coercive responses (Green et al.). These results complicate the view that prosocial problem solving is the most common form of conflict resolution in girls. There may be something in the way that girls and boys interact with each other that may give girls an advantage socially if they are slightly coercive with peers. Children's gender clearly plays an important role in social problem solving, beginning with the early the parent-child relationship.

The Early Parent-Child Relationship

The importance of the parent-child relationship in children's socialization can be understood from many perspectives, for instance, attachment, social learning, or reciprocal compliance, among others (Grusec & Davidov, 2010). Early relationships, such as the parent-child relationship, are essential to the development of socialization.

Parents or primary caregivers are the central influences fostering this process in their children as they are the first and most frequent interactions children have that influence their internal expectations of future encounters with others (Maccoby, 2007). Parents transmit their values, culture, and cognitions to their children in order to prepare them for interacting with the social world; the extent and success of this transmission is dependent on the reciprocal nature of the dyad, according to the domain-specific view of socialization (Grusec & Davidov, 2010). Using this perspective, the current study examined the mutual relationship that occurs between parent and child.

Mutuality. The bidirectional quality of relationships is not a new concept in the literature (e.g., Bell, 1968). Bell reinterprets much of the early parent-child literature by detailing how children are instrumental in affecting the behaviours of parents by their moods, actions, and needs. However, until recently, these influences have been measured by examining characteristics of each individual partner while they are interacting with another (e.g., Belsky, Youngblade, Rovine, & Volling, 1991; Lindsey & Mize, 2001; Rocissano, Slade, & Lynch, 1987). Some authors have further attempted to measure mutuality with event-based coding, rather than global ratings. Lindsey and Mize coded each attempt to influence and each response to the influence with a particular code (i.e., initiation and compliance). From this, balance scores were calculated by taking the proportion of the parent score to child score to achieve a dyadic score. While it is important to investigate individual influences of a relationship, one cannot claim to be studying the bidirectionality of relationships, since these methods do not capture the true essence of how the unit (i.e., dyad) interacts with each other. Bidirectionality occurs due to a continuous influence of each person onto another, which alters the entire interaction,

including the behaviours of each individual (Kuczynski, 2003). In fact, some developmental researchers have shifted from examining individual characteristics to investigating the full dyad, finding that each contribute unique variance to the impacts of the parent-child relationship. For instance, some authors have shifted from measuring each individual's responsiveness to each other to investigating a global essence of the mutuality of the dyad (Aksan, Kochanska, & Ortmann, 2006). In addition, Lindsey and Mize recognized that their initiation/compliance coding scheme may not be capturing a truly dyadic quality and included a global synchrony code designed to describe the general look of the back-and-forth nature of the parent-child interaction (e.g., Lindsey, Cremeens, Colwell, & Caldera, 2008). Therefore, the current study took the dyadic perspective in describing the mutual relationship between parent and child.

In the present study mutuality or reciprocity was defined as the back and forth, cooperative quality of a relationship that is characterized by smooth flowing and in-tune interactions (Aksan et al., 2006). In fact, Maccoby and Martin (1983) argued that this mutual relationship is essential in the child's socialization process: specifically, the process is not the parent imparting skills and knowledge on the child, rather it is the reciprocal give and take between the parent and the child that aids in socialization. Given these characteristics, mutuality appears to be an appropriate construct with which to capture the dyadic qualities in a parent-child relationship.

Benefits of mutuality. Parent-child mutuality has been linked to numerous child adjustment outcomes in the literature. In studies by Deater-Deckard and colleagues, observations of parent-child interactions (with 43-month-old children) were coded on a 1 to 7 scale for parent and child responsiveness, dyadic cooperation, and dyadic reciprocity,

which were combined to develop a parent-child mutuality score. Parent-child mutuality was significantly associated with prosocial behaviour and positive affect (Deater-Deckard & O'Connor, 2000). Further, higher levels of mutuality were also predictive of lower externalizing problems, however only if positive affect in the relationship was above average (Deater-Deckard et al., 2004), suggesting that positivity may not be an essential component of mutuality, but a crucial element in conjunction with mutuality to foster social competence in children. This same study did not find associations between parent-child mutuality and children's internalizing problems, proposing that distinct sources may affect different types of behaviours. Other major researchers in this area have found links between mutuality and other developmental outcomes.

Kochanska and colleagues have extensively studied their proposed concept of "mutually responsive orientation" (MRO) by coding for coordinated routines, harmonious communication, mutual cooperation, and emotional ambiance on a 5-point scale (Aksan et al., 2006). MRO was related to child's conscience development (Kochanska & Murray, 2000), lower maternal power (Kochanska, 1997), internalization of maternal rules (Kochanska), and better self-representation (i.e., who they are, identifying their possessions; Kochanska, Aksan, Prisco, & Adams, 2008) in a variety of preschoolers, with ages ranging from approximately 8 to 46 months. Other researchers have found many links between mutuality and other peer competence outcomes, such as prosocial behaviours, with emotion understanding as an important mediator (Ensor, Spencer, & Hughes, 2011). Many of these global ratings relate well to socialization and the development of social competence, however similar results have been found with other coding systems.

Mutuality is also linked to other beneficial outcomes even while using a more complex coding system. Lindsey and colleagues have investigated parent-child relationships in a variety of ages by coding the balance of influence attempts and response to attempts, as well as a global level of synchrony for the dyad (e.g., Lindsey et al., 2008). Specifically, in a group of preschoolers, parent-child reciprocity was correlated with communicative competence (i.e., verbal comprehension and expressive language) and self-control (as assessed by a forbidden toy task; Lindsey et al., 2008). Further investigations in similar studies indicated parent-gender differences.

Parent gender differences. Gender differences in mutuality emerge when comparing mothers and fathers with their children. Overall, some studies have found that mother-child and father-child mutuality scores are moderately similar with significant correlations ranging from .20-.40 (Aksan et al., 2006). However, a more complete picture begins to emerge when examining the relationships more closely. Specifically, Kochanska and colleagues (e.g., Aksan et al., 2006) found that mutual responsiveness is actually distinct when comparing mother- and father-child interactions, a finding that increases in relevance when comparing 7-month-olds to 15-month-olds. This suggests that children forge unique relationships with each parent; furthermore, it is possible this trend would continue when examining preschool-age children, such as those in the current study. However, this study also demonstrated that both relationships contributed equal variance to the MRO subscales (Aksan et al., 2006), which is important when determining the impact of each parent-child relationship on the child's development.

In a follow-up study by the same authors, they further examined each relationship (e.g., mother-child; father-child) and the impacts on preschoolers' outcomes (Kochanska

et al., 2008). Researchers examined parent-child MRO, mediated by power assertions (i.e., physical, assertive control or interventions in their child's behaviour), predicting a child's internalization of mothers' prohibitions (i.e., child following the mother's directions and not touching an attractive toy) as well as child self-regulation (i.e., performance on various tasks designed to measure effortful control). Specifically, researchers found that higher levels of mother-child MRO before the child was 2-years-old was linked with more child internalization of mother's prohibitions and self-regulation at 4.5-years-old through the mothers' infrequent use of power assertions (Kochanska et al., 2008). Similarly, father-child MRO was related to child self-regulation and advanced self-representation (i.e., distinguishing self and other), and power assertion was negatively related to these outcomes, as well. However, distinct from the mother-child relationship, father-child MRO was unrelated to child's internalization of prohibitions as well as father's use of power assertions, suggesting different mechanisms of influence in the two relationships (Kochanska et al., 2008). Mothers and fathers do appear to have equally important but varying impacts on a child's social development.

Further, mother- and father-child differences have been discovered in two separate contexts when the children were 15-, 18-, and 24-month-olds (Lindsey, Cremeens, & Caldera, 2010). This study examined mutual compliance between parent and child interactions during play and caregiving (i.e., snack) tasks and the links to peer competence as determined by teacher ratings and observational assessments. During the play context, highly mutually compliant mother-child dyads had children who acted more prosocially with peers. However, father-child dyads with high mutuality scores during play tended to have children who were more prosocial but also less aggressive with peers,

an association which did not present itself in the mother-child dyads (Lindsey et al., 2010). Furthermore, in the caregiving context, mother-child dyads with high mutual compliance tended to have children who were less aggressive with peers, while mutually compliant father-child dyads in this context had more prosocial children, results mirroring those during the play context (Lindsey et al.). Clearly, the parent-child relationship is complex, and these results demonstrate the distinct, yet equally important, contributions by mother and fathers to children's social development. The current study utilizes the play context because it typically calls for more horizontal (i.e., egalitarian) interactions between parent and child compared to a parent-led task such as caregiving.

Parenting and social problem solving. In relating parenting to social problem solving, it is a skill that is developed in the early years of child development, fostered initially by interactions with parents and other family members (Maccoby & Martin, 1983). Research demonstrates that attachment security and parenting are related to how 54-month-old children perceive their peers' intentions in ambiguous social situations (Raikes & Thompson, 2008). Specifically, the more sensitive the mother was during play early on, the more competent solutions and fewer negative attributions of peers the child gave to social stories. Many factors involving parenting can influence a child's SPS, such as concurrent maternal depression, early maternal sensitivity, and maternal attachment (Raikes & Thompson, 2008). Researchers examined social problem solving in both obvious and ambiguous hypothetical provocation scenarios with peers. They specifically investigated how family experiences impact the child's SPS, including the child's early experiences, peer encounters, and the mothers' reactions to child-related vignettes (Pettit, Dodge, & Brown, 1988). Generally, it was found that aggressive solutions to social

problems were not related to early family experience, however the mother's endorsement of aggression and hostile biases towards the child are related to lower SPS in the child (Pettit et al., 1988). Considering that one of the main facets of developing and maintaining close relationships with others involves resolving conflict, measuring children's friendships can give an indication of social competence. In a meta-analysis examining parent-child attachment, it was found that attachment was strongly related to children's peer relations, especially as the child grew older (Schneider, Atkinson, & Tardif, 2001). In terms of parenting styles, mothers who were more restrictive with their children had children who used more evasion and less negotiation and personal affective appeals in problem solving. Additionally, mothers who were highly nurturing had children who solved social problems relying on fewer appeals to authority (Carlson-Jones, Rickel, & Smith, 1980). These results suggest that parenting behaviours impact a child's interpersonal problem-solving strategies.

Summary

In conclusion, the social development of young children is an important element in raising a future society of competent beings. Social problem solving is one such manner that children learn to respond to situations in everyday life, and their flexibility with determining appropriate strategies for resolving a particular situation is important in determining their social competence. Furthermore, the mutual parent-child relationship is a key factor in shaping much of a child's social development, a factor that needs to be further examined in a dyadic form. The current study investigated the relationship between parent-child mutuality and a child's knowledge of a variety of social problem solving strategies.

Present Study

Parent-child mutuality was examined by coding participants engaging in a play task with a farm and carnival set at their home. One year later, research assistants presented select stories from the MacArthur Story Stem Battery (Bretherton et al., 1990) to the children. Responses from the narratives were coded using a social problem solving coding scheme. Associations between mutuality, the range of problem-solving strategies used, and differences between story stems were investigated.

The purpose of the present study was to examine the predictive relationship of parent-child mutuality (as assessed at Time 1) on a variety of children's social problem-solving strategies one year later in addition to the flexibility of children to alter strategy use according to the hypothetical problem situation. Social problem solving is particularly important during the development of social competence, as it is a skill that is crucial when interacting with others in the social world. This study was designed to contribute to the literature on parent-child relationships by including both mothers' and fathers' exchanges. Further, the study employed a methodologically age-appropriate approach (i.e., narratives) to tap into the range of social problem-solving strategies children use as an aspect of social competence. Finally, the current research explored the potential gender differences in strategy use depending on the story stem presented. The current study investigated the following general questions:

- 1) Does mother-child or father-child mutuality predict the variety of problem-solving strategies preschoolers use in a narrative task?
- 2) Do boys and girls use different amounts of each SPS strategy according to the narrative presented?

Due to the paucity of literature on the specific relations between parent-child mutuality and social problem solving strategies, it is difficult to predict how these two variables relate to each other. However, inferences were made based on previous literature examining parenting styles, caregiver attachment, and other social behaviours as presented above. Therefore, it was expected that higher mother- and father-child mutuality scores predicted more varied prosocial SPS strategy use in children, while lower mother- and father mutuality scores predicted more socially negative and avoidant SPS strategies in children. No hypotheses were made for differences in boys' and girls' varied strategy use in story stems, as this was not been investigated sufficiently in the literature.

Method

Participants

The current study aimed to measure parent-child mutuality and social problem solving in preschoolers. Mothers, fathers and their toddlers were recruited through (a) day cares; (b) word of mouth; and (c) advertisements in a local magazine and on parenting Internet message boards. At Time 1, 58 families (mother, father, child) met the criteria for the current study composed of 29 girls and 29 boys between 25 and 42 months old ($M = 32.5$, $SD = 5.4$). Families identified their ethnic backgrounds as Caucasian (88%), mixed (9%), and Asian (3%), and the great majority of parents were married (88%), followed by common-law or separated (12%). Mothers and fathers were highly educated, as over 80% of them had at least a college or university degree; the remaining were divided between partial college or university, a trade or technology certificate, and a high school diploma or General Educational Development (GED). Finally, 72% of the families

reported incomes of over \$69 000, while the remaining families reported earning under \$69 000. In sum, the participants were mostly Caucasian with stable family homes and higher education and income. At Time 2, 54 of the original families participated; the first family moved to another province, the second child did not speak English, and two families opted out of the follow-up portion of the study.

Procedure

A detailed proposal of the larger study's purpose, methodology, consent process, and potential harms was prepared for and accepted by the University of Alberta's Research Ethics Board. As no new measures were included and no new data were collected, the current project was accepted under the larger study's ethics approval. At Time 1, mothers and fathers consented to responding to questionnaires (i.e., demographics for the purposes of this project) and engaged in play, teaching, emotions cards tasks with their child in their home; the play task is relevant to the current project. A trained team of research assistants (RA) helped with the data collection. Prior to data collection the RAs received lab and practice training implementing the standardized protocol and the procedures of the study (e.g., how to administer the task instructions, how to set up tasks, when and how to prompt child, etc.). The presentation of the three tasks and parent gender order were counterbalanced. Children were videotaped playing with each parent separately for 15 minutes during two visits. Parents and children were instructed with the following script, "For this task I am interested in seeing how young children of different ages play and interact. Here are some toys for the two of you to play with. I'll be in the next room if you need me, and I will let you know when your playtime is done." The RA placed a farm set and amusement park toys in front of the dyad and left

the room for 15 minutes. The RA returned after the allotted time to end the play task. A pair of graduate students coded the play task for parent-child mutuality using an adapted version of the *Mutually Responsive Orientation (MRO) Scale* (Aksan et al., 2006), which is discussed in further detail below. Families were provided with a \$25 gift certificate to an educational store as a token of appreciation.

One year later, at Time 2, parents answered questionnaires, forwarded questionnaires to their child's teacher or caregiver if applicable (not relevant to the current project), and had their child participate in a narrative task with a research assistant (i.e., MSSB; Bretherton, et al., 1990).

Narrative task. The MSSB is comprised of 14 story stems representing a variety of potentially conflictual or difficult situations a child may encounter in everyday life. The current study utilized five of the main stories plus warm-up and wrap-up stories (see Appendix A), and specific themes are shown in Table 1. The RA built rapport with the child participant before beginning the task in a quiet area. Once the child was more comfortable with the RA, other family members were asked to leave the room, and the RA gave the preschooler the task instructions, "Now we're going to tell stories together. I will begin each story and then ask you to finish it." The story characters were introduced to the participant. Toy characters were: older sibling (Susan/George), younger sibling (Jane/Bob), and friend (Laura/Dave), which were matched in gender to the participant child, as well as mother, father, grandfather, a dog, and including toy props such as a chair, couch, television, table, soccer ball, etc. The RA began with a warm-up story, *Birthday Party* to get the child comfortable playing with the toys and ensured the child understood the task before moving on. For example, in the *Spilled Juice* narrative, the RA

and child set up the toy table, pitcher of juice, and family around the table. The RA began the story by acting out with the toys and saying, “Here’s the family drinking their juice. [Susan/George] gets up and reaches across the table and uh-oh! [She/he] spilled the juice all over the floor! Show and tell me what happens now.” The child then continued the story as desired. There were several prompts the RA used if the child did not address the main idea of the story, for instance, “What happens with [Susan/George] spilling the juice?” or “Did anything else happen?” The RA did not give the child suggestions about what to say and did not interfere with the story telling, only repeating what the child said for the camera to make sure as much as possible was properly understood. When an appropriate pause in the story arose, the RA asked the child, “Is that the end of your story?” and if the child responded positively then they continued onto the next story. The task ranged in length from 13 min 28 sec to 43 min 25 sec, with the average length of task at 26 min 55 sec ($SD = 7$ min 13 sec). In addition, there was a range in story-telling abilities as well as comfort with the task. The families received a \$50 gift certificate for their participation in Time 2 of this study.

Table 1

Themes Represented in Select Stories of the MacArthur Story Stem Battery

Story	Theme
Spilled Juice	Accident vs. punishable act (reaction of authority)
Mom’s Headache	Empathy with mother, compliance with mother or friend, resisting temptation
Three’s A Crowd	Loyalty to friend or sibling, use of authority
Lost Keys	Response to parent conflict

From Bretherton & Oppenheim, 2003

Measures

Demographics questionnaire. A simple questionnaire was distributed, asking the parents questions about relevant participant information, such as the child's age, birth date, and gender, family's ethnic background and household income, as well as parents' relationship status, and levels of education.

Mutually responsive orientation scale. Two graduate-level research assistants coded parent-child mutuality during the play task using an adapted version of Aksan and colleagues (2006) *Mutually Responsive Orientation (MRO) Scale* (see Appendix B). Coding began at the 5-minute point, after the dyad was more accustomed to the camera and set up most of the toys, and ended at 10 minutes, to avoid coding the child's potential fatigue with the task. MRO consists of four subscales attempting to describe the mutual relationship in a dyad: Coordinated Routines, Harmonious Communication, Mutual Cooperation, and Emotional Ambiance. In the original coding scheme, MRO is coded on a scale from 1 (very untrue of the dyad, very low MRO, poor relationship) to 5 (very true of the dyad, very high MRO, excellent relationship) for each context (e.g., all of play) taking into consideration the four dimensions listed above (G. Kochanska, personal communication, April 30, 2011). The current study coded 3 of the 4 dimensions that were relevant to the play task on the 1 to 5 scale recommended (Aksan et al., 2006). As defined by the coding scheme, Harmonious Communication is smooth, effortless interaction and communication with high levels of intimacy and connection. Mutual Cooperation describes the ability of the dyad to follow each other's roles with little resistance, engage

in and respond to subtle influences, maintain low levels of conflict, and demonstrate being psychologically in tune with each other. Finally, Emotional Ambiance describes how the dyad resolves negative affect, engages in positivity and warmth, and shows negative or positive affect and displays of affection.

Construct validity was extensively investigated and was determined that the MRO scale was correlated with but distinct from individual parent and child responsiveness and positive affect and adequately fit the model according to confirmatory factor analysis, demonstrating that the four subscales measured a single unifying construct (Aksan et al., 2006). For the current study, Cronbach's *alphas* for the MRO average were high (Mother-Child: .82; Father-Child: .86).

Observer agreement. Following a period of training, practice, and discussion over the coding scheme and video contents, two graduate students coded 31% of the videos for agreement, achieving intraclass correlations (ICC) interrater reliability of .80 (Communication), .82 (Cooperation), and .96 (Ambiance). ICC's are commonly used for assessing observer agreement when ratings (i.e., a 1 to 5 scale) are coded in a sample (Shrout & Fleiss, 1979).

Social problem-solving coding. A coding scheme was devised for the current study, using many similar coding procedures in the literature as inspiration (e.g., Green et al., 2008; Laible et al., 2004; Mize & Ladd, 1988; Pettit et al., 1988; Robinson et al., 2007; Walker et al., 2002). Five main scales were measured by coding the occurrence of individual events within each story stem (Appendix C). The autonomous category (positive or negative) was coded if the child does not describe any social behaviour between characters. The prosocial category was coded if compliance, helping behaviours,

negotiation, or positive talk were observed. The socially negative scale was coded if non-compliance, aggression, coercion, appeal to authority, or negative talk were apparent in the child's stories. Finally, active avoidance was coded if the child withdrew from the story, ignored the problem, denied the existence of a problem, or refused to answer the RA's prompts. A final "other" category was created for codes that might be interpreted as avoidant, however could not be accurately inferred from the ensuing responses (e.g., off-topic story, changing story, says "I don't know," or getting distracted from story). Each individual sub-point (e.g., helping behaviours, aggression) was coded as present or absent for each of the five main story stems regardless of the actor or target; therefore, multiple behaviours can be coded within one story, however a particular behaviour was only coded once per story. Finally, the ending of the story was coded as resolved or unresolved, regardless of the socially acceptable nature of the resolution.

Several changes were made to the final codes in order to create scores representing the variety of behaviours children use to solve social problems. First, two codes were never seen by coders (Coercion and Denial) and two other codes were not strictly speaking social behaviours (Autonomous Positive and Autonomous Negative) and therefore were not used in the final analysis, leaving 15 codes. The final version of the coding scheme can be seen in Appendix C. Other codes occurred together very frequently and so were combined into single codes to simplify the data. To determine the variety of strategies children used within each category of behaviours (i.e., prosocial, socially negative, and avoidant strategies), the frequency of the presence of each code was added to create a score ranging from 0-4 for each category. For instance, children received prosocial, socially negative, and avoidant strategy scores each ranging from 0-4.

Similar methods have been used in other studies that have examined the number of distinct, relevant, alternative strategies children use in response to a hypothetical problem (e.g., Pettit et al., 1988; Shure & Spivack, 1980).

Observer agreement. A graduate and a senior undergraduate student spent approximately 6.5 hours training and practicing using the coding scheme by watching several videos, continually refining the scheme by adding examples and clarifications in order to become comfortable with the scheme. Thirty-one percent of the families (17/54) were coded for reliability achieving a Cohen's *kappa* of .73. Cohen's *kappa* is a method of measuring observer agreement by taking into account chance and is appropriate for nominal variables (Bakeman & Gottman 1997; Cohen, 1960). Percent agreements for each individual code ranged from 73-100%. The purpose of this coding scheme was to obtain details on the strategies children use to talk through and solve social problems they may encounter in everyday life.

Results

The following section outlines the makeup of the responses children gave as well as the analyses conducted to answer the current study's research questions. First, excerpts of children's responses to the story stems are presented in order to illustrate the qualitative variability that was obvious during the completion of the task. While this is not related to a specific research question, presenting a picture of the variations in answers children provided sets the context for the interpretation of the specific analyses. Subsequently, descriptive information regarding the various measures are presented, followed by preliminary correlations between demographic information, mutuality (MRO) measures, social problem solving strategies, and resolutions of story stems. Next,

an examination of the regressions conducted in order to investigate the predictive value of mother and father MRO on children's SPS strategies is presented. Finally, repeated measures ANOVAs were conducted to examine the differences in the variability of prosocial, socially negative, and avoidant strategies used depending on the story presented to the child. Additional *t-tests* were conducted where needed, to further understand the direction of significant interactions.

Sample of Responses to Short Story Problems

Quantitative analyses provide a general idea of how the different stories were answered by children; however, they do not offer a strong enough qualitative picture of how children responded to the story stems. In order to provide an illustration of the variation of responses, excerpts of highly prosocial, highly socially negative, and highly avoidant responses are shared.

Highly prosocial storyteller. First, a 54-month-old girl loved story telling and was clearly engaged and enjoying the task. In response to *Three's A Crowd*, the young girl described a cooperative and affectionate group of people, all involved in the children's soccer play:

- 1 Interviewer: ...Show and tell me what happens next.
- 2 Child: Mom comes over and says this to, this to, this to her friend, "Not nice to let another friend to not play with, you should let her," and then she picks her up.
- 3 Interviewer: She picks Jane up
- 4 Child: Uh huh... Whoops. [Figurine falls over.] And then with her little arm, she, Jane jumps right in and gives her [Mom] a big hug.
- 5 Interviewer: She gives her a big hug.
- 6 Child: "Can we please play," says Susan, says Susan's sister and the other the same size as her. [Child is referring to the friend Laura's figurine.] "Well sure, but you have to play cause if no one plays with me, I'll go home." "OK." And

- then everyone kicks the ball, and then Mom and Dad keep talking.
- 7 Interviewer: Hum HUM. And Susan is kicking the ball.
- 8 Child: Ah ha. And then she kicks the ball and kind of jumps up and went and rolled that way. [Makes ball rolls away.]
- 9 Interviewer: Oh, like that way, ok.
- 10 Child: Yeah like that, and then, then she [Susan] says, “My ball, it is over the fence,” and then the neighbour says, “We will get it” and then it [went] straight over. “Thanks.” [Neighbours give back the ball.] And then she grabs the ball and she says, “Who wants to kick the ball first?” “Me!!” “Come on Susan.” And then... “One second.” Susan says, “Dad, today can we go to the park and bring my friend there too?” “Then you must bring your little sister” [Dad says]. “Thanks.” And she runs over and kicks the ball and kind of went over the fence again.

The girl continued the end of her story with the children kicking the ball around and the neighbours helping with retrieving the ball when it was kicked over the fence. While the child initially used the mother to resolve the problem with the friend (line 2), the remainder of the story was highly prosocial and affectionate, with daughter and mother hugging each other, children discussing how they will play (e.g., line 10; “Who wants to kick the ball first?”), and Susan asking the father’s permission to go to the park. The issue generally never became a conflict, and all members played together and moved through the game smoothly, while using good discussion about the direction of play. This girl’s other stories were equally as detailed and although some involved socially negative components (e.g., the parents continued to argue about Dad losing keys before Susan steps in to stop the fighting), the responses were overall prosocial and positive, demonstrating high interpersonal skills and verbal abilities.

Highly “socially” negative storyteller. Some children demonstrated more negative behaviours in response to the story stems. For instance, this 38-month-old boy had colourful ideas for his completion of the *Three’s A Crowd* story.

- 1 Interviewer: ...Show and tell me what happens next.
- 2 Child: Yeah. He kicks him.
- 3 Interviewer: Who kicks him?
- 4 Child: These ones. [Lifts up George and Dave].
- 5 Interviewer: These ones. Yeah but Dave says, “But George, I’m your little brother.”
- 6 Child: Now we get to play with you.
- 7 Interviewer: You know what Dave says? But I said I don’t want to play with your little brother.
- 8 Child: Then he hurt him.
- 9 Interviewer: Huh! Dave hurt him. Why?
- 10 Child: 'Cause he didn’t want him to play. Ohhh. Now this George is playing with the dog now.

The child finished this story with the children and the dog playing together, trying to score on a goal. The child later specified that they are nice so they did not tell the little brother he could not play with them. While this child ultimately resolved the story in a prosocial and cooperative fashion, the boy’s pervasive reactions were aggression and causing pain to another child when conflict occurred (e.g., line 2). Many of his stories involved the characters kicking each other, knocking people down, or the dog eating all of the people, demonstrating a tendency to react with physical, aggressive responses to social problems. What was interesting about this child was his lack of negative *affect*. For instance, the child demonstrated happiness and enjoyment in the task, and did not show signs of malice or negativity in his actions that may be thought to accompany socially negative actions. This example was a good demonstration of how negative actions in the MSSB contrast with prosocial behaviours.

Highly avoidant storyteller. Finally, other children appeared to have difficulty discussing the issue at hand and employed strategies that were interpreted as avoiding the social problem. For instance, a 57-month-old boy was constantly off-topic or refused to answer any of the stories. While it is difficult to illustrate avoidant behaviour with text as much of the interpretation was due to body language and other non-verbal cues, the following shows distractibility and other evasion strategies in the *Cookie Jar* story.

- 1 Interviewer: ...Show and tell me what happens next.
- 2 Child: They get really angry.
- 3 Interviewer: They get really angry?
- 4 Child: Uh huh. [Slides off chair and peers at toys from under table.]
- 5 Interviewer: They say, Mom and Dad say, "Who ate those cookies?"
- 6 Child: [Few seconds pause, comes from under the table.] Why do these ones have shoes on? [Picks up Mom doll.]
- 7 Interviewer: Why do they have shoes on?
- 8 Child: Um hm.
- 9 Interviewer: Guess they're a little special. I didn't notice that, huh.
- 10 Child: Why doesn't this one have them? [Picks up George.]
- 11 Interviewer: Yeah, he doesn't have shoes on, but Mom and Dad have shoes on, wow.
- 12 Child: And grandpa and grand... [Replacing people around table.]
- 13 Interviewer: Grandpa, yeah he's got shoes on too. [2 sec pause.] "Who ate those cookies?" [In a lower pretense voice.]
- 14 Child: [Grabs Bob and pulls him away from toy table; drags him around play surface.]
- 15 Interviewer: Oooh what's he doing?
- 16 Child: Going for a walk. [Takes Bob away from camera view.]
- 17 Interviewer: He's going for a walk too? Wow! Ok, he's going for a walk.
- 18 Child: [Moving Bob around surface.]
- 19 Interviewer: Oh, there he goes.
- 20 Child: He runs by the house. [Moving Bob around.]
- 21 Interviewer: He runs by the house!?! [Making "running" sounds.]
- 22 Child: And there he's farther away [Moves Bob off camera view.]
- 23 Interviewer: {Now he's farther away}
- 24 Child: {And back to the house!} [Moves Bob back towards other toys.]
- 25 Interviewer: He runs back to the house?
- 26 Child: [Peers at toys from under the table edge.]
- 27 Interviewer: Oh boy, what's happening now in your story?
- 28 Child: This story is done. [Crashes all toys together.]

29 Interviewer: That story is done! Oh, good work! [Clapping.]

It is clear from examining this young boy's response that he did not address the issue of stealing a cookie from the jar. He preferred to distract the research assistant and drew the attention to the dolls' physical attributes (e.g., lines 11-13) in order to avoid talking about the problem at hand. Furthermore, while the RA attempted to bring him back on task with the required prompt ("Who ate those cookies?") the child continued to evade the issue by making the character go for a walk (line 16). This choice of actions occurred frequently with this child as well as with some other children, and it was coded as an avoidant strategy since they are removing the character from the scenario. Many of this child's stories took on the same themes, with him even refusing to answer any part of some story stems (e.g., the child responding "This story is done" to the initial prompt of "Show and tell me what happens next.") What is unclear from this excerpt is the child's body language. The child hid under the table, made shy glances at the RA, and held his head in his hands, which illustrated his uncomfortable feelings around the task. What made these actions more obvious was his engaging and positive nature in between the story stems, while the RA was setting up the next narrative. This difference in behaviour clearly demonstrated the stories' effect on the boy, bringing forth the question of the connection between how the children interact with a new adult and their social abilities.

Quantitative Analyses

Descriptive information. Table 2 presents descriptive statistics for the three subscales for parent-child Mutually Responsive Orientation, the average MRO score, as well as prosocial, socially negative, and avoidant problem-solving strategy scores. The

predominant range of MRO scores was 3, whereas the highest possible range according to the coding scheme was 4 (coding based on 5-point scale).

The range in types of strategies used for each story varied widely, as children used certain strategies more than others depending on the theme of the story, a question that is investigated in more depth below. In addition, although the highest range possible for each strategy was 4, the small ranges in Table 2 show children typically only enacted a couple of possible behaviours for each strategy type.

Table 2

Means, Standard Deviations, and Ranges for MRO Scores and SPS Strategies

	Mother-Child			Father-Child		
	Mean	<i>SD</i>	Range	Mean	<i>SD</i>	Range
<i>Time 1: Play Task (n = 58)</i>						
<i>Mutually Responsive Orientation</i>						
Harmonious Communication	4.03	.70	3.00	3.90	.74	3.00
Mutual Cooperation	4.22	.73	3.00	4.00	.77	2.00
Emotional Ambiance	3.79	.59	3.00	3.81	.63	3.00
Average Score	4.01	.58	3.00	3.90	.63	2.67
<i>Children only</i>						
	Mean	<i>SD</i>	Range			
<i>Time 2: Narrative Task</i>						
<i>Spilled Juice (n = 54)</i>						
Prosocial	.06	.23	1.00			
Socially Negative	.07	.26	1.00			

Avoidant	.80	.71	2.00
<i>Mom's Headache (n = 54)</i>			
Prosocial	.61	.74	3.00
Socially Negative	.74	.71	3.00
Avoidant	1.05	.71	3.00
<i>Three's A Crowd (n = 54)</i>			
Prosocial	.46	.61	2.00
Socially Negative	.98	.86	3.00
Avoidant	1.15	.79	3.00
<i>Lost Keys (n = 54)</i>			
Prosocial	.26	.44	1.00
Socially Negative	.46	.54	2.00
Avoidant	1.26	.68	3.00
<i>Cookie Jar (n = 53)</i>			
Prosocial	.53	.61	2.00
Socially Negative	.72	.72	2.00
Avoidant	.85	.61	2.00
<i>Average (n = 54)</i>			
Prosocial	.38	.30	1.40
Socially Negative	.59	.41	1.40
Avoidant	.23	.11	.45

Preliminary analyses. Pearson's correlations can be found in Table 3. Children's ability to resolve the social problems was positively related to child gender, child age, and prosocial behaviours. Specifically, girls, older children, and the use of more varied prosocial strategies were positively associated to resolving social problems. In addition, females were more likely to use prosocial strategies in the story stems. Furthermore, avoidant strategy use was negatively related with resolving social problems. Interestingly, Pearson's correlations demonstrated that mother-child and father-child MRO were not associated significantly, and no child gender differences emerged between mother- and father-child MRO scores. Finally, the three main problem-solving strategies, prosocial, socially negative, and avoidant were not significantly correlated, demonstrating discriminant validity for the three strategy categories.

Table 3

Pearson Correlations of Demographic Variables, MRO, and SPS Strategies

Variable	1	2	3	4	5	6	7	8
1. Child Gender	1	-.05	-.21	.21	.39**	-.13	-.12	.34*
2. Child Age		1	.15	.26	.20	.12	.01	.28*
3. MRO Mother-Child			1	.15	-.06	.12	-.03	-.08
4. MRO Father-Child				1	.10	.04	.14	.23
5. Prosocial Average					1	.12	-0.22	.53**
6. Socially Negative Average						1	-.12	.24
7. Avoidant Average							1	-.30*
8. Resolution								1

* $p < .05$; ** $p < .01$; #1-4 ($n = 58$); #5-8 ($n = 54$); Notes: Male = 0; No resolution = 0

Question 1: Mutuality and social problem-solving strategies. The first research question investigated whether mother- and father-child mutuality predicted their preschooler's use of social problem-solving strategies. Three separate multiple regressions were conducted to answer this question, one for each of the dependent variables. Specifically, gender, mother-child MRO, and father-child MRO were entered as forced entry predictors, and each problem-solving strategy (i.e., prosocial, socially negative, and avoidant) was entered as dependent variables in three separate multiple regressions. Gender significantly predicted the use of varied prosocial strategies (see Table 3), similar results to the preliminary correlations reported in Table 3. However, as is evident in Table 4, mother-child and father-child MRO did not significantly predict the use of prosocial, socially negative, or avoidant strategies in response to the story stems, which did not support the original hypotheses that parent-child MRO would predict the use of particular problem solving strategies.

Table 4

Multiple Regressions of Parent-Child MRO Predicting Social Problem-Solving Strategies

Variable	<i>B</i>	<i>SE B</i>	β
<i>Dependent Variable: Prosocial Strategies</i>			
Gender	.24	.08	.39*
Mom-Child MRO	.02	.07	.03
Dad-Child MRO	.00	.06	.01
<i>Dependent Variable: Socially Negative Strategies</i>			
Gender	-.01	.12	-.12

Mom-Child MRO	.06	.10	.08
Dad-Child MRO	.04	.09	.06
<i>Dependent Variable: Avoidant Strategies</i>			
Gender	.04	.03	-.19
Mom-Child MRO	-.02	.03	-.09
Dad-Child MRO	.03	.02	.19

* $p < .05$; Note: Male = 0, Female = 1

Question 2: Story differences in the use of problem-solving strategies.

Exploratory repeated measures analyses of variance were conducted to see whether boys and girls used problem-solving strategies differently in each of the five story stems. No hypotheses were made regarding this research question. Three repeated measures, one for each problem-solving strategy, were conducted with gender as a between-participants variable, with the five stories as the within-participants repeated measure. When examining prosocial strategy use, results revealed two main effects and an interaction. As was expected due to preliminary correlations and multiple regression, the main effect of gender was significant for prosocial strategy use, $F(1,51) = 8.80, p < .05, \eta^2 = .15$. Pairwise comparisons indicated that girls ($M = .5, SD = .35$) use more varied prosocial strategies than boys ($M = .27, SD = .19$). Huynh-Feldt corrections were employed due to a violation of the sphericity assumption. Specifically, story type was significant, $F(3.58, 182.47) = 10.28, p < .05, \eta^2 = .17$. Pairwise comparisons indicated that fewer prosocial strategies were used in both the *Spilled Juice* and *Lost Keys* stories (see Table 2 for means and standard deviations) compared to the remaining three stories. Furthermore, a significant story by child gender interaction was also found, $F(3.58, 182.47) = 3.22, p <$

.05, $\eta^2 = .06$. Follow-up *t*-tests, $t(52) = -3.44$, $p < .05$, indicated that girls ($M = .93$, $SD = .78$) used significantly more varied prosocial strategies in the *Mom's Headache* story than boys ($M = .3$, $SD = .54$), however boys and girls used similarly varied prosocial strategies in the remaining stories (see Figure 1).

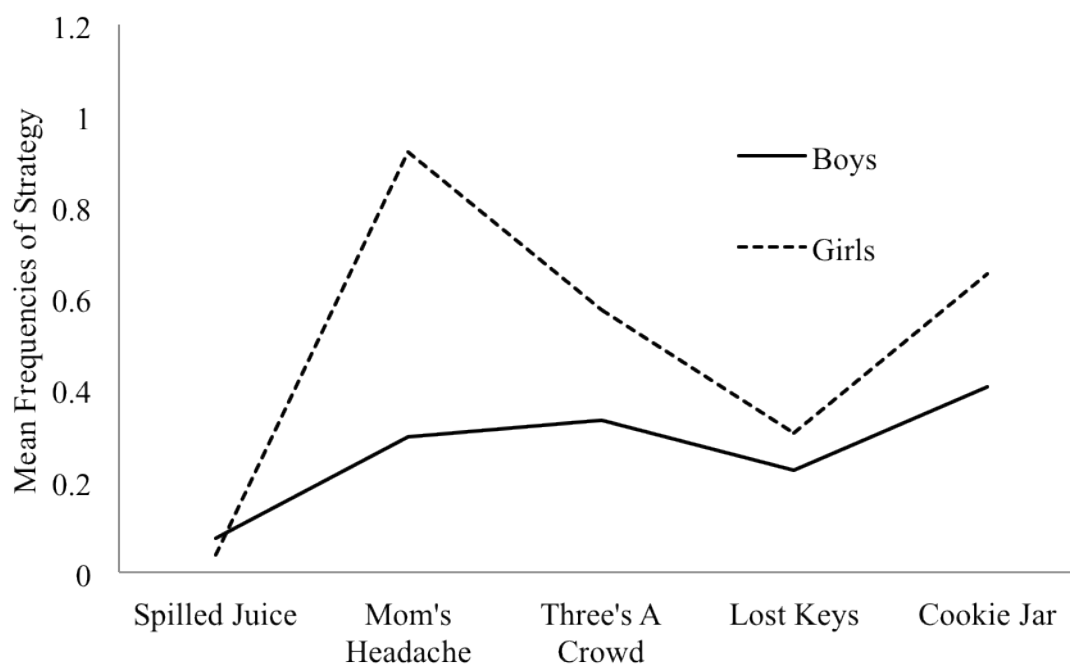


Figure 1. Means of prosocial strategy use by gender for each story stem.

In the repeated measures ANOVA examining the variability of socially negative strategies used, Figure 2 shows both a significant main effect and interaction. A significant main effect for story type was found, $F(4, 204) = 21.02$, $p < .05$, $\eta^2 = .29$. Pairwise comparisons indicated that each of the five stories differed significantly from each other in the use of socially negative strategies except for the *Mom's Headache* and *Cookie Jar* stories, which did not differ significantly in the children's use of socially negative strategies (for means and standard deviations, see Table 2). Interestingly, the significant story by child gender interaction, $F(4,204) = 2.66$, $p < .05$, $\eta^2 = .05$, may

further explain the similar means of socially negative strategies in the *Mom's Headache* and *Cookie Jar* stories. It was found that boys ($M = .96$, $SD = .76$) used more varied socially negative strategies in *Mom's Headache* compared to girls ($M = .52$, $SD = .58$); however girls and boys used similar amounts of socially negative strategies in the other stories ($t(52) = 2.41$, $p < .05$).

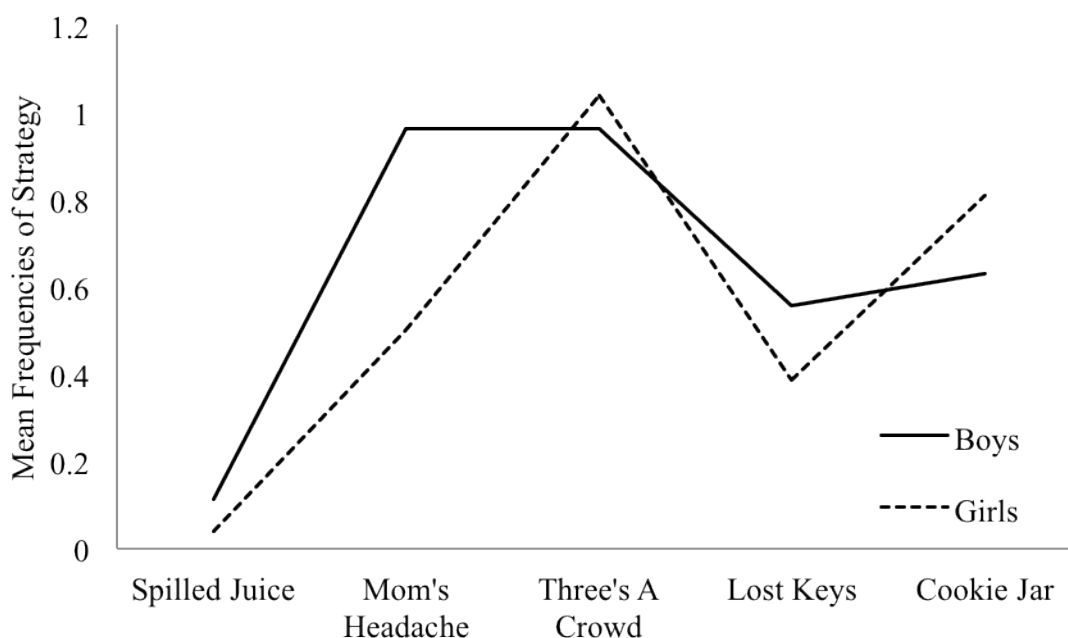


Figure 2. Means of socially negative strategy use by gender for each story stem.

Finally, a third repeated measures ANOVA was conducted with avoidant strategies as the dependent variable, whose means and standard deviations are in Table 2. This analysis revealed a significant main effect for story type, $F(4,204) = 5.2$, $p < .05$, $\eta^2 = .09$. Specifically, *Spilled Juice* and *Cookie Jar* had significantly fewer avoidant strategies used compared to *Three's A Crowd* and *Lost Keys*. On average, girls and boys used similar amounts of avoidant strategies in all stories, as represented by the non-significant story by child gender interaction.

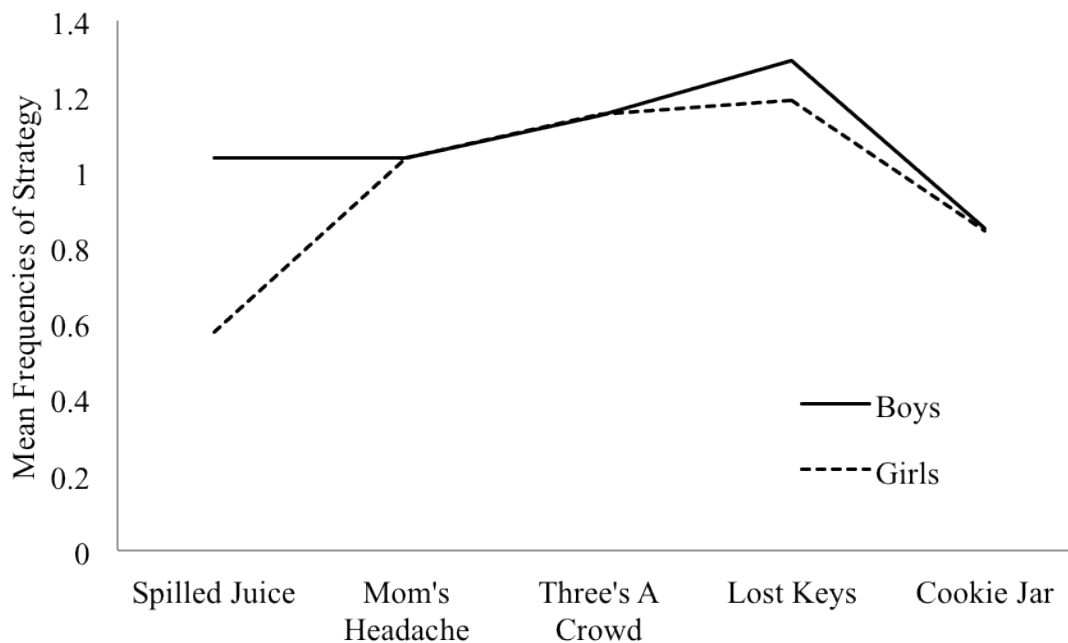


Figure 3. Means of avoidant strategy use by gender for each story stem.

Discussion

The purpose of the current study was to expand on the child social development literature by investigating parent-child mutuality predicting preschoolers' social problem solving in response to narrative story stems. In addition, the differences in strategies used by girls and boys in each of the five stories were investigated. What follows is an interpretation of the results found in the current study in light of existing literature. Finally, limitations regarding the current project as well as future directions and implications will be explored.

Complexity of Social Problem Solving

Samples of highly prosocial, highly socially negative, and highly avoidant responses of children to the narratives were presented in order to illustrate the variation of answers occurring in the current study. Passages were chosen according to those story stems that received high scores according to the coding scheme, representing narratives

that included a wider variety of particular strategies (e.g., scoring 4 on prosocial for a story stem means the child used four different prosocial strategies in their response). While it is possible that other narratives were highly prosocial in quality but only received a score of 1 (e.g., using helping behaviours throughout whole story stem), the current study focused on the importance of prosociality as a combination of alternative strategies rather than separating skills into smaller categories. This method is mirrored in some studies that were interested in children's flexibility to come up with alternative strategies to hypothetical situations as representative of social problem solving (e.g., Pettit et al., 1988; Shure & Spivack, 1980). While many studies examine particular prosocial or socially negative/antisocial behaviours (e.g., compliance: Kochanska, Aksan, & Koenig, 1995; aggression: Pakaslahti, 2000), it is generally agreed that "prosocial" and "antisocial" are umbrella terms comprised of many different actions that are equally important for the development of social competence. For instance, researchers have examined a combination of helping, sharing, and comforting behaviours as prosocial behaviour (Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011), and others have recognized that prosocial development includes a variety of elements, such as empathy, sympathy, compassion, concern, and cooperation, among others (Hastings, Utendale, & Sullivan, 2006). Similarly, antisocial behaviour (in the current study termed "socially negative") may be comprised of hostile and aggressive behaviour (Grusec, Hastings, & Almas, 2010). While it is difficult to include the numerous elements comprising of prosocial or antisocial behaviours, observational studies such as the current project allow for a more detailed examination into preschooler's range of social problem solving abilities. The importance of having a variety of prosocial skills from which to choose

from is crucial in social problem solving in aiding the child to choose strategies appropriately according to the task requirements (Rubin & Rose-Krasnor, 1992). Furthermore, it is repeatedly demonstrated that prosocial problem-solving strategies are associated with more positive social outcomes such as being well liked by others. For instance, in a study examining students in middle childhood, researchers found that children who were peer-nominated as prosocial were more likely to prefer constructive, directly assertive solutions to awkward social scenarios compared to children who were rated as bullies or bully victims (Warden & MacKinnon, 2003). This is the context in which the reported results are interpreted.

Problem-Solving Resolution and Child Characteristics

Many of the preliminary Pearson's correlations from the current study are partially supported by current literature. The present study demonstrated that children's resolution of the problem presented in the story stem was related to children being female, older, and using prosocial behaviours. While some researchers have demonstrated gender differences in problem solving, where girls tended to give more prosocial and competent responses than boys (e.g., Walker et al., 2002), others have found no gender differences in the proportions of strategies used (Green et al., 2008). More details on gender differences are discussed below. Furthermore, while research tends not to support older children using more varied or more frequent strategies, it is possible the types of strategies selected were more appropriate for the given scenario (Rubin & Rose-Krasnor, 1992). Furthermore, older children tend to give more complex prosocial stories with longer conversations between characters, potentially resulting in a higher likelihood the social problem will be resolved (Bretherton & Oppenheim, 2003;

Pettit et al., 1998). It is important to acknowledge that other factors may interconnect. For example, girls tend to give more coherent narratives (e.g., von Klitzing, Kelsay, Emde, Robinson, & Schmitz, 2000), which could influence the interpretation of the coders in determining whether the problem was resolved or not. Finally, preliminary correlations demonstrated avoidant strategies were negatively related to resolution of story stems. This is not surprising since one cannot resolve a problem without addressing it.

The current study also demonstrated that mother- and father-child mutuality as measured by MRO were uncorrelated. This suggests that the parent-child dyad may experience different levels of mutuality depending on the gender of the parent. Literature investigating parent-child mutuality supports this finding. For instance, it was found that mother-child dyads were more highly mutual than father-child dyads (Deater-Deckard et al., 2004), and a factor analysis indicated a better model fit when mother-child and father-child relationships were considered distinct in terms of mutual responsiveness (Aksan et al., 2006). Others demonstrated that the correlations between mother- and father-child mutuality might depend on the context (i.e., caregiving task vs. play; Lindsey et al., 2010). A further discussion of MRO and social problem solving continues below.

Mutuality and Social Problem-Solving Strategies

The hypothesis regarding higher MRO predicting more prosocial problem-solving strategy use in preschoolers was not supported by this study. Specifically, parent-child MRO scores did not predict children's use of prosocial, socially negative, or avoidant strategies in response to the story stems. Many studies investigating parent-child relationships and the outcomes of children's development suggest this hypothesis should have been supported. Specifically, parent-child dyads' mutual compliance (i.e., the

balance of parents' and children's compliance) during play was related to social competence as rated by teachers (father-child dyads only) as well as being liked by peers (both mother- and father-child dyads); however, mutual parent-child initiations (i.e., the balance of parents' and children's initiations during play) were not significantly related to the child's social competence as measured by teacher and peer ratings (Lindsey et al., 1997). The parent-child mutual initiation and compliance in the cited study were coded for parent and child individually, a different method from the current study. Also contrary to the present study's findings were Lindsey and colleagues' results indicating that more synchronous parent-child dyads, as measured by a global dyadic code, had children who were more socially competent as well. Similarly, lower parent-child mutuality as coded during an interaction task predicted higher externalizing behaviours in young children (Deater-Deckard et al., 2004). In a study investigating parenting quality with children's social problem-solving skills, researchers found that early maternal sensitivity and caregiver attachment were predictive of socially competent responses to hypothetical social situations, while early and concurrent maternal sensitivity were negatively related to aggressive solutions (Raikes & Thompson, 2008). Although these researchers did not measure parent-child mutuality, these parenting characteristics are related to characteristics of mutuality, and therefore similar results may be expected with these variables. Other researchers using alternative methods, found links between children's perceptions of parents and child behaviours (e.g., Laible et al., 2004; Oppenheim, Emde, & Warren, 1997). Specifically, positive or disciplinary perceptions of mothers in the MSSB were related to fewer externalizing behaviours in preschoolers as determined by a behaviour checklist. Furthermore, children's negative perceptions of mothers were

related to more externalizing behaviours (Oppenheim et al., 1997). In another study, researchers found that parental perceptions based on a self-report questionnaire predicted themes children used in an attachment-based narrative. As well, warm parenting predicted prosocial themes in attachment stories, while parental perceptions of harsh parenting predicted aggressive themes in the children's story stems (Laible et al., 2004). It is clear that some aspects of parenting are associated with positive outcomes in children's social behaviour, however parent-child mutuality's predictive power on social problem solving has yet to be resolved. Some explanations exploring why the hypothesis was unsupported follow.

While these studies support the original hypothesis that highly mutual parent-child dyads would predict prosocial themes in a narrative task, these studies do not directly mirror the methods utilized in the current project. For instance, many used checklist or self-report data to determine parent and child behaviours instead of focusing on more objective observations of interactions. It is possible that the hypothesis was not supported due to these methodological differences. Furthermore, many hypothetical scenarios presented to children have more obvious social goals (e.g., obtaining a toy from another; Rubin & Rose-Krasnor, 1992). However, in the MSSB, the goals are ambiguous as two or more interpretations and directions can be taken in each story (e.g., loyalty to friend versus to sibling or use of authority figure in *Three's A Crowd*). Perhaps these narratives make the task more complex; however, it is proposed they are representative of real-life situations the children may encounter (Emde, 2003), where the goals may not be obvious. Moreover, particular characteristics of the current study may have prevented differences from emerging. For instance, MRO scores as determined by coders had a

small range, as most of the families were moderately or highly mutual, with very few being low in mutuality. Perhaps this small range prevented differences in social problem solving strategies from being detected. In addition, the narratives utilized in the current study may have elicited slightly different responses than a direct interviewing technique as used in many studies, resulting in an unsupported hypothesis. Finally, it is likely a larger and more diverse sample in terms of demographics would have supported the hypothesis. Unlike the current study's main hypothesis, other significant results were discovered when examining story differences in the MSSB.

Story Differences in the Use of Problem-Solving Strategies

In examining children's use of prosocial, socially negative, and avoidant social problem-solving strategies in the five narratives, it was found that children used a variety of strategies depending on the scenario presented. In general, different stories called for different types of strategies. For instance, prosocial strategies were employed less frequently in the *Spilled Juice* and *Lost Keys* stories, while use of negative strategies varied more depending on the story presented. Finally, avoidant strategies were used more in *Three's A Crowd* and *Lost Keys* and less frequently in *Spilled Juice* and *Cookie Jar*. These findings are important since they show even young children can differentiate context and are able to differentially apply problem-solving strategies or have more difficulty competently resolving certain scenarios. While many studies utilizing the MSSB typically collapsed codes across all story stems (Bretherton & Oppenheim, 2003), the current study's results suggested this might not be appropriate when examining problem solving, as the strategies used can be situation-specific. Furthermore, it has been shown that older children (i.e., kindergarten compared to preschoolers) are more able to

select strategies according to the task requirements (Rubin & Rose-Krasnor, 1992); the results of the current study suggest that the children in this age group (i.e., older preschoolers) are beginning to develop these abilities. Additionally, frequency of strategy use changes depending on the goal of the situation, further demonstrating the differentiation of the problem-solving strategy use according to context (Rose-Krasnor & Rubin, 1983). Some researchers acknowledge the distinctness of social situations, keeping them separate in the analyses. For instance, Walker and colleagues (2002) investigated strategies used by boys and girls in ambiguous and intentional provocation situations, peer group entry scenarios, and social expectation situations as separate entities, recognizing children may respond differently according to the task requirements. The current study's results suggest that preschoolers are beginning to selectively use particular social problem solving strategies according to the task requirement, and a comparison of the narratives' themes may provide potential explanations.

In original research examining story differences in the MSSB, correlations for positive and negative themes were investigated (von Klitzing, Kelsay, & Emde, 2003). Except for *Spilled Juice*, which had lower correlations, *Three's A Crowd*, *Lost Keys*, and *Cookie Jar*'s correlations for negative themes were moderate (in the .30-range), suggesting while there are some similarities between the negative themes demonstrated in narratives, a great amount of variance remains to be explained. In fact, these three stories have more complex triadic conflict themes, perhaps an indication of the greater similarity in negative responses to the narratives. In addition, the four above stories had very low correlations in positive themes, suggesting that there is a lot of variability in the

presentation of positive themes in the MSSB (von Klitzing et al., 2003). These findings suggest there is validity in differentiating the narratives according to content themes.

Some differences in strategies used in response to the MSSB are clearer in describing the responses of children. For instance, the majority of participants responded to *Spilled Juice* with, “Mom/I just wiped up the juice.” This was coded as a positive, autonomous behaviour, and therefore neither prosocial, socially negative, nor avoidant, suggesting this occurrence was considered an accident and not worthy of punishment for most children, thus, explaining the low occurrence of prosocial, negative, and avoidant behaviours. Alternatively, the low occurrence of prosocial responses in *Lost Keys* is evident in that this same story had higher levels of both socially negative and avoidant behaviours. In fact, many children did not know how to respond to this story, appeared uncomfortable with the story stem, frequently said, “I don’t know,” or had a character find the keys without dealing with the argument. This is an emotionally charged story, as children are likely deeply affected by their parents arguing. It is possible they are either not comfortable with being around a similar scenario or they do not know how to react appropriately to it. This may stem from both an unfamiliarity and familiarity with this narrative, as experiences may cause discomfort. Finally, *Three’s A Crowd* may have elicited more socially negative and avoidant responses because of the more complex conflict inherent in the story stem. The dilemma in choosing between a friend and a younger sibling may be more difficult for some children, particularly when choosing relevant, competent strategies to remedy the situation. In fact, this is more evident in that both boys and girls used equal amounts of avoidant strategies for this story stem. Young preschoolers have difficulty understanding other people’s perspectives, an ability that

develops with age, which may add to the complexity of this particular narrative. In addition to the strategy-use differences, further details were revealed in Gender by Story interactions.

Gender by Story interactions were demonstrated with certain stories. Specifically, girls used more prosocial strategies than boys in *Mom's Headache*, while boys used more varied socially negative strategies. This story stem highlights the issue of compliance. Therefore, this might have been an ideal story in which prosocial responses in girls would outshine those of boys. This is partially mirrored in results that showed girl toddlers tended to demonstrate more committed compliance (i.e., willingly complying with request, internalizing the request) than boys, but less situational compliance (i.e., cooperative, needing frequent reminders and parental control to stay on task) than boys (Kochanska et al., 1995). In the current study, many boys would complete their story stem by turning on the television (i.e., going against Mom's wishes), while many girls tried to find a quiet game to play with their friend, or suggested they turn on the television softly, which was interpreted as a type of negotiation. This gender difference could also be reflected in the social upbringing of children and how society encourages certain behaviours with certain genders. Specifically, young girls' play tends to centre on small nurturing groups that resolve conflicts by compromising, while young boys' play tends to be qualified by rough and tumble play with conflicts resolved by physical force (Pasterski et al., 2010). Interestingly, boys and girls used similar amounts of avoidant strategies across the five stories, suggesting this may be a distinct social problem solving strategy from prosocial or socially negative ones. Few to no studies were found to

support these findings, suggesting it is a new area of research; therefore, avoidant problem solving strategies should be investigated further in preschoolers.

What is also clear from distinguishing between scenarios is that children use different strategies depending on the problem at hand. Furthermore, it appears girls change strategies more often than boys. This is apparent in that boys most often use aggression more than girls across contexts; however, girls are not uniformly more prosocial than boys. Gender differences were also found in Rubin and Rose-Krasnor's (1983) study in which girls came up with more alternatives to a hypothetical situation than boys. As discussed above, similar findings in a study examining gender differences in social problem solving demonstrated that girls tended to use prosocial strategies over boys and boys tended to use negative or physical strategies compared to girls (Green et al., 2008). Furthermore, while children used more prosocial strategies across different types of stories than negative (e.g., agonistic) strategies, boys used agonistic strategies more than all other types except prosocial strategies. Girls' agonistic strategies remained among the most infrequent strategies used along with manipulating affect (Rubin & Rose-Krasnor). Importantly, however, in the current study, four of five narratives demonstrated that girls and boys use similar amounts of prosocial, negative, and avoidant strategies. It is clear that girls and boys use different amounts of varied strategies depending on the situation presented, which has clear implications for dealing with social behaviours in applied settings.

Similar gender differences have been found in previous research investigating social problem solving in young children depending on the social context. For instance, in a study looking at gender and strategy competence in four scenarios, researchers found

that girls and boys both tended to use similar strategies when faced with an ambiguous provocation situation (e.g., appealing to authority or using simple directives), however girls used more prosocial responses than boys overall, whereas boys were more likely to use retaliatory or aggressive responses (Walker et al., 2002). In an intentionally provocative situation, both boys and girls again used similar strategies, however boys were more likely to use verbal or physical aggression. Interestingly, neither gender gave prosocial responses in this scenario, suggesting they are taking the context into account. Most children did not know how to act in a peer-group entry situation, however only boys responded using physical aggression, while girls tended to have several other responses such as simple requests, appeal to authority, and manipulation. Finally, in a social-expectation situation, girls mostly said they would wait, while boys would most often appeal to authority; however many children did not know how to respond to this scenario, suggesting an unfamiliarity with handling situations such as these (Walker et al.). These gender differences may be trends that result from societal directions in the socialization of boys and girls, however individual differences within each gender may be more distinct than between gender differences.

Limitations

There are various limitations that may have impacted the current study's results and therefore the generalizability of the results to other populations. First, the study's sample size was small ($n = 54$ at Time 2) and homogeneous in terms of ethnic background (i.e., mostly Caucasian) and household income (i.e., most families earning more than \$69 000). Therefore the sample was not representative of all children of this age group across all cultures and economic backgrounds. In addition, the small sample

size prevented the use of more complex statistical procedures (e.g., MANOVAs), which is useful in comparing strategies and story stems in more detail. Furthermore, in a more diverse sample, a wider variety in quality of parent-child interactions as well as lower and higher functioning children may have been represented, allowing for more power in predicting social problem-solving strategies from parent-child mutuality.

Second, the study did not measure some aspects of development in the children. Narrative coherence is the ability of a child to smoothly and clearly recount a story to others. Research has shown that narrative coherence is related to both gender (i.e., girls are more coherent than boys) and low narrative coherence tends to be related to aggression and other behavioural outcomes (von Klitzing et al., 2000). Similarly, level of vocabulary or verbal ability was not measured in this study, which is acceptable because the social problem-solving coding scheme allowed for nonverbal communication between the child and the RA. Mixed results appear in the literature as to whether language competence is related to prosocial narrative responses (Bretherton & Oppenheim, 2003). Furthermore, no parental measure of children's problem solving abilities or general social competence was included in the current study. Measures of teacher reports on the child's social and emotional competence were gathered in the larger study, however only 40 families had teachers complete the questionnaires, diminishing the already small sample size, and so these results were not reported in the current study. Perhaps investigating relations between the child's narrative coherence as well as others' reports on social competence would have added additional detail to the strategies children chose to employ in the MSSB.

Finally, limitations exist with the social problem-solving coding scheme used in the current study. The coding scheme was particularly devised for the current research and was formed using several coding procedures conducted in similar studies in the literature. The validity remains unknown for this coding scheme; however due to its similarity to others (e.g., Green et al., 2008; Laible et al., 2004; Mize & Ladd, 1988; Pettit et al., 1988; Robinson et al., 2007; Walker et al., 2002) and their findings demonstrating associations with other social competence measures, support is available for the use of the current scheme. The social problem-solving coding scheme lacked in some detail in terms of describing the behaviours of the children. In particular, the presence or absence of behaviours was coded once per story (i.e., compliance could only be coded once in each story stem), which may mask other problem-solving characteristics in the narratives. For instance, coding the frequency of compliance instances throughout each story or rating the quality of compliance on a Likert-type scale may have contributed a different quality of results for the study. However, due to time constraints of the present research, as well as the occurrence of present/absent coding in other similar coding schemes (e.g., Robinson et al., 2007), this format was employed. Despite the limitations to the current study, the findings remain an important contribution to the literature on social problem solving and children's narratives.

Future Directions and Implications

Despite limitations present in the current study, examining parent-child relationships and children's social problem solving strategies brought forth important findings. While parent-child mutuality was not found to predict children's problem solving strategies, this bidirectional process generally impacts much of the children's

socialization and development, as was shown in the literature. As such, further investigation into appropriately measuring mutuality is recommended. For instance, different authors measure this construct in various ways (e.g., observing individual behaviours and creating a balance score or scoring whole dyads on particular characteristics), which can impact how the construct is portrayed in research. Furthermore, future studies examining parent-child mutuality should continue to investigate its predictive impact on various elements of social and emotional competence. Further studies investigating the whole dyad can help inform parent-child relationship intervention programs. These programs can help foster mutuality in the way the parent-child dyad works together to encourage quality relationships that will benefit the child's developmental outcomes and the family's well-being as a whole. Parent-child interactions, and increasingly, parent-child mutuality, are crucial areas of study that highlight distinct factors from studying individual dyad members out of context. Future studies on mutuality will continue to round out the current literature on parent-child interactions.

Child's social problem solving has been extensively investigated over the decades. However, unique to this study is the use of narratives in order to elicit these strategies in a non-threatening and playful setting. A few studies have looked at strategy choice according to context, however, further investigations into the characteristics of various social situations can help shed light onto reasons why children may respond in differently. For instance, what is it about *Lost Keys* that elicited many avoidant responses? Interpretations on how to help children with social problem solving deficits may change depending on if the answer is due to their level of experience with parental

arguments or the highly emotional nature of the situation. If similar results are found in comparable story stems with equally emotionally upsetting themes, then it may be concluded that children have difficulty responding to narratives with these elements. Research in context-specific impacts on social behaviour is crucial particularly in child development for social skills interventions or family therapies, where children may have social difficulties in specific areas of their lives.

Conclusion

In conclusion, the current study adds a new depth to the study of social problem solving in preschoolers. Parent-child mutuality was not found to predict children's use of particular social problem-solving strategies, however it is believed that with further study (with larger samples) and rigorous methodology, that associations will be found. Furthermore, children's use of prosocial, socially negative, and avoidant social problem-solving strategies was found to vary according to the story stem presented, suggesting young children's ability to distinguish task needs. These abilities, which begin to develop in the preschool and kindergarten years, are crucial in developing children's ability to interact and solve conflicts with others, encouraging proper socialization and social competence for the school years and beyond.

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Appendix A: MacArthur Narrative Coding System

General Protocol Information:

- Establish rapport first for about 10 min. (or as needed)
- Find quiet area
- Ask family members to leave the room
- Place limits on story length, don't allow child to go to excessive lengths
- If unsure of ending, ask, "Is this the end?"
- Clarify vague responses: e.g. "He got punished" as who punished whom so transcriber knows
- Older siblings, younger siblings, and friends used should be of the same gender as the child
- If child interrupts your part of the story, say "I'll tell the beginning, and you get to finish it"
- If unsure of who says it, say: "Who in the story says that?"

START

I: Now we're going to tell stories together. I will begin each story and then ask you to finish it.

INTRODUCTION OF FIGURES

M= Mother figure

F= Father figure

G = Grandfather figure

C1= Older brother/sister (Susan/George)

C2= Younger brother/sister (Jane/Bob)

C3= Friend

D= Dog (Barney)

I= Interviewer

I: Look who we have here [*bring out the family*]. **Here's our family. This is grandpa, this is mom, this is dad, this is the big sister/brother and her/his name is Susan/George, and this is the little sister/brother and her/his name is Jane/Bob and this is their dog and his name is Barney.** [*Show the figures as you name them*]

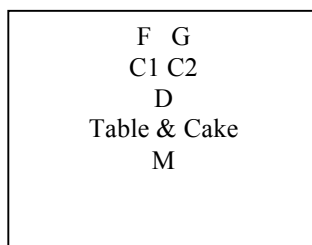
I: Who do we have here? [*Get child to name each family member, with help if necessary*]

WARM-UP TASK: THE BIRTHDAY

Props: Table, birthday cake

Characters: All family characters, including dog (but not friends and other non-family characters)

Child



Interviewer

I: You know what? It is Susan/George's birthday and Mom made her/him this beautiful cake [*bring out cake*]. It's time for the party!

M: Come on Grandma, Dad, Jane/Bob and Susan/George, it's time to celebrate Susan's/George's birthday.

I: Can you get the family ready at the table?

I: Show me and tell me what happens now

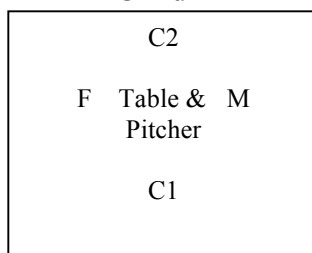
*** Let child play with figures or tell a story yourself if child is in need of help.
Remember that demonstrations/leading prompts should NOT be used for the remaining stories. They can only be used for this warm-up task***

STORY #1: SPILLED JUICE

Props: Table, pitcher

Characters: Mother (M), father (F), older sibling (C1), younger sibling (C2)

Child



Interviewer

I: **The family is thirsty and they are going to have some juice. Now put the family around the table so they can have some juice** [*wait until figures are placed*].
Here's the family drinking their juice. Susan/George gets up and reaches across the table and uh-oh! She/he spilled her/his juice all over the floor [*make child spill the pitcher onto the floor so that it is visible to the child*].
 I: **Show me and tell me what happens now.**

Prompts if needed:

- If child does nothing about the juice:

I: **What happens about Susan/George spilling the juice?**

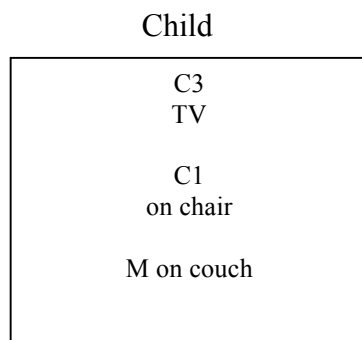
- If child only picks up the pitcher and stops:

I: **Did anything else happen?**

STORY #3: MOM'S HEADACHE

Props: Couch, television, armchair

Characters: Mother (M), older sibling (C1), friend (C3)



Interviewer

I: [*Set out objects as illustrated, name each as you set them up*]. **We have a couch, a TV, and a chair.**

I: **Mom and Susan/George are sitting and watching TV** [*mom turns to child*]

M: **Oh Susan/George, I have such a headache! I just have to turn this TV off and lie down!** [*Mom gets up and turns the TV off*]. **Susan/George, can you find something quiet to do for a while?**

C1: **Ok Mom, I'll read a book** [*Mom lies down on the couch and Susan/George remains in chair and reads a book*]

I: [*Ding-dong make doorbell sound*] **It's Susan/George's friend Laura/Dave!**

C3: **There's this really neat show on TV, can I come in and watch with you?**

I: **Show and tell me what happens next.**

Prompts:

- If Susan/George or friends doesn't turn on the TV:

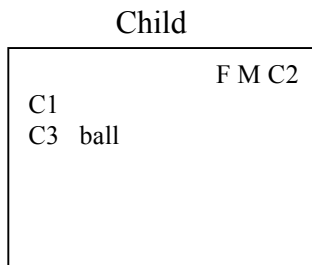
C3: **Oh come on! I know you'll really like it!**

- If Susan/George or friend turns on the TV:
M: **I have such a headache** [*Expressing mild pain*]

STORY #5: THREE'S A CROWD

Props: Ball

Characters: Mother (M), Father (F), Older sibling (C1), Younger sibling (C2), Friend (C3)



Interviewer

I: **Mom and dad are talking to the neighbours and Susan/George is playing with her/his friend Laura/Dave and her/his new ball** [*Place figures and ball as illustrated*]

I: **Show me how they play with the ball.**

I: **They're playing with Laura's/Dave's new ball. And Jane/Bob, the little sister/brother, runs out of the house and says: "Can I play with you?"**

C1: **Sure!**

C3: **No way! If you let your sister/brother play, I won't be your friend anymore!**

I: **Show me and tell me what happens next.**

Prompts:

- If Susan/George doesn't come to Jane's/Bob's defense:

C2: **But Susan/George, I'm your sister/brother!**

- If sibling is included:

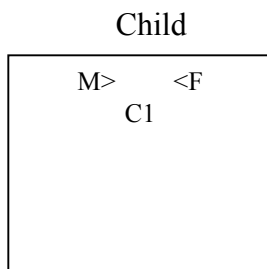
C3: **But I said, I don't want to play with your little sister/brother!** [*Angrily*]

STORY #7: THE LOST KEYS

Props: None

Characters: Mother (M), Father (F), Older sibling (C1)

Setting: Mom and dad facing each other, child observing



Interviewer

I: Susan/George comes into the room and sees Mom and Dad looking at each other like this. Look at my face [*Show angry face*]

M: [*Angrily*] You lost my keys!

F: [*Angrily*] I did NOT!

M: Yes you did, you always lose my keys!

F: I did not lose them this time!

I: Show and tell me what happens now.

Prompts:

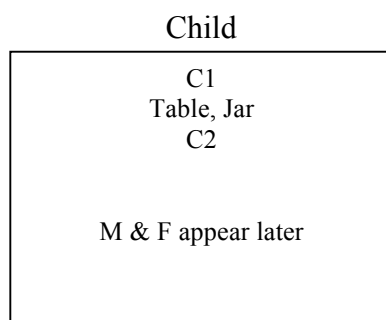
- If child does not enact end or resolution of conflict:

I: What's going to happen about Mom and Dad's argument?

STORY #13: THE COOKIE JAR

Props: Table, jar

Characters: Mother (M), Father (F), Older sibling (C1), Younger sibling (C2)



Interviewer

I: Susan/George and Jane/Bob are in the kitchen. Jane/Bob sees the cookie jar and she/he takes a cookie.

C1: Mom said NO cookies!

C2: Please don't tell Mom and Dad about it! [*Dramatic voice*]

I: You know what, HERE COME MOM AND DAD!! [*Emotion in voice*]

I: Show and tell me what happens now.

Prompt:

- If nothing is said about the cookie that was taken:

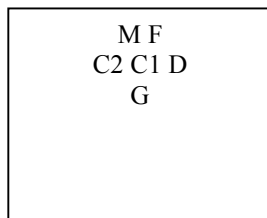
M & F: Who ate those cookies? [*Emotion in voice*]

STORY #14: FAMILY FUN

Props: Offer child whichever props/figures he/she would like

Characters: Mother (M), Father (F), G (grandfather), Older sibling (C1), Younger sibling (C2), Family dog (D)

Child



Interviewer

I: Here's the family at home.

M: [*Happily to father*] **Today is our day off, let's do something together!**

F: **Yeah, let's do something that would be fun for the whole family!** [*Mother and father turn to the children*]

M&F: **Girls/Boys, what would you like to do today?**

I: Show me and tell what happens now.

Interviewer can become more involved, if necessary by suggesting activities if child is not able to do so, e.g. playing in the park or having a picnic.

Appendix B: Mutually Responsive Orientation Scale:

The following items are rated on a scaled from 1 to 5 for each context of interest (e.g., item 1 is rated at a 3/5 for the clean-up context). Coders did not know which item belonged to which dimension while coding. Original kappa from the study cited below was .72; Cronbach's alpha = .92

Coordinated Routines

The Coordinated Routines subscale measures the extent to which the dyad displays coordinated activity and settles comfortably into routine activities that become scripted over time. Easy and comfortable coordination reflects implicit shared procedural expectations.

- 1R. Routines are a source of conflict.
- 2R. Seemingly no routines present, or if present, very choppy and rough.

Harmonious Communication

The Harmonious Communication subscale measures the extent to which both verbal and nonverbal aspects of communication flow smoothly.

- 3. Interaction flows smoothly, is harmonious.
- 5. Communication flows effortlessly and has a connected back-and-forth quality.
- 6. Dialogue promotes intimacy and connection.
- 7R. Dyad participates in very little or no communication.

Mutual Cooperation

The Mutual Cooperation subscale measures the extent to which the dyad effectively resolves potential sources of conflict and the extent to which partners are open to each other's influence.

- 4R. Dyad is unable to accept roles (e.g., frequent autonomy struggles and/or resistance).
- 8. Subtle influences are sufficient for cooperation.
- 9. Parent and child adopt a receptive, willing stance toward each other's influence.
- 10R. Conflicts escalate, get out of hand.
- 12. Parent and child are psychologically in tune with each other.

Emotional Ambiance

The Emotional Ambiance subscale measures the extent to which the dyad enjoys an emotionally positive atmosphere indicating clear pleasure in each other's company.

- 11. Dyad effectively addresses occurrences of distress and negative affect.
- 13. Overall emotional ambiance is positive and warm.
- 14R. Dyad engages in clear bouts of negative affect.
- 15. Dyad engages in clear bouts of joy.
- 16. There are natural displays of affection.
- 17. Expressions of affection are a source of pleasure for both.

Note. The item numbers refer to each item's position on the coding sheet, and *R* indicates a reversed item.

Source: Askan, N, Kochanska, G., & Ortmann, M. R. (2006). Mutually responsive orientation between parents and their young children: Toward methodological advances in the science of relationships. *Developmental Psychology*, *42*, 833-848. doi: 10.1037/0012-1649.42.5.833

Appendix C: Social Problem-Solving Strategies Coding Scheme

The following categories should be coded for the responses of the children in the MacArthur Story Stem Battery by using videos. Code each sub-point (e.g., negotiating, coercion: each black bullet in Autonomous, Prosocial, Socially Negative, Active Avoidance) as present or absent, regardless of actor/target. See additional notes & specific occurrences at the end of document.

Autonomous: (effective or ineffective resolution)

Actions that are independent, self-directed, and do not involve other characters

- **(APos) Positive**: e.g., “Susan just cleans up the juice”; positive behaviour/action without interacting with others
- **(ANeg) Negative**: e.g., Character sits by himself crying, sulking, moping, negative facial expressions, negative talk about themselves; negative behavior/action without interacting with others (e.g., dumps cookies on floor/in garbage, cookie from mouth back into jar)

Prosocial: (effective resolution; must involve other characters)

- **(Comp) Compliance** while interacting/involving others (e.g., following what another asks them to do; telling the truth in cookie story)
- **(Help) Helping behaviours**: Sharing, working together, collaboration, cooperation (e.g., working together to find the keys)
- **(Nego) Negotiation**: Exchanging for something desired, compromise (e.g., Little brother can watch us play soccer because he’s too little; puts on a quiet tv show)
- **(PosT) Positive talk**: Inclusion, friendliness, polite requests, discussion, explanations (encouragement, validating others; e.g., mom and sister are talking together in Lost Keys story “You are really good at soccer!”, apologizing)

Socially Negative: (ineffective resolution; must involve other characters)

- **(NComp) Non-compliance** while interacting/involving others (e.g., turning on tv after Mom turns it off)
- **(Agg) Aggression** (verbal, physical): (e.g., taking something from others, insulting, hitting, threats)
- **(Autho) Appeal to authority**: parents are involved in the resolution/main issue (e.g., Goes to tell mom what other did; Mom comes in and tells children to “Play nice”)
- **(NegT) Negative talk**: Exclusion, demanding, one-sidedness, close-minded, not considering others’ opinions, argumentative, lying, blaming others (e.g., lying about who ate cookies)

Active Avoidance: (ineffective resolution; not necessarily a social act)

- **(Ignore) Ignoring problem**: (e.g., boy runs away from parents’ argument, girl hides from parents, some removal of character from story; obviously ignoring direct question from RA)
- **(Refuse) Refusing** to answer problem, “I’m too shy,” “I don’t want to say” (different from “I don’t know”)

- **(NoAns) No Answer:** Withdrawn from story (or within story), silence, child is uncomfortable with task, doesn't know what to do/say, "I don't know"
- **(Evade) Evasion:** Off-topic story that has nothing to do with main problem/issue (e.g., waterfall comes in); changing story that is still generally on topic of the main problem/issue (e.g., ants come in and take the cookies away; mom and dad put on a show during 3's Crowd story); distraction/leaving scene: attention to other things (e.g., "look at my foot on the chair!"; "Why does this girl only have one eye?"; wanting to play with other toys)

Resolution:

- Code whether social problem was resolved or not
- Do not worry about story being positive or negative, solely judge on whether there is an outcome
- Make a general judgment of yes or no
- May attempt to resolve but might not be to our standard
- ****Take notes on variability of resolutions****

Additional Notes:

- Parental discipline is not counted because it is not part of the main issue
- In the cookie jar scenario, if the child lies to the parents (i.e., tells them they both or neither of them ate the cookie) it is considered socially negative (lying) even though they are being loyal to their sibling
- Code behaviours regardless of actor/target
- Treat the dog (or any animal figures) as a human being and active participant in the story.
- Code whole story, even parts that follow the resolution of the story.

Social Problem Solving Coding Scheme inspired by:

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Mize, J., & Ladd, G. W. (1988). Predicting preschoolers' peer behavior and status from their interpersonal strategies: A comparison of verbal and enactive responses to hypothetical social dilemmas. *Developmental Psychology, 24*, 782-788. doi: 10.1037/0012-1649.24.6.782

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