Children's Co-Construction of Shared Meanings and Internal State Language During Pretend Play

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ABSTRACT

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Children's co-construction of shared meanings and internal state language (ISL) were investigated in 65 focal children (*M* age = 56.4 mos.) during pretend play with their younger sibling (*M* age = 34.9 mos.) or older sibling (*M* age = 75.8 mos.) and best friend (*M* age = 57.8 mos.). The data consisted of videotaped free play sessions at the focal children's home with siblings and with friends. Using the video recordings, the transcribed play dialogue was coded for children's construction of shared meanings (Howe, Petrakos, Rinaldi, & LeFebrve, 2005) and ISL (Recchia & Howe, 2008). Observations revealed the focal children employed a wide range of the shared meaning strategies across both play sessions, with introductions used more frequently with their sibling and positive and neutral responses and prosocial behaviour occurring more often with their friend. Birth order differences indicated that first-born focal children responded more negatively, ignored, and engaged in more nonmaintenance behaviours with their younger sibling than second-born focal children. First-borns also used more explanations with their younger sibling, whereas second-borns extended their older siblings' ideas. There were no birth order differences for the focal children in the friend play session. Among the four ISL categories, goals and cognitions were referred to significantly more often than emotions and preferences, regardless of the play session. Lastly, the focal children's shared meaning strategies and ISL were significantly correlated, with several significant associations found in the sibling session compared to

the friend play session, thus demonstrating the complexity of interactions between siblings. Findings are discussed in relation to theory, literature, and in terms of the effect of the partner on children's social and cognitive development.

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Introduction

Typical models of development emphasize the psychological value of play and its significance for children's social and emotional development. These ideas stem from the traditional theories of Piaget (1962) and Vygotsky (1966; 1976), who argued social and cognitive development occurs through interactions with others and these interactions help children to construct an understanding of their social world (Howe, Petrakos, Rinaldi, & LeFebvre, 2005). Pretend play, or pretense, provides an excellent context for children to foster their social cognitive development. Play partners need to establish, maintain, and move forward with a pretense scenario, therefore a series of reciprocal and mutually agreed upon negotiations and collaborations between the partners must occur (Brown, Donelan-McCall, & Dunn, 1996). Without negotiating social interactions, collaborative pretense will not continue.

Sibling relationships and friendships are both significant relationship contexts for young children (Dunn, 2002; Hinde, 1979). Although there are similarities between these two relationships, there are important differences. First, friendships have a more reciprocal (i.e., equal and returned exchanges) dynamic, whereas sibling relationships tend to be complementary (one dominates due to greater authority, but complements the other's behaviour, as in teaching) due to age differences (DeHart, 1999; Hartup 1989). Although at times, siblings may engage in reciprocal exchanges in term of play and conflict interactions (Howe, Ross, & Recchia, 2011). Second, while both relationships are likely to be close, sibling relations have a wider range of affect (e.g., positive, ambivalent, negative) than peer relationships. Lastly, sibling relationships are not voluntary (children do not choose their siblings), whereas friendships are optional,

mutual, and reciprocated relationships. A large body of research supports the importance of friendships for young children (Rubin, Bukowski, & Laursen, 2009; Rubin, Bukowski, & Parker, 2006); however, less work has incorporated the sibling relationship as a focus for research questions.

The process of developing shared meanings or intersubjectivity (Piaget, 1962; Vygotsky, 1976) may be one way for children to foster their social cognitive development. Given that siblings share a common history and experience a wide range of affect together, they may be particularly skilled at co-constructing shared meanings during play. Although the history between friends is shorter compared to siblings, they too may easily establish a shared understanding during play due to their common interests and mutual liking. Hughes and Dunn (1997) found a positive association between preschool-aged friends' engagement in pretend play and internal state language. The use of internal state language (i.e., references to mental and emotional states) during pretense is considered an important marker of social cognitive understanding (Howe et al., 2005); however, there has been little research comparing the nature of play interactions with siblings and peers.

In an effort to add to the limited research of sibling and peer interactions during play, the purpose of this study was to examine children's co-construction of shared meanings and internal state language used during episodes of pretend play. The unique feature of this study was the examination of these constructs in two relationship contexts, the sibling relationship and friendships. First, the complex definition of play will be provided as well as a review of prominent theories of the development of children's play. Following, the complexity of play, the connection between play and social cognition, and

the co-construction of shared meanings during play will be discussed. Lastly, children's sibling relationships and friendships will be defined while making connections with the concepts discussed throughout the paper.

What is Play?

Defining play has been a contentious issue in the field of research. Explanations of play have evolved from diverse theoretical backgrounds to include psychological, behavioural, or cultural constructs. Despite the lack of consensus on an exact definition, the study of play continues to flourish with widely accepted general characteristics that are typical of play (Rubin, Fein, & Vandenberg, 1983).

Researchers and theorists have converged on five factors to distinguish play behaviour from nonplay behaviour. As Garvey (1990) states, the first characteristic of play is that it is a pleasurable and enjoyable activity. Even during times of despondency the player positively values play. The second characteristic is that play is intrinsically motivated (Rubin et al., 1983). It is an end in itself with the means as the enjoyable component. Third, play must be self-imposed rather than imposed by others (Rubin et al., 1983). In other words, the participants freely choose to engage in play. This leads to the fourth characteristic, in which players must be actively engaged in play as opposed to passive states or feelings of indifference in the activity. The final widely accepted factor is that play is free from externally imposed rules (Rubin et al., 1983). This feature differentiates play from games with previously established rules. The conceptualization of play depends on these contrasting features. We can only speak of play when we contrast it with other states and nonplayful behaviours.

Considerable research has been conducted on the development of play during childhood (Rubin et al., 1983). Prominent and influential theories on the development of play will be reviewed before examining the complexity of pretend play.

Influential Theories in the Sequence of Development of Children's Play

The majority of studies on the development of play stemmed from the research of Parten's (1932) categories, which reflected social development, as well as Piaget (1967) and Smilansky (1968) who considered children's cognitive development during play (Göncü, Patt, & Kouba, 2002). These foundational and influential theories will be reviewed followed by an examination of the complexity of pretend play.

Parten (1932) conducted some of the most influential research on children's play (Xu, 2010). Through the use of observation, Parten identified the changing nature of children's social play during early childhood and differentiated children's social sophistication into three levels. The first and lowest level of social play is solitary independent play. During this stage, children play alone and independently without interest in the other children. Next comes the most commonly observed stage in Parten's (1932) study, parallel activity. This stage differs from the first in that children choose to engage with toys that are similar to the other children's toys, but yet play independently. Essentially children choose to play *beside* rather than *with* the other children. The last level consists of two play forms: associative play and cooperative supplementary play. These play categories involve true social interactions with a predominant difference that distinguishes one from the other. In associative play children engage in separate activities yet interact with one another about the activity (e.g., borrowing and loaning

play materials); whereas in cooperative play, children act together in a highly organized manner (Parten, 1932; Xu, 2010).

When analyzing the observations, Parten (1932) noticed that as children developed from age 2 to 5, their play transitioned from solitary independent play to highly interactive cooperative play. Parten's categories undoubtedly reflected children's social development. Although Piaget had a similar observational approach as Parten when examining children's play, he developed a more cognitive developmental theory.

Piaget (1962) segmented play behaviour into three forms: sensorimotor, symbolic or dramatic play, and games-with-rules, which appear in a sequential order throughout the first 6 to 7 years of life (Fein, 1981). Sensorimotor play occupies the first two years of development. During this time, the child is learning to coordinate his or her movements and derives pleasure from mastery (Garvey, 1990; Rubin et al., 1983). The second form, symbolic or dramatic play, prevails after the age of two to about six years (Garvey, 1990). The child has developed the understanding that one thing can stand for something else, which reflects the development of the semiotic function and ability to pretend (Rubin et al., 1983). Throughout this form, play becomes increasingly sophisticated from the solitary to the social (Fein, 1981), thus paralleling the sequence of Parten's categories. The last form, games-with-rules, emerges around six years of age and is predominantly a social form of play. Children enter this stage with a relative understanding of certain social concepts and competition (Garvey, 1990). Due to the collective organization required in this play form, it is considered the most sophisticated of the three forms.

Piaget's work influenced subsequent theories on the development of play, specifically the work of Smilansky (1968). Smilansky (1968) expanded Piaget's 3-form model to include an additional stage, thus postulating play as a 4-sequence developmental model. Smilansky's main contribution was to add a stage named constructive play. Constructive play is the introduction to creative activity by means of objects and materials (Smilansky, 1968). This stage follows sensorimotor as it is considered to be more focused and mature, but is not a form of pretend play (Smith, 2005).

After Smilansky's (1968) expansion of Piaget's (1962) play theory, Rubin (1976) superimposed Smilansky's cognitive hierarchies upon the social stages of play described by Parten (1932) to create a framework for assessment. Unable to make a reliable distinction between two of Parten's categories, "associative play" and "cooperative play", in young children's play, Rubin collapsed these categories to form a single "group play" category (Rubin, 1978). The social play categories included solitary, parallel, and group and the cognitive categories included functional, constructive, dramatic, and games. By using the combined and nested categories, Rubin (1978) found preschoolers engaged in significantly more parallel-functional play while kindergarteners engaged in more group-dramatic play than preschoolers. Ultimately, Rubin's research revealed that the social-cognitive play of preschoolers was qualitatively less mature than that of kindergarteners. As children develop, their play becomes more socially mature in that children organize their interactions within a group, and cognitively, in that children are producing and sharing symbolic meanings to facilitate pretend play (Rubin & Pepler, 1982). Overall, Rubin's findings highlight the progression of children's development of play in both social and cognitive domains.

From the work of these theorists, an abundance of research has emerged; specifically on Piaget's second play form, symbolic play. The complexity of symbolic (or pretend) play has intrigued researchers and theorists alike who have asked questions as to how and why this play form surfaces universally during early childhood and what functions it serves for children's development.

The Complexity of Pretend Play

Pretend play, or pretense, is a theoretical construct often defined as behaviour in a simulative, nonliteral or "as if" mode (Fein, 1981; Garvey, 1990). Pretending requires the ability of the child to transform objects and actions symbolically (Lillard, 2002). This intricate ability is referred to as decontextualization (Fein, 1981). Social pretend play is even more complex due to the requirement that children simultaneously coordinate their actions with one another and maintain communication between the two meanings of the actions; the literal and nonliteral (Howes, 1985).

Recognizing the cognitive complexity of play, Vygotsky (1966) described play as "a cognitive process" (p. 81). Children must defy reality and act in a mental, rather than visible, situation (Vygotsky, 1966). In addition, according to Piaget (1962), children require self-restraint and self-determination to engage in social pretense. These play scenarios create demands on children to act against their impulses if they wish to continue to play. Vygotsky viewed this act as learning to sever thought from object, which is a crucial component in the development of abstract thinking.

Although Piaget believed symbolic transformations occurred during early childhood, through a series of experiments Harris (1994) found children as young as two years understand pretend actions and utterances without understanding the underlying

mechanisms required for the process. Lillard (2002) however, suggests through metarepresentation, or cognitively understanding other's mental representations, more sophisticated forms of play are able to unfold thus developing children's social understanding. Social understanding has been defined as having the ability to make accurate inferences regarding others' thoughts and feelings in a variety of social contexts (Dunn, Cutting, & Fisher, 2002). During social play, children might be aware that pretending involves mental states that differ from reality, therefore understanding their partner's intentions are important. Other theories and concepts thought to be crucial to pretending and social development will be elaborated next.

Pretend Play, Social Cognition, and Other Domains of Development

Pretend play and theory of mind are considered to be two important contributions to the development of socially competent behaviour (Newton & Jenvey, 2011). Similar to pretense, theory of mind has been described as an abstract and complex process (Wellman, 2011) and refers to children's ability to understand and predict the emotions, behaviours, and actions of others (Astington, 1993). It is also connected to children's understanding of false-belief; the recognition that others have beliefs about the world that may differ from reality (Dunn, Brown, Slomowski, Tesla, & Youngblade, 1991). These abilities are essential in perspective-taking, which is often required during social pretend play. As these abilities develop, children are able to regulate their interactions and make meaning of other's social behaviour and verbal communication (Dunn et al., 1991).

In recent years, experimental studies have reached the consensus that employing internal state language (ISL) (i.e., references to mental states such as thoughts, beliefs, and desires) reflects children's social understanding (Carpendale & Lewis, 2004; Dunn,

1988; Howe, Rinaldi, & Recchia, 2010; Hughes & Dunn, 1997). Although ISL has been associated with theory of mind performance, a recent study conducted by Meins, Fernyhough, Johnson, and Lidstone (2006) suggests otherwise. Their study revealed children's (M = 8.4 years) ISL during a storybook and friend task was independent of age and verbal ability unlike the theory of mind task. In addition, their findings also revealed a lack of association between internal state discourse and theory of mind in middle childhood. ISL may be a different, independent, and unique cognitive process from theory of mind ability and is important to study in the context of social pretend play.

Given that shared pretense is a social activity, young children may be particularity motivated to use ISL and refer to mental states to initiate and sustain their play (Hughes & Dunn, 1997). Howe, Petrakos, and Rinaldi (1998) obtained results supporting this idea when they examined 40 children (M = 5.75 years) with either a younger (M = 3.6 years) or older sibling (M = 7.10 years). Their results indicated that dyads engaging in frequent pretend play used significantly more ISL than infrequent pretend play dyads. Again when examining children's ISL ability in the context of the sibling relationship, Howe (1991) found preschoolers with proficient perspective taking skills engaged in more internal state discourse than poorer perspective takers. Furthermore, when observing preschoolers in a naturalistic setting, Hughes and Dunn (1997) reported a significantly greater proportion of mental state terms were used in the context of pretense than nonpretend play. These findings may highlight the interdependence between pretense and internal state discourse in the development of mental life (Howe, 1991; Hughes & Dunn, 1997).

The Development of Intersubjectivity

The attainment of intersubjectivity, or shared understanding, is a central issue in social-cognitive development and refers to a shared understanding among the participants of an activity (Göncü, 1993a). Since pretend play is a collaborative activity, it implies constructing shared meanings for the advancement of play among the participants (Verba, 1993). Children begin pretense with a shared focus moving to negotiation strategies in order to expand their pretend play scenario. Although prominent theories of social pretend play have greatly influenced the study and understanding of children's play (i.e., Parten, 1932; Piaget, 1962; Smilansky, 1968), they have not addressed how children develop the ability to establish shared understandings.

Intersubjectivity is thought to derive from caregiver-infant interactions (Göncü, 1993a; Harrist & Waugh, 2002). According to Harrist and Waugh, these interactions require three necessary components in order for the infant to begin to develop a sense of shared understanding with the caregiver. First is that the coordination of intentions between the caregiver and infant occurs simultaneously over prolonged exchanges (Göncü, 1993a; Harrist & Waugh, 2002). Joint attention and turn-taking are evident when witnessing these interactions. The second component is the rhythm and pacing of the interactions, which facilitates the construction of intersubjectivity as nonverbal and verbal communication is exchanged (Göncü, 1993a). Contingency is the third component, when the occurrence of one event increases the likelihood of the other (Harrist & Waugh, 2002). As the caregiver and infant develop an understanding of the other, their behaviours become more coordinated and this allows for engagement in an activity for longer periods of time. In addition, as the child enters the second year of life, intersubjectivity becomes even more complex due to the child's development of

language. The child can now refer to other people, objects, and events and share these experiences with the caregiver (Göncü, 1993a). Throughout these experiences, toddlers become more self-regulating in their interactions with others, which is essential for socialization as their social circle is beginning to expand beyond their caregivers (Harrist & Waugh, 2002). Around this age, children begin to increase their interactions with significant others such as siblings and friends. Interactions to establish intersubjectivity, such as during social play, should be reciprocal and mutual given the emotional component and shared history of their relationships (Dunn, 1983; Harrist &Waugh, 2002).

Intersubjectivity and play. Intersubjectivity makes social play possible (Göncü, 1993a). Children need to jointly determine the play theme and interpret the play actions as pretense as opposed to real events or actions (Göncü, 1993b). By jointly determining the play scenario, children have the opportunity to practice taking on the role and perspective of another person. In addition, children also need to cooperate as they construct a play script, which consists of jointly established rules to guide the pretense scenario (Vygotsky 1966), thus enhancing skills in cooperating with another person's ideas and goals for play. Lastly, these messages must be communicated effectively to form a shared understanding (Göncü, 1993a). Along these lines is the idea of connected communication, which was proposed by Gottman (1983) to indicate the importance of contingent speech during early children's social interaction (Slomkowski & Dunn, 1996). The idea of connectedness of communication is to reflect the understanding and coordination of another person's perspective and this will be a strong predictor of

whether or not children become friends. How children establish connected communication or a shared understanding during play will be considered next.

Constructing shared meanings during play. When children engage in pretense, they use physical or psychological means to represent the meaning of another thing (Göncü, 1993a). In order to pretend with others, children must communicate effectively to construct a shared reference to ensure successful interactions. After establishing a joint focus of attention, children must engage in metacommunication, which is compulsory for the facilitation of social play (Bateson, 1954). Metacommunication refers to the exchange of verbal messages between play partners to inform one another about their pretend play activity (Göncü & Kessel, 1988). Doyle and Connolly (1989) partitioned metacommunication into two categories with respect to play, implicit and explicit metacommunication. Implicit metacommunication is embedded within the context of communication in the pretense episode whereas explicit metacommunication refers to the negotiations and plans of pretend, outside the pretend play itself (Doyle & Connolly, 1989). Following the work of Bateson (1954), implicit metacommunication would occur inside the psychological frame of play when children are enacting in pretense, whereas explicit metacommunication breaks the psychological frame and children communicate as themselves and in reality.

The construction of shared meanings is a complex process. Children's verbal play communication has been recently studied to determine how they establish a similar viewpoint during social pretend play. Through the use of observation, Garvey (1990) noted that children's talk during social play was directed to creating, clarifying, maintaining, and negotiating the play scenario. Subsequent researchers have continued to

examine children's negotiation strategies as well as developmental differences. By observing 12 4.5-year-olds and 12 3-year-olds in a laboratory playroom, Göncü (1993a) examined their negotiation acts used to establish intersubjectivity in pretense. Negotiation acts included expanding play interactions, the degree of agreement, emphasis of one's own ideas, and irrelevant acts. The findings indicated social play interactions become increasingly shared from age 3- to 4.5-years. In addition, children at both ages construct shared meanings through the use of expansions, which included building-on to one's own previously expressed idea and extending the partner's idea by adding new information.

These findings were consistent with Howe et al. (2005) who examined the construction of shared meanings during pretense in sibling dyads. Their coding scheme included a semantic tying (adding new information) category that was comprised of extension and building-on, as well as explanation/justification. Additional categories included initiation of play, clarification strategies, partner's response to clarifications, prosocial statements, and nonmaintenance strategies. The results revealed the older siblings (M = 7.10 years) used more semantic tying strategies than the younger siblings (M = 3.6 years). Younger siblings were more likely to use nonmaintenance strategies and employed fewer prosocial statements than the older siblings. Furthermore, second-born kindergarteners were more likely to engage in sophisticated play strategies than first-born kindergarteners and dyads exhibiting more sophisticated negotiation strategies were more likely to engage in pretense. Lastly, siblings who employed more shared meaning strategies were also more likely to use internal state language, which may highlight the

connections between close relationships and social understanding (Dunn, 2002; Howe et al., 2005).

As anticipated from previous research, there is a developmental trend toward increasing pretend play complexity. An additional area to consider is the effect of the effect of the partner on the child's participation in pretend play. Howes and Farver (1987) examined this partner effect by observing 2-year-old partners in social pretend play. Each of the 16 toddler aged children (M = 2 years) were observed twice, once with an age-mate and once with an older aged partner (M = 5 years). The children were familiar with one another as they attended the same day care centre. The social behaviours measured included verbal and nonverbal metacommunications about the play, teaching behaviours, attempts to direct the play, and imitation. The researchers found that when the children played with a same-aged partner, they employed more verbal metacommunications, attempts to direct the play, and teaching behaviours. However, the 2-year-olds engaged in more cooperative social pretend play when their partner was older rather than the same age. In these play scenarios, the researchers stated the 2-year-olds played more of a complementary role, meaning their pretend actions depended on the older child's pretend actions. Lastly, an unexpected finding of the study revealed that 2-year-olds were more active in constructing pretense with same-age partners than with older partners. They made more frequent verbal metacommunications, directions during the play, and teaching statements when their play partner was the same age. Even though the play was more complex with an older child, the findings suggest the 2-year-olds were more effective in cooperating with a same-age partner. Perhaps in the mixed-aged dyads, the older child was responsible for directing the play while the younger child followed

these directions. This would result in more intricate play due to the cognitive abilities of a 5-year-old compared to a 2-year-old. Perhaps the 2-year-olds may have felt more confident engaging with a same-aged playmate, which could explain the finding that they engaged in more effective cooperation. Overall, the age of the play partner is important in the complexity and development of social pretend play.

The findings from these studies revealed developmental differences in early childhood play as well as the effect that children's play partners have on the construction and complexity of their pretense. Children will develop their social understanding through their relationships with both friends and siblings. The characteristics of these relationships with reference to social-cognitive development will be discussed next.

Children's Social Relationships

Studying children's social play in the context of different relationships has been an interest of child development researchers. Children's construction of their play may depend on the type of relationship they have with the play partner and potential differences may have implications for pretend play and ultimately, children's social-cognitive development.

Types of interactions in relationships. A relationship implies a series of interactions between two people, over an extended period of time (Hinde, 1979). There are two types of interactions in relationships: complementary and reciprocal. As defined by Hinde (1979), complementary exchanges are characterized by asymmetry and social dominance typical of parent-child, sibling, and teacher-student relationships. Within these relationships, there are opportunities for the more experienced participant to guide the development of the less experienced partner, similar to Vygotsky's (1966) concept of

the zone of proximal development and scaffolding. For example, the second born kindergarteners from Howe et al.'s (2005) study used more sophisticated play strategies suggesting this may have been learned from interacting with an older sibling.

Reciprocal exchanges have a more equal power base typical of friendships and are seen in play and conflict between siblings (Howe, Ross, & Recchia, 2011). The long, shared history of reciprocity is thought to create opportunities to promote social understanding due to the mutual and returned exchanges of the other's perspective (Dunn, 1983). The sibling relationship consists of both complementary and reciprocal interactions, which makes it a unique context for children to develop their social understanding.

The uniqueness of children's interactions with their siblings is evident, especially when comparing children's discussions with their mother and sibling. Brown and Dunn (1992) found sibling discussion of emotions differed from discussions with mothers; siblings discuss emotions more with each other than they do with their mothers. When children enter kindergarten, their talk about emotions is significantly more frequent with their siblings, while their talk about emotions with their parents declines (Brown & Dunn, 1992). Furthermore, children engage in significantly more talk about mental states with their siblings than with their parents (Brown et al., 1996). These increased discussions of both positive and negative emotions and mental states offer unique opportunities for children to development their social and emotional understanding. In addition, this may allow children with siblings to establish shared meanings more effectively with a peer or friend since the sibling relationship and friendships share similar characteristics.

Characteristics of sibling relationships and friendships. Four major features have characterized the sibling relationship. First, siblings define their relationship with a great range of affect from strongly positive to strongly negative and sometimes ambivalent feelings (Dunn, 2002; Howe et al., 2011). Second, siblings spend a great deal of time with one another. This provides them with numerous opportunities to learn from one another and be influenced by each other's behaviours (Tucker & Updegraff, 2009). They are also constructing a common history that translates into opportunities for pretend play, conflict, and emotional support (Howe et al., 2011). The third feature is the wide individual differences in the sibling relationship. These differences as well as an age gap are linked to the type of interactions children will exchange with their sibling. For example, there may be an asymmetry of power, which can lead to dynamics of both cooperation and conflict (Howe et al., 2011). Finally, although siblings share a common history with one another, their nonshared environment will affect the development of their relationship (Howe et al., 2011). Overall, the sibling relationship is an enduring and a safe context for children to learn social skills that may be applied to friendships.

Sibling relationships and friendships are based on similar attributes. They are both intimate and dyadic relationships with other children and some research suggests there is a direct association between these two relationships (Lockwood, Kitzmann, & Cohen, 2001; McCoy, Brody, & Stoneman, 1994). This has been referred to as a carryover or spillover effect, which predicts similarity in sibling and peer social exchanges due to the expectation that children would use the same interaction strategies in multiple types of relationships (Stocker & Dunn, 1990). As stated by Stormshak, Bellanti, and Bierman (1996), children who act more aggressively with their siblings may

also be more likely to act aggressively with their peers. In contrast, the parallel function of the sibling-friendship relationships may also have a compensatory effect. East and Rook (1992) found children who are isolated by their peer group might have a positive sibling relationship, which provides support for the case when children lack friendships. Additionally, children in hostile sibling relationships may depend on high-quality friendships to fulfill positive exchanges that are absent in their sibling relationship (Howe et al., 2011).

As stated previously, although there are similarities between the sibling and friendship relationships, there are distinct differences between the two. First, friendships involve a commitment of trust and support that may not be found in all sibling relationships (Dunn, 2002). Second, friendships do not include rivalry for parental love and attention as well as resentment of differential treatment that some siblings may experience (Howe & Recchia, 2008). Lastly, friendships are a purely voluntary relationship. Children select their friends unlike the sibling relationship, which is an involuntary relationship (Dunn, 2002). Although there are associations between these relationship contexts, there are also differences. How children develop their social-cognitive abilities, specifically ISL and constructing shared meanings, may depend on their play partner. Comparing children's play in the context of the sibling relationship and friendship and determining partner effects may reveal a better understanding of children's socio-cognitive development and is the focus of the present study.

Overall, siblings may be learning important social skills from one another. The interactions among siblings and friends may contribute to the development of children's social, emotional, and cognitive processes. However, more research linking sibling and

friends' interactions needs to be completed. Additional information about the interactions within these relationships during social play will help researchers understand how the relationships influence and facilitate social and emotional development.

The Present Study

The of aim of the current study was to extend previous literature on children's social-emotional development by examining children's co-construction of shared meanings and ISL used during episodes of pretend play. The unique feature of this study was the examination of these constructs in two relationship contexts; the sibling relationship and friendship. The effect of the partner on children's communication during social pretend play has received little attention. Previous research and theory provided evidence for associations between the two relationship contexts, yet the research has not fully explored direct associations by selecting a focal child to observe in both relationship contexts and determine partner effects on the social play. Furthermore, previous studies have often resorted to questionnaires or interviews rather than observationally coding children's interactions in their naturalistic settings. The current study will add to research by including these aspects in the research design.

The present study is using the first of two time points from a previously collected, longitudinal data set examining sibling and friend interaction in early (time one) and middle (time two) childhood, 65 sibling dyads were examined. One child from each dyad was the primary focus. These focal children, aged approximately 4-years-old, were observed engaging in two free play sessions; once with their sibling and once with a friend. Given this data, the first goal of the study was to compare the co-construction of shared meanings between the two relationships. The second goal was to compare the

frequency of ISL employed during play between the two relationships. The third goal was to compare the shared meaning strategies and ISL in the relationship contexts. Lastly, birth order and gender composition were explored.

(1) Shared meanings. The primary research question regarded children's overall co-construction of shared meaning strategies employed during play with siblings and friends. In other words, do the focal children employ more overall strategies with their sibling or friend? Due to the limited research in this area and the differences in the characteristics of the sibling and friendship characteristics, competing hypotheses were formed. Given the characteristics of play (e.g., pleasurable activity) and friendships (e.g., purely voluntary) as well as Howes and Farver's (1987) findings, a prediction that children would employ more shared meaning strategies during play with their friends compared to their siblings could be made. More specifically, children may be more inclined to use positive responses and prosocial behaviour with friends and semantic tying strategies due to shared interests that are often present in friendships. Conversely, the focal children may employ more shared meaning strategies with their siblings due to the characteristics of the play and the sibling relationship; specifically, their long, co-constructed shared history and the high level of intimacy may influence semantic tying strategies as well as more emotionally charged responses such as negative and nonmaintenance strategies.

The second component to this research question was to examine an overall comparison of the focal children (4-year-olds) who are first-born and second-born. Based on Howe et al. (2005) and Howes and Farver (1987) findings and the evidence of the carryover effect (Stocker & Dunn, 1990), it was hypothesized that when the focal

children were the second-born siblings, they would employ more strategies for constructing shared meanings in both the sibling and friend play sessions, especially sophisticated shared meaning strategies. The rationale for this prediction was based on the older siblings' important role of being a more experienced social partner, which may provide more structure and guidance for the younger sibling who would be considered the less experienced partner (Bruner, 1977). Therefore, the second-born focal children would employ the strategies learned from the older sibling when playing with a friend.

(2) Internal state language. The second research question aimed to investigate whether the focal children would employ more ISL (dependent variable) in the play session with their sibling or friend (independent variable)? As previously mentioned siblings define their relationship with a great range of affect (Dunn, 2002; Howe et al., 2011) and spend a great deal of time with one another providing numerous opportunities to learn and be influenced by one another (Tucker & Updegraff, 2009). Based on these characteristics, it was predicted the focal children would employ more ISL when conversing with their sibling than friend. Furthermore, based on the premise of the carryover effect (Stocker & Dunn, 1990), it was predicted that when the focal children were the second-born siblings, they would employ more ISL with a peer compared to the focal children who were the first-born siblings.

(3) Construction of Shared Meanings and Internal State Language. The third research question aimed to ascertain the relationship between the shared meaning strategies and ISL employed by the focal children in the sibling session and peer session. Previous research findings have found significant positive associations between shared meaning strategies and ISL within the sibling relationship (Howe et al., 1998; Howe et

al., 2005). Some research findings for friends reveal similar results (Hughes & Dunn, 1998), therefore it was predicted there would be positive associations within both relationship contexts. However, it was predicted the association would be stronger within the sibling context than the friend due to the characteristics of the sibling relationship, which was highlighted in a previous set of hypotheses (i.e., siblings' high level of intimacy and long, co-constructed history).

Method

Participants

The participants included 65 focal children from Caucasian, middle-class families in Western New York State. Of the 65 focal children (*M* age = 56.4 mos.; SD = 5.71 mos.), 37 were observed with a younger sibling (*M* age = 34.9 mos.; SD = 5.3 mos.) and 28 were observed with an older sibling (*M* age = 75.8, mos.; SD = 11.2 mos.). Of the 65 dyads, 34 included same-gender sibling pairs (18 brother pairs, 16 sister pairs) and the remaining 31 dyads were mixed-gender pairs (17 brother-sister pairs, 14 sister-brother pairs).

Each focal child was also observed with a same-age friend (friends' *M* age = 57.8 mos.) who was chosen by the family based on three criteria: (1) a frequent playmate of the focal child, (2) the same age of the focal child, and (3) the same gender as the focal child. If all three criteria could not be met, then the friend was chosen based on the first two criteria. In four cases (three boys and one girl), an opposite-gender friend was chosen.

The mothers of the focal children completed a brief questionnaire regarding information of the nature of the relationship between the focal children and friend. The mothers indicated: (1) in what settings the children spent time together, (2) how often the children interacted with one another, and (3) their perception of the children's friendship. Nearly 40% (25 of the 65 dyads) were reported to spend time together at school or day care. Using a 5-point scale, where 1 = never, 3 = once and week, and 5 = every day, mothers' average rating for how often the children saw each other was 3.64 (*SD* = 1.00). Lastly, the average rating of the nature of the children's relationships reported by the

mothers was 3.96 on a 5-point scale, where 1 = acquaintance, 3 = friend, and 5 = best friend (*SD* = .81). More detailed information can be found in Stauffacher and DeHart (2005). Ethical approval for this study was previously given to Nina Howe by the Concordia University Human Research Ethics Committee (protocol number, UH2010-047).

Procedure

Sibling and friend dyads were videotaped in the focal children's homes during semi-structured free play sessions using three wooden play sets (farm, village, and train) that facilitated cooperative pretend play. The farm set was given to 32 sibling dyads and 30 friend dyads, the village set was given to 31 sibling dyads and 31 friend dyads, and the train set was given to 2 sibling dyads and 3 friend dyads. Each focal child was videotaped in two separate 15-minute semi-structured home play sessions, one with the sibling and another with the friend. At each taping visit, the research assistants set up the camcorder and external microphone, reminded the children that they were being videotaped, and turned on the camcorder. The research assistant would then empty the pieces of the play set on the floor and told the children the toys were for them to play with together. While the children were being videotaped, the research assistant sat with the focal child's mother in another room while the mothers completed the questionnaires described previously. The order of the sibling and friend taping visits as well as the wooden play sets were counterbalanced across all families.

The videotapes were transcribed and during the transcription process, the children's language and behaviours were transcribed into separate turns, which were bounded by a verbal response of the partner or a passage of time (approx. 2s). The

number of conversational turns on each transcript was determined by counting the reciprocal exchanges or if a turn was separated by a time passage. Transcripts were coded for construction of shared meanings, internal state language, and pretend enactment, as part of a larger project, directed by Nina Howe.

Measures

Construction of shared meanings. Each transcript was coded for the frequency of specific behaviours that create shared meanings between partners in play (Howe et al., 2005) (see Appendix A for a detailed coding scheme). The categories included: (a) introduction to play (e.g., calls for attention, play themes), (b) simple maintenance strategies (e.g., descriptions of action, imitations), (c) semantic tying strategies (e.g., extensions, building onto the partner's ideas, justifications), (d) negotiation strategies (e.g., questions, revisions), (e) response to negotiation (e.g., agreement, no response, disagreement), (f) prosocial behaviour (e.g., shared affect, sharing), and (g) nonmaintenance behaviors (e.g., conflict, talking to observer) that disrupt the play and interfere with constructing shared meanings. Table 1 shows a conversational excerpt coded for co-construction of shared meanings between the focal child and sibling. Frequencies were summed for each category and proportion scores were created accounting for language (i.e., number of conversational turns) in each play session.

Interrater reliability was established with a second coder (who was blind to the purpose of the study) for 16% (21/129) of the transcripts and Cohen's *kappa* revealed high levels of agreement for coding of the total shared meaning strategies variable (k = .94), meanwhile *kappas* for each category are as follows: introductions = .99, simple strategies = .91, semantic tying = .79, negotiations = .96, total responses = .88, positive

and neutral = .89, negative and ignoring = .87, prosocial behaviour = .86, and nonmaintenace behaviours = .95.

Internal state language. Each transcript was also coded for internal state language (ISL) and was based on Howe, Rinaldi, and Recchia (2010). Each instance of children's ISL was coded according to four mutually exclusive categories: (a) cognitions (e.g., think, know), (b) emotions (e.g., happy, sad), (c) goals (e.g., want, try, need), and (d) preferences (e.g., like, hate) (see Appendix B). Two research assistants who were blind to the purpose of the study were involved in this coding process. Interrater reliability was established on a different 17% of the transcripts (22/129) and revealed a high level of agreement (k = .96).

Table 1

Coding of Example Conversational Excerpt using the Intersubjectivity Coding Scheme

Child	*Birth Order*	*Turn*	*Conversation*	*Code*
Sibling	Older	1	I make the fence, ok?	Simple Strategy Negotiation
Focal Child	Younger	1	I put the animals in.	Semantic tying (Extension)
Sibling	Older	2	And then we can put the persons in.	Semantic tying (Extension)
Focal Child	Younger	2	I put in this gate.	Semantic tying (Extension)
Sibling	Older	3	Ok, ah. It's gonna be locked. *We* better do this.	Semantic tying (Extension) Prosocial Behaviour

Results

Descriptive Information

A report of descriptive statistics concerning all variables in the study is included in the following section. It is important to note that due to the wide variation in the number of conversational turns across dyads (siblings session range = 9 – 143; peer session range = 23 – 114), data analyses were conducted using proportion scores. For example, simple strategies (sibling session) equalled the number of simple strategies employed by the focal child in the sibling session divided by the focal child's total number of conversation turns in the sibling session for each child.

Means, standard deviations, range, and percentages of the shared meaning and ISL variables employed by the focal child are found in Table 2 (all Tables are found at the end of the Results section). The means and standard deviations are reported for the proportionalized data while the range and percentages are based on the raw data. Data are also partitioned based on the play session (i.e., sibling session and peer session). A total semantic tying proportion score was also reported, which was based on the sums of the categories of extensions, building on, and explanations. The responses' proportion score was based on a similar principle and was the sum of positive, neutral, negative, and ignore responses. Additionally, a neutral response was collapsed with the positive response creating a positive/neutral variable and ignore was combined with negative responses resulting in a negative/ignore variable. The response Submission was dropped from the analyses due to the extremely low frequency. Lastly, nonmaintenance was the sum of proportion scores of four strategies: control, negative behaviour, irrelevant act, and talking to observer.

Birth Order, Gender, Gender Composition, and Play Set Differences

An independent samples *t*-test was conducted to compare the focal children's birth order and the shared meaning strategies and ISL. A few significant findings were revealed. In regards to the shared meaning strategies, there was a significant difference in the focal children's birth order and the response negative and ignore, $t(63) = -3.22$, $p < .05$, and nonmaintenance, $t(63) = -2.29$, $p < .05$, in the sibling session. There was also a significant difference in the focal children's birth order and the ISL category cognitions in the peer session, $t(62) = -2.64$, $p < .05$.

An independent samples *t*-test was also conducted to compare the focal children's gender and the shared meaning strategies and ISL and did not yield significant findings. A series of one-way ANOVAs were conducted to determine a significant difference between the gender composition of the dyad and the shared meaning strategies and ISL as well as the play set of each dyad (e.g., farm, village, or train) and the shared meaning strategies and ISL and did not yield significant results. Since gender, gender composition, and the play set were not associated with shared meaning strategies and ISL, the following analyses were conducted without controlling for these variables.

Hypothesis 1: Shared Meanings

To test the hypotheses concerning the focal children's employed shared meaning strategies, a series of ANOVAs were conducted with the play session (sibling or peer) and birth order (first-born or second-born) as the independent variables and the shared meaning strategies as the dependent variable. The significant results were further analysed using the Bonferroni correction with the post hoc test.

Children's overall usage of shared meaning strategies. In order to determine if there was a difference in the focal children's employed shared meaning strategies in the sibling session or peer session, an exploratory analysis was conducted. A 2 (session: sibling or peer) X 9 (shared meaning strategies) repeated measures ANOVA controlling for the focal children's birth order did not reveal a main effect for session, $F(1, 63) = 1.46$, *ns* (see Table 2 for means); however, a main effect of shared meaning strategies was found, $F(9, 55) = 15.40$, $p < .05$, $\eta^2 = .20$. This indicated that there was an overall mean difference in the strategies the focal children employed (see Table 5 for means and standard errors). Post hoc tests revealed that the focal children employed simple strategies significantly more often than the other strategies with the exception of nonmaintenance, which was the second most frequent strategy used. Negotiation was used significantly more often than introductions, the semantic tying strategies (extensions, building on, and explanation), negative/ignore response, and prosocial strategies. Positive/neutral responses were employed more frequently than negative/ignore response and the semantic tying and prosocial strategies. Prosocial strategies were used the least often, with the exception of the semantic tying strategies. When examining the semantic tying strategies to one another, extensions were employed significantly less often than building on and explanation.

Results also indicated an interaction between the play session and shared meaning strategies, $F(9, 55) = 1.90$, $p < .05$, $\eta^2 = .03$ (see Figure 1 at the end of the Results section). Post hoc tests illustrated that when the focal children were in the sibling session, they were more likely to employ introductions ($M = .15$, $SE = .01$) than when they were in the peer play session ($M = .10$, $SE = .01$). In contrast, focal children were

more likely to use a positive/neutral response (M = .13, SE = .01) and prosocial strategies (M = .11, SE = .01) when in the peer play session than the sibling play session (M = .07, SE = .01 and M = .07, SE = .01, respectively).

Associations between shared meanings strategies and birth order. Second, a series of one-way ANOVAs with birth order as the independent variable and the shared meaning strategies as the dependent variable was conducted to test the hypothesis that focal children who were the second-born sibling would be more likely than focal children who were first-born to employ more strategies, specifically the more sophisticated (semantic tying) strategies, for constructing shared meanings in both the sibling and peer play sessions (see Tables 3 and 4 for means). The hypothesis was partially supported. The focal children's negative/ignore responses, $F(1, 63) = 10.34$, $p < .05$, and nonmaintenance, $F(1, 63) = 5.23$, $p < .05$, strategies in the sibling session were significantly associated with the focal children's birth order. The first-born focal children responded more negatively or ignored their younger sibling more often than the second-born focal children. Furthermore, the first-born focal children engaged in more nonmaintenance behaviours than the second-born focal children.

In regards to the semantic tying strategies, there were significant findings for extensions, $F(1, 63) = 7.90$, $p < .05$, and explanations, $F(1, 63) = 7.66$, $p < .05$, in the sibling session (see Table 3 for means). The first-born focal children employed the strategy explanation more often than the second-born focal children. Concerning extensions, the second-born focal children were more likely to employ the strategy than the first-born focal children. There were no significant differences in the peer session.

Hypothesis 2: Internal State Language

To test the hypotheses concerning the ISL the focal children employed during the play sessions, a series of ANOVAs was conducted with the session (sibling or peer) and birth order as the independent variable and the categories of ISL as the dependent variable.

Focal children's overall usage of ISL. To begin, a 2 (session: sibling or peer) X 4 (ISL) repeated measures ANOVA controlling for birth order was conducted to determine if the hypothesis that focal children would employ more ISL when conversing with their sibling than peer was supported or not. This hypothesis was not supported and a main effect for session was not found, $F(1, 63) = .33$, *ns*; however, a main effect of ISL was found, $F(3, 61) = 17.30$, $p < .05$, $\eta^2 = .22$, indicating that there was an overall mean difference in the ISL categories the focal children employed (see Table 5 for means and standard errors). Post hoc tests indicated that of the four ISL categories, the focal children referred to goals most often followed by cognitions. There was no significant difference between emotions and preferences. There was no significant interaction between play session and ISL, $F(3, 61) = 2.38$, *ns*.

Associations between ISL and birth order. Next, a series of one-way ANOVAs with birth order as the independent variable and ISL as the dependent variable was conducted to test the hypothesis that focal children who were the second-born sibling would be more likely than focal children who were first-born to employ more ISL in the peer session than the sibling session. The hypothesis was not supported; however, a significant mean difference was found. The focal children's birth order was significantly associated with cognitions in the peer session, $F(1, 63) = 6.97$, $p < .05$. First-born focal

children (M = .38, SD = .52) made references to cognitions significantly more often than second-born focal children (M = .14, SD = .16). All other ISL categories for the peer session were not significant and the ISL categories for the sibling session were not significant.

Hypothesis 3: Construction of Shared Meanings and Internal State Language

A series of partial correlations, controlling for birth order, were conducted to investigate the hypotheses of positive associations between constructing shared meaning and ISL. The hypotheses were supported (see Table 6 for correlations). First, the associations between the shared meaning strategies and total ISL in the sibling session and peer session were also positively correlated. Second, several shared meaning categories were significantly positively associated with ISL in the sibling session, which included introductions, total semantic tying, and the subcategories of building on and explanations, negotiations, and nonmaintenance strategies. One category (introductions) was significantly correlated with ISL in the peer session.

The total ISL score was partitioned into the four categories and partial correlations were conducted, continuing to control for birth order, to illuminate significance of the finding previously stated (see Table 7 for correlations). In the sibling session, several ISL categories were correlated with shared meaning strategies. Goals were positively correlated with introductions, total semantic tying, the subcategories building on and explanations. Positive correlations were also found between cognitions and introductions, total semantic tying, the subcategories building on and explanation, negotiations, and nonmaintenance strategies. A negative correlation was found between emotions and negative/ignore response. Lastly, preferences were positively associated

with nonmaintenance strategies. In regards to the peer session, introductions and negotiations were positively correlated with cognitions. There were no significant findings for goals, emotions, and preferences in the peer session.

Exploratory partial correlations, controlling for birth order, were conducted to analyse associations between the focal children's shared meaning strategies and ISL across the sibling session and peer session. First, the focal children's shared meaning strategies in the sibling session were correlated with the focal children's shared meaning strategies in the peer session. Several categories were significantly correlated. The semantic tying category explanations in the sibling session was positively associated with the semantic tying category extensions in the peer session, $r = .26$, $p < .05$. The extensions in the peer session was also positively associated with negotiations in the sibling session, $r = .31$, $p < .05$. There was a negative association between the positive/neutral response in the sibling session and simple strategies in the peer session, $r = -.29$, $p < .05$. Lastly, explanations ($r = .28$, $p < .05$), negative/ignore response ($r = .27$, $p < .05$), and prosocial behaviour ($r = .26$, $p < .05$) in the peer session were positively correlated with nonmaintenance strategies in the sibling session.

The second set of exploratory partial correlations, controlling for birth order, examined associations the focal children's ISL in the sibling session and peer session. One significant association was found between the ISL category of goals in the sibling session and peer session, $r = .46$, $p < .05$.

The last set of exploratory partial correlations, continuing to control for birth order, were conducted to determine associations between the focal children's total shared meaning strategies and total ISL combined across sessions (see Table 8 for correlations).

First, the shared meaning strategies in the sibling session were correlated with the ISL in the peer session. Significant positive correlations were revealed. Introductions and explanations were significantly correlated with goals; explanations were also correlated with preferences. Prosocial strategies were also correlated with preferences as well as cognitions. The next set of correlations was between the focal children's shared meaning strategies in the peer session and ISL in the sibling session. No significant correlations were found.

Table 2

Descriptive Statistics for Shared Meaning Strategies and ISL employed by the Focal Child during the Sibling Session and Peer Session

	Sibling Session			Peer Session		
Shared Meaning Strategy	*M (SD)*	*Range*	*Percentage*	*M (SD)*	*Range*	*Percentage*
Introductions	.15 (.10)	0-35	9.3	.10 (.09)	0-48	6.1
Simple strategies	.35 (.15)	2-47	21.6	.36 (.16)	3-60	20.4
Semantic tying	.09 (.07)	0-26	6.1	.12 (.08)	0-33	6.9
Extensions	.01 (.02)	0-10	1.1	.02 (.02)	0-9	1.1
Building on	.05 (.04)	0-19	3.1	.06 (.06)	0-23	3.5
Explanations	.03 (.04)	0-8	1.9	.04 (.03)	0-13	2.3
Negotiations	.16 (.09)	0-35	10.4	.17 (.07)	3-34	9.8
Responses	.18 (.11)	0-35	11.5	.23 (.09)	3-47	13.5
Positive/Neutral	.07 (.05)	0-27	4.9	.13 (.08)	0-27	7.5
Negative/Ignore	.11 (.08)	0-23	6.6	.11 (.06)	0-28	6.1
Prosocial behaviour	.07 (.06)	0-14	4.2	.10 (.07)	0-28	6.1
Nonmaintenance	.30 (.20)	1-64	19.5	.29 (.17)	2-65	16.6
Internal State Language						
Goals	.19 (.15)	0-55	60.5	.30 (.26)	1-35	50
Cognitions	.08 (.08)	0-37	26.1	.24 (.38)	0-66	36.5
Emotions	.03 (.04)	0-13	10	.04 (.05)	0-20	7.5
Preferences	.01 (.02)	0-13	3.4	.04 (.07)	0-14	6

Note. Focal Children in Sibling Session ($N = 65$). Focal Children in Peer Session ($N = 64$). Frequencies reported for Shared Meaning Strategy and Internal State Language are the total scores identified in each session. Means and standard deviations are based on these frequencies and proportion scores were calculated using the total number of conversational turns in the play session as the denominator.

Table 3

Descriptive Statistics for Shared Meaning Strategies and ISL employed by the First-Born Focal Children (N = 28) and the Second-Born Focal Children (N = 37) in the Sibling Session

	First-Born Focal Children			Second-Born Focal Children		
Shared Meaning Strategy	*M (SD)*	*Range*	*Percentage*	*M (SD)*	*Range*	*Percentage*
Introductions	.16 (.11)	1-25	8.9	.14 (.10)	0-35	8.9
Simple strategies	.32 (.17)	2-34	16.9	.38 (.14)	3-47	23.3
Semantic tying	.10 (.07)	0-26	5.8	.08 (.06)	0-19	5.9
Extensions	.01 (.01)	0-4	.4	.02 (.03)	0-10	1.6
Building on	.05 (.05)	0-19	3	.04 (.04)	0-10	2.8
Explanations	.05 (.05)	0-8	2.3	.02 (.03)	0-6	1.4
Negotiations	.13 (.10)	0-32	7.5	.17 (.09)	1-35	11.7
Responses	.23 (.13)	0-35	12.6	.15 (.08)	1-26	9.7
Positive/Neutral	.08 (.05)	0-25	9.7	.07 (.05)	1-27	9.4
Negative/Ignore	.15 (.10)	0-23	7.9	.08 (.06)	0-20	5
Prosocial behaviour	.07 (.08)	0-14	3	.07 (.05)	0-12	3.8
Nonmaintenance	.36 (.21)	2-64	21.5	.25 (.18)	1-43	16.4
Internal State Language						
Goals	.20 (.14)	1-39	62.3	.19 (.15)	0-55	58.9
Cognitions	.07 (.06)	0-11	27.3	.08 (.09)	0-37	25.1
Emotions	.03 (.05)	0-13	8.4	.03 (.04)	0-9	11.4
Preferences	.01 (.01)	0-2	2	.01 (.03)	0-5	4.6

Note. N = 65. Frequencies reported for Shared Meaning Strategy and Internal State Language are the total scores identified in each session. Means and standard deviations are based on these frequencies and proportion scores were calculated using the total number of conversational turns in the play session as the denominator.

Table 4

Descriptive Statistics for Shared Meaning Strategies and ISL employed by the First-Born Focal Children (N = 28) and the Second-Born Focal Children (N = 37) in the Peer Session

	First-Born Focal Children			Second-Born Focal Child		
Shared Meaning Strategy	*M (SD)*	*Range*	*Percentage*	*M (SD)*	*Range*	*Percentage*
Introductions	.09 (.08)	0-32	5.4	.11 (.11)	0-48	7.1
Simple strategies	.36 (.14)	6-60	21	.35 (.18)	3-54	20
Semantic tying	.12 (.08)	0-33	7.3	.11 (.07)	0-23	6.7
Extensions	.02 (.03)	0-6	1.2	.02 (.02)	0-9	1
Building on	.07 (.07)	0-23	4	.05 (.05)	0-13	2.9
Explanations	.04 (.03)	0-6	2	.05 (.04)	0-13	2.7
Negotiations	.15 (.06)	3-24	9	.18 (.08)	4-34	10.8
Responses	.23 (.09)	4-47	13.8	.24 (.09)	3-31	13.5
Positive/Neutral	.12 (.08)	1-27	7.3	.13 (.08)	0-25	7.9
Negative/Ignore	.11 (.06)	0-28	6.5	.10 (.07)	0-17	5.6
Prosocial behaviour	.10 (.08)	0-28	5.6	.11 (.05)	0-23	5.2
Nonmaintenance	.28 (.18)	2-65	16.8	.30 (.17)	5-55	16.6
Internal State Language						
Goals	.33 (.27)	4-34	51.7	.28 (.25)	1-35	57
Cognitions	.38 (.52)	0-66	38.1	.14 (.16)	0-24	28.7
Emotions	.04 (.04)	0-8	7.9	.05 (.06)	0-20	9.8
Preferences	.05 (.08)	0-10	2.3	.03 (.05)	0-14	4.5

Note. $N = 64$. Frequencies reported for Shared Meaning Strategy and Internal State Language are the total scores identified in each session. Means and standard deviations are based on these frequencies and proportion scores were calculated using the total number of conversational turns in the play session as the denominator.

Table 5

Means and Standard Errors for Shared Meaning Strategies and ISL Employed by the Focal Child Across Play Sessions

Shared Meaning Strategy	*M*	*SE*
Introductions	.12	.01
Simple strategies	.35	.02
Semantic tying	--	--
Extensions	.02	.00
Building on	.05	.01
Explanations	.04	.00
Negotiations	.16	.01
Responses	--	--
Positive/Neutral	.15	.01
Negative/Ignore	.12	.01
Prosocial behaviour	.09	.01
Nonmaintenance	.20	.01
Internal State Language		
Goals	.25	.02
Cognitions	.16	.02
Emotions	.04	.01
Preferences	.02	.00

Note. $N = 64$. Means and standard errors are based on the proportion scores and on the overall shared meaning strategies and ISL the focal children employed across both sessions.

Table 6

Partial Correlations between Categories of Shared Meanings and Internal State Language of the Focal Children by Session

	Internal State Language	
	Sibling Session	Peer Session
Shared Meaning Strategy		
Total Strategies	.55**	.26*
Introductions	.43**	.28*
Simple strategies	.08	.20
Semantic tying	.41**	.12
Extensions	-.05	.05
Building on	.33**	-.09
Explanations	.40**	.15
Negotiations	.34**	.25
Responses	.06	.13
Positive/Neutral	.11	.07
Negative/Ignore	-.16	.11
Prosocial behaviour	.08	.07
Nonmaintenance	.26*	-.07

Note. Birth order was controlled. Internal state language was the sum of goals, cognitions, emotions, and preferences. *$p < .05$, **$p < .01$.

Table 7

Partial Correlations (Controlling for Birth Order) between Categories of Shared Meanings and Internal State Language in the Sibling Session and Peer Session

	Sibling Session				Peer Session			
Shared Meaning Strategy	Goal	Cog	Emot	Pref	Goal	Cog	Emot	Pref
Introductions	.51**	.31*	-.11	-.07	.19	.45**	.24	.22
Simple strategies	.15	-.08	.12	-.12	.16	.08	-.20	-.13
Semantic tying	.38**	.40**	.13	-.20	-.07	.10	-.11	-.06
Extensions	-.05	.01	-.06	-.14	-.08	.13	.02	.06
Building on	.26*	.34**	.23	-.12	-.15	-.01	-.13	-.05
Explanations	.43**	.34**	.00	-.15	.16	.15	-.04	-.09
Negotiations	.20	.50**	.15	-.12	.03	.36**	-.05	.19
Responses	.22	.04	.23	.10	.20	.07	-.05	.06
Positive/Neutral	.09	.14	-.04	.06	.08	.07	-.04	-.05
Negative/Ignore	.09	-.04	-.28*	.09	.20	.02	-.02	.16
Prosocial behaviour	.13	.05	-.12	-.07	.04	.10	-.06	-.02
Nonmaintenance	.14	.27*	.17	.26*	-.07	-.10	.11	.11

Note. Goal = Goals. Cog = Cognitions. Emot = Emotions. Pref = Preferences. Birth order was controlled. The Sibling Session correlations include the shared meaning strategies used in the sibling session and ISL employed in the sibling session. The Peer Session correlations include the shared meaning strategies used in the peer session and ISL employed in the peer session. *$p < .05$, **$p < .01$.

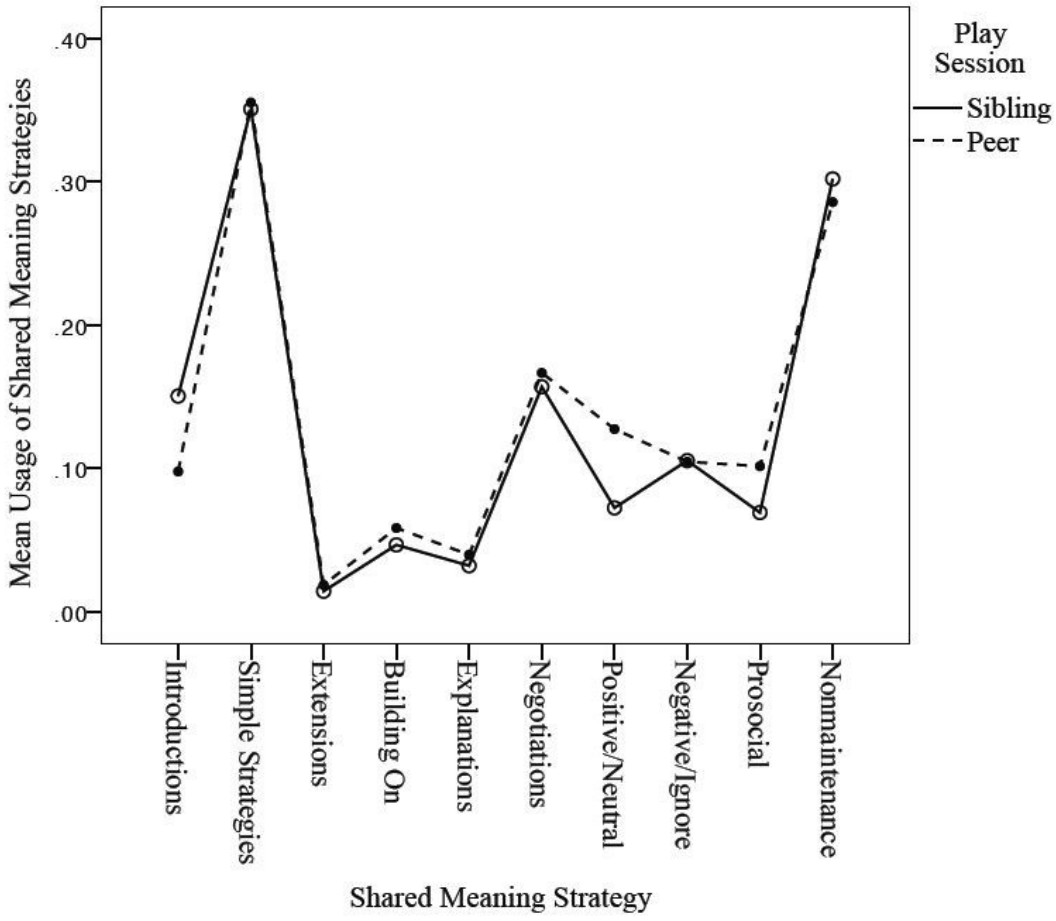
Table 8

Partial Correlations between Categories of Shared Meanings in the Sibling Session and Internal State Language in the Peer Session of the Focal Children

	Internal State Language in Peer Session			
Shared Meaning Strategy in Sibling Session	Goals	Cognitions	Emotions	Preferences
Introductions	.48**	.07	.17	.13
Simple strategies	.20	.13	.18	.19
Semantic tying	.21	.06	-.07	.20
Extensions	-.21	-.05	-.12	-.08
Building on	.17	.03	-.05	-.12
Explanations	.31*	.03	.01	.27*
Negotiations	.00	.00	-.05	.13
Responses	-.03	-.09	-.08	.07
Positive/Neutral	-.23	-.10	.01	.01
Negative/Ignore	.11	-.05	-.11	.07
Prosocial behaviour	.06	.37**	.06	.36**
Nonmaintenance	.22	-.02	.04	-.12

Note. Birth order was controlled. *$p < .05$, **$p < .01$.

Figure 1. Shared Meaning Strategies by Focal Children ANOVA Interaction



Discussion

The overall purpose of this study was to examine children's co-construction of shared meanings and ISL used during pretend play across two relationship contexts, the sibling relationship and friendships. A discussion of the findings reported above will ensue according to themes and patterns that emerged in the data. Following this discussion will be an outline of the limitations of the study, directions for future research, and implications of the findings for parents and early childhood educators.

Co-Constructing Shared Meanings During Play

Types of strategies. In satisfying the first goal of the present study, to examine children's overall co-construction of shared meaning strategies employed during play with siblings and friends, exploratory analyses were conducted and revealed several differences in the focal children's usage of shared meaning strategies. First, the focal children were more likely to employ simple strategies, negotiations, and nonmaintenance strategies than the other shared meaning strategies. In regards to the simple strategies, they were characterized as declarative statements that accompanied the children's activity and these statements often maintain the children's interest in the play. Children often use simple strategies to communicate an idea and subsequent shared meaning strategies follow, such as building on this idea or a question, which would be considered a negotiation. For example, a child might make a simple statement such as "here's a cow," then building upon this idea by adding, "and he's going to be in the barn." Negotiations were also frequently used, which demonstrates the importance of clarification in the process of developing a shared understanding. These were often asked in relation to the objects such as "where should the table go?" or "do you want this (cow)?" Although

semantic tying strategies have been reported in the literature as key elements in the shared meaning process between dyads (Göncü, 1993a), they were the least frequent strategies employed by the focal children with extensions being employed significantly less often than any of the other shared meaning strategies. This could be a reflection of the children's age (i.e., 4-years-old), suggesting they have not yet developed more advanced cognitive skills since the strategies are sophisticated in nature. Specifically, extensions require the child to first understand their partner's message then add new information to coherently extend the partner's idea (Göncü, 1993a). The low frequency of the semantic tying strategies may also link to the notion of connected communication, which is based on the frequency of one partner's utterances being semantically related to another speaker's prior utterances (Ensor & Hughes, 2008; Gottman, 1983). Perhaps as children acquire more dyadic social experiences, they will be better able to connect their communication with others, which is a question that could be explored in the time 2 data when the focal children were 7-years-old.

In regards to the shared meaning strategy and play session, some of the few significant findings were predicted such as the more frequent positive and neutral responses and prosocial behaviour in the peer session. First, the only strategy employed more often in the sibling session than peer session was introductions. Second, positive and neutral responses as well as prosocial behaviours occurred significantly more often in the peer session than sibling session. This may be a reflection of the characteristics of these types of relationships. Given that friendships are a voluntary relationship and based on a mutual liking, the finding that children were more prosocial is expected since these behaviours contribute to the maintenance of the relationship (Dunn, 1988). In

comparison, the obligatory nature of the sibling relationship means prosocial behaviour is not required to foster this relationship, as it will continue regardless of how many positive or negative interactions occur. Additionally, same-aged playmates have been found to engage more cooperatively with one another compared to mixed-aged dyads (e.g., Howes & Farver, 1987), which may also provide an explanation for this finding. Lastly, given that the focal children did not differ in the other types of shared meaning strategies across the two relationship contexts, these findings may suggest both types of relationships have distinct characteristics, but may both contribute to developing a shared understanding regarding the co-construction of pretense. For example, Howes and Farver (1992) examined partner effects of unrelated children and found when toddlers played with a same-aged partner, they engaged in more reciprocal interactions, meaning the children were more active in constructing social pretend play compared to when the toddlers played with an older child. The mixed-aged dyads' interactions were described as asymmetrical because the older children engaged in more teaching and directive behaviours than the younger children and the younger children often imitated the older children. Additionally, in a study conducted by Cutting and Dunn (2006) siblings were reported to engage in more conflict than friends; however, the sibling's communication was more successful than the friends, suggesting that siblings engaged in more joint discussions about their pretend play than friends.

Overall, the cooperative behaviours found in friendships and the successful communication between siblings may both contribute, albeit with differing functions, to the co-construction of a shared understanding about play. For example, one of the primary characteristics of play is that it is a pleasurable and enjoyable activity (Garvey,

1990) and the prosocial interactions between friends may foster these emotions and ultimately be used to sustain the pretend play episode. Furthermore, siblings' successful communication may reflect the intimate nature of the relationship and creating a shared understanding may come more easily than with friends. Namely, due to their long history and countless experiences, siblings may be more knowledgeable about each other than friends, which would contribute to establishing a shared understanding during play more easily than between friends. It is important to highlight the age difference between siblings, which may also contribute to the construction of shared meanings during play and will be further discussed in the next section.

Birth order differences. The focal children's birth order was associated with a few shared meaning strategies during play. As expected, first-born focal children responded more negatively, ignored, and engaged in more nonmaintenance behaviours with their younger sibling than the second-born focal children. Howe et al. (2005) also found nonmaintenance behaviours to be more frequently employed by the first-born siblings and suggest they were preoccupied with controlling the play and actions of their younger sibling rather than collaboratively creating a shared understanding about the course of the play. The negative and ignore response finding in the present study would also support this explanation and perhaps indicate additional ways for the first-born children to remain in control of the play.

Contrary to the hypothesis, there were a lack of significant associations between birth order and shared meaning strategies in the peer session, which did not support the carryover effect (Stocker & Dunn, 1990). It might have been expected that there would be links between the two relationships, specifically that what the younger children learns

from their older sibling would be carried-over into friendships; however, the findings suggest otherwise. Perhaps carryover effects may occur as children progress through childhood, developing their cognitive skills and gaining more social experiences with their older sibling.

Additionally, the first-born children employed the semantic tying category of explanations more often than the second-born children in the sibling session. The first-born children's use of explanations may reflect their understanding of their role of being an older sibling. That is, older siblings may understand that they need to use explanations frequently when communicating with their younger sibling in order to come to a shared understanding in the activity since their younger sibling's social and cognitive processes are not as developed as their own. This understanding may have developed throughout their numerous experiences of interacting with one another in which they are learning and being influenced by each other's behaviours (DeHart, 1999; Hartup, 1989; Howe et al., 2011; Tucker & Updegraff, 2009). This developmental difference may also explain the other significant semantic tying category of extensions, which were more frequently employed by the second-born focal children. This may reflect the older sibling's important role in developing the ideas during the play and the younger siblings' engagement in the play by adding new information or extending the older sibling's ideas. Perhaps this sequence of exchange contributes to more successful or connected communication between the siblings.

The differences in the children's interactions also support Hinde's (1979) distinction of the two types of relationship interactions: complementary and reciprocal. The differences in the strategies the children employed with their sibling emphasize the

complementary and reciprocal nature of the relationship. For example, the older siblings responded more negatively, ignored, and used explanations and nonmaintenance strategies more often than the younger siblings, which may reflect the asymmetry and social dominance of the older participant, thus reflecting complementary interactions. The reciprocal interactions are evident in the second-born focal children extending their older siblings' ideas about the play. Since the first-born siblings also employed more nonmaintenance strategies, which were reported previously, perhaps the younger or second-born siblings naturally assume a co-constructing role in the development of the play and followed the older siblings' actions. The significant positive and neutral responses and prosocial behaviour in the peer session may also be an indication of the reciprocal interactions in which friends typically exchange. Although both relationship interactions contribute to children's social and emotional development, clearly, the sibling relationship is a unique context for children to develop, practice, and rehearse social interactions.

Internal State Language Use During Play

Types of internal state language. Children's use of ISL is especially interesting given that references to mental states have been identified as an important marker of social understanding (Carpendale & Lewis, 2004; Dunn, 1988; Howe et al., 2011; Hughes & Dunn, 1997). Although there was no significant overall difference between the children's ISL in the sibling session and peer session, there was a significant difference overall among the four ISL categories with goals and cognitions referred to more often than emotions and preferences. Since pretend play is "a cognitive process" (Vygotsky, 1966, p. 81) and requires the ability to transform objects and actions

symbolically (Lillard, 2002), references to both goals and cognitions are logical. Children would need to verbally express their mental states in order to develop a shared understanding due to the cognitive skills required for play. For example, children will refer to their own mental states and make statements such as "I don't *need* that" or "I *know* how that barn goes." The children will also refer to their play partner's mental states, sometimes by asking questions such as "I don't *know* what this is. Do you *know* what this is?" or "do you *want* this tree right here?" These statements refer to the children's own thoughts and cognitions or are requests to their play partners to express their mental states.

As for the low frequency of references to preferences and emotions, perhaps these were communicated nonverbally through the use of actions and facial expressions (e.g., smiling and laughing or frowning and crossing arms), whereas goals and cognitions would need to be expressed verbally (e.g., "I *want* that horse" or "I *think* it's a bench"). These findings are in accordance with Hughes and Dunn (1997) who suggest mental state references (e.g., thoughts, beliefs, and memories) during play may be necessary to facilitate their pretend scenario. Similarly, Youngblade and Dunn (1995) found conversations between a child and sibling about internal states (i.e., feeling state talk) contributed to the child's participation in and sophistication about social pretense. Social pretend play was measured based upon pretense bouts where both partners participated in the scenario as well as the theme of the pretend bout, which was coded using an index of the variety and richness of the pretend play. This differed from the present study, which used play as a context to study ISL. Perhaps if pretense was specifically measured using a rigid coding scheme and associated with the ISL category of emotions, similar findings

to Youngblade and Dunn (1995) would have been found. Regardless of this issue, the association between ISL and pretend play may reflect young children's understanding of other people's thoughts and feelings and facilitate social pretend play since perspective taking may be necessary to continue the cooperative play scenario (Slomkowski & Dunn, 1996). Otherwise stated, children may use mental state talk to initiate and sustain their interactions with other children especially during play.

Although the expectation was that the children who were second-born would carry-over social skills employed in the sibling session into the peer session, this was not the case. Instead, the first-born children made references to cognitions more frequently than the second-born children in the peer session. Perhaps there was a carry-over effect, but counter to what was hypothesized. The first-born children may have referenced their cognitions more frequently because they have learned through interacting with their younger siblings that it is important to reference cognitions when attempting to establish a shared understanding, especially during an activity where mutual engagement is optimal, such as social play. An alternative explanation for this finding may be that first-born children had experienced more sophisticated conversations with the parents compared to second-born children (Hughes & Leekman, 2004). First-born children would have the opportunity to engage in dyadic conversation with their parents, unlike second-born children who might have to compete with their older sibling for parental attention (Howe et al., 2011). Perhaps the second-born children lack the experience of explicitly stating their cognitions due to their birth order; meaning older siblings may be the ones to reference cognitions during play and carry this ability into other social contexts, such as engaging in play with a friend, which was found in the present study.

As the second-born children's cognitive skills develop and engage in more complex play with their older sibling, a carry-over effect may be found. Overall, ISL reflects an aspect of children's cognitive processing, which indicates how they are thinking about their own mental states and are communicating their thoughts to their partner (Howe et al., 2005). In sum, referencing cognitions specifically may be crucial when co-constructing shared meanings during play.

Shared Meaning Strategies and Internal State Language Associations

Given that internal states can be referenced while establishing a shared understanding, gaining insight into the associations of these two constructs was the third goal of the study. As expected, the focal children's employment of shared meaning strategies and ISL were linked within both sessions while controlling for birth order and an especially high number of correlations were found in the sibling session. Focal children who used introductions, semantic tying, negotiations and nonmaintenance strategies with their sibling were significantly more likely to employ ISL with them. Although the total shared meaning strategies employed by the focal children in the peer session was associated with ISL, when the strategies were examined individually, focal children who only used introductions were more likely to reference internal states. Since birth order was controlled, the several significant associations found in the sibling session compared to the peer session demonstrate the uniqueness of the sibling relationship. The large amount of time siblings spend together, which provides countless opportunities to learn and be influenced by one another's behaviours (Dunn, 2002; Tucker & Updegraff, 2009) as well as engage in both conflict and cooperation (Howe et al., 2011) may be crucial factors in the significant associations between shared meaning strategies and ISL

usage. Friendships do not often share these unique characteristics, which could explain the lack of associations between shared meaning strategies and ISL in this relationship context. Brown et al. (1996) found that the length of children's friendships and the frequency of their interaction were related to children's references to mental states and pretend play. When friendships were enduring and consisted of countless mutual interactions, mental state references and play associations were similar to the child-sibling dyads. Additionally, Cutting and Dunn (2006) reported siblings spend more time in both conflict and cooperation than friends, which would explain the multifaceted exchanges between siblings. Given this, there may be more complex interactions between the siblings than peers, which may be due to the characteristics described above as well as their shared history that is comprised of mutual interactions.

Adding to the above findings, the focal children who referenced cognitions were more likely to use introductions, the semantic tying strategies building on and explanations, negotiations, and nonmaintenance strategies in the sibling session. Similarly, the children who referenced goals were also more likely to employ introductions, building on, and explanations also in the sibling session. As reported previously, cognitions and goals appear to be crucial internal states to reference when establishing a shared understanding, which again has been documented in the literature (e.g., Howe et al., 2005). Only two shared meaning strategies were correlated with cognitions in the peer session, which included introductions and negotiations. Perhaps introductions were often used with negotiations in order to call attention to the play partner when asking a question about cognitions; for example, "I don't *know* what this is.

Matt, do you *know* what this is?" Overall, the co-construction of shared meanings during play appears to be associated with references to internal states, specifically cognitions.

Exploratory correlations were conducted to determine if there were associations across the two relationship contexts. First, the focal children who employed introductions and explanations in the sibling session were more likely to refer to cognitions in the peer session. Also, the children who engaged in prosocial behaviour and used explanations in the sibling session made references to preferences in the peer session more often. Lastly, the siblings' prosocial behaviour was also positively correlated with cognitions in the peer session. When the shared meaning strategies in the peer session were correlated with the ISL used in the peer session, no significant associations were revealed. These findings suggest that siblings' co-construction of shared meanings during play may be a key facilitator for developing an ability to attribute mental states to oneself and others (Howe, Petrakos, & Rinaldi, 1998; Hughes & Leekman, 2004). The children's shared meaning strategies used with their sibling may indicate the ability to establish connected communication (Slomkowski & Hughes, 1996), which leads to the employment of ISL with their friend and is a marker of the children's social understanding (Carpendale & Lewis, 2004; Dunn, 1988; Howe et al., 2011; Hughes & Dunn, 1997). The ability to communicate effectively may begin in the sibling context and transfer, or carry over, into other contexts, such as friendships. Perhaps co-constructing shared meanings during play in the sibling relationship is a facet of social understanding and thus, is associated with the ability to reference mental states with others. Since the correlations between the children's shared meaning strategies with the peer and ISL with their sibling did not yield significant associations, this is in line with

the previous findings from the current study, which indicates children's interactions with their siblings are unique, complex, and may have a prominent role in developing children's social understanding.

Summary

Taken together, the findings from the study revealed several significant associations and differences in children's co-construction of shared meanings and ISL used during pretend play across the two relationship contexts. The result regarding children's employed shared meaning strategies and play partner as well as the birth order investigation, reflected the characteristics of these two relationships. For example, the positive and neutral responses and prosocial behaviours found in the peer session highlight the mutual liking and voluntary nature of this relationship, which confirms findings from previous studies that also found partner effects in young children's pretend play (Cutting & Dunn, 2006; Howes & Farver, 1992). Furthermore, first-born focal children responded more negatively and ignored their younger sibling more often than second-born focal children, thus supporting Hinde's (1979) theoretical discussion of complementary interactions. Second-born siblings often assumed a co-constructing role in the play by contributing new information to the older siblings' ideas, which also reflects Hinde's (1979) description of reciprocal interactions. These two types of interactions are often demonstrated in siblings' social exchanges (Dunn, 1983; Hinde, 1979; Howe et al., 2011) and were evident in the findings of the present study.

The second component of the study investigated children's ISL usage and found an overall significant difference of the four ISL categories with goals and cognitions referred to most often. This supports Vygotsky's (1966) description of play as a

"cognitive process" (p. 81) as well as Lillard's (2002) emphasis on the cognitive complexity involved in pretense. The significant referencing to goals and cognitions may be crucial for developing a shared understanding during play and reflect the children's cognitive processes (Howe et al., 2005).

Cognitions and goals were also revealed to be significant when associations between shared meaning strategies and ISL were investigated. These two ISL categories were correlated with several shared meaning strategies in the sibling session including introductions, the semantic tying strategies building on and explanations, negations, and nonmaintenance strategies, which supports previous literature (Howe et al., 2005). Only two shared meaning strategies, introductions and negotiations, were correlated with cognitions in the peer session. This again revealed the key role of cognitions in the construction of a shared understanding during play as well as introductions and negotiations. Also, these findings revealed stronger correlations between the shared meaning strategies and ISL used in the sibling session even when controlling for birth order. The significant pattern found in the sibling session emphasizes the differences between children's relationships with their sibling and friend. The highly intimate nature, long co-construction of a shared history, and great range of affect found in the sibling relationship (Dunn, 2002; Howe et al., 2011) may be crucial for children to develop socially, cognitively, and emotionally.

Overall, the study reflects the complexity of children's co-construction of shared meanings and ISL usage during play. Clearly, the partner affects how and which shared meaning strategies are employed and mental states are referenced. Due to the significant differences in the interactions between the sibling session and peer session even when

birth order was controlled, it can be concluded that the sibling relationship offers a unique context for children to develop a social understanding.

Limitations

Although the collected data provided a rich venue to study children in their naturalistic setting, a few noteworthy limitations have arisen. First, due to the time consuming nature of using observational data, a sample size of 65 may be considered acceptable; however, due to the comparison of the focal children's birth order, the sample size was partitioned into two groups consisting of 38 and 27. These latter sizes may have reduced statistical power. Additionally, the majority of the participants were from middle-class status and of a Caucasian background. The lack of demographic variability of the participants and the relatively small sample sizes may limit the generalizability of the findings.

A second limitation is that there was a lack of additional measures regarding the children's social ability and understanding. Measures commonly used in previous research regarding children's social development include theory of mind and false-belief tasks as well as verbal ability. Although theory of mind and false-belief tasks have received mixed results in the literature in being associated with the quality of children's social interactions (e.g., Cutting & Dunn, 2006; Dunn et al., 1991; Hughes & Dunn, 1998; Slomkowski & Dunn, 1996), including a false-belief measure would have added to the current research on this topic on children's cognitive processing, social interactions, and verbal communication with their play partner. Additionally, a measure indicating the children's length and endurance of their friendships would have made the comparison between siblings and friendships more fruitful, since friendship length was related to

children's references to mental states and social pretend play in a previous study (e.g., Brown et al., 1996). Furthermore, children's language ability (e.g., receptive language skills) has been considered an important variable to examine since understanding the partner's perspective is a crucial step in the process in developing a shared understanding between partners. For example, Hughes and Dunn (1997) found a strong correlation between children's mental state language and verbal ability (measured using the Peabody Picture Vocabulary Test), which needed to be partialled out during their subsequent analyses. By including additional measures such as the ones described above, the interpretation of the results would hold more conviction; however, proportion scores were used in the present study as an attempt to control for language interactions (e.g., number of conversational turns).

Future Directions

Despite the limitations outlined above, the results of the present study suggest, that this is a fruitful avenue for future research. First, the intersubjectivity coding scheme was extensive and captured an array of the children's strategies they employed to establish a shared understanding during play. Future studies can examine the processes of communication that lead to pretense by determining the patterns in children's language (that lead to a shared understanding) and interactions (i.e., social exchanges). Perhaps socialization with siblings and peers provides children with the primary mechanisms that are required to develop global social competencies. Conducting this research may also identify qualitative differences between children's interactions with their sibling and friend, and in turn could be used to develop a better understanding of these two relationships.

Second, children's references to internal states are often complex. At times, children reference their own cognitions and during other times they referred to their play partner's cognitions. Both have an important role in establishing a shared meaning during play; however, determining how and when children refer to their own mental states and their partner's states would add to our understanding of children's social abilities especially in the two social relationship contexts.

Third, more significant findings were revealed for children in the sibling session than the peer session for shared meaning strategies and ISL. In light of this finding, future studies should continue to examine the role of the sibling relationship in fostering children's ability to establish shared meanings and usage of ISL and explore how features of the sibling relationship, such as relationship quality, are related to the frequency and effectiveness of creating a shared understanding. Although this study explored children's social relationship contexts, examining triads that include siblings, friends, or both may illuminate the different roles children play in one another's social development. Additional interaction contexts should be observed and analysed to determine how children co-construct a shared understanding and use ISL during other activities such as a problem solving or teaching task. This may also be useful in understanding how co-construction of a shared understanding unfolds and changes over time. Perhaps children's employment of shared meaning strategies is dependent on the context (e.g., play, teaching and learning, conversation) as well as the children's cognitive ability and social experiences.

Implications

The findings of the present study illuminate how children construct a shared understanding and reference internal states during play with their siblings and friends. Children's primary socialization occurs within the sibling or peer context through early childhood. Consequently, the knowledge gained from this study adds to the literature on children's development and their social relationships.

As was demonstrated from this study, children's communication to establish a shared understanding during play is complex. Children will learn a great deal by negotiating the play scenario with their play partner. During social pretend play, children have opportunities to communicate their ideas and learn how to explain their perspective effectively to their play partner and in turn, accommodate their partner's thoughts into the play episode. Children will also inevitably encounter conflict with their partner, regardless of the type of relationship. In the process of accommodating their partner's perspective, they will continue to use shared meaning strategies and reference internal states in order to come to an agreement and understanding of the play scenario.

Given this, the information gained from this study can be made known to parents. The results from this study suggest that children's negotiations during play are complex, especially between siblings. The data revealed that when children engage in play with their sibling they are more likely to use sophisticated shared meaning strategies, such as extensions and explanations, and make more references to their mental states than when engaged in play with a friend. When parents are aware of the cognitive complexity needed for pretend play and the differences in how children play with a sibling compared to a friend, they may be more inclined to encourage their children to engage in unstructured play in a cooperative manner. Generally speaking, when children engage in

cooperative pretend play, they need to initiate, sustain, and accommodate their partner's perspective into their play, which highlights the many social-cognitive processes required to ensure successful play interactions will occur. In sum, children will naturally learn social skills, develop an emotional understanding, and think abstractly (Vygotsky, 1966) as they engage with their sibling, which will most likely influence other areas of development.

Conclusion

Overall, the findings from this study support findings from previous studies that have examined children's co-construction of shared meanings and internal state language usage (Dunn et al., 1991; Göncü, 1993a; Farver, 1992; Howe et al., 2005; Howes & Farver, 1987; Hughes & Dunn, 1997). Additionally, this study adds to the literature by including an examination of these processes across two significant relationships of children. The results demonstrated that there is a high level of sophisticated play interaction among siblings during play and these interactions are rich and varied, especially when compared to friendships. Clearly, the study has revealed children's interactions during play are complex in both sibling and friend contexts, although the sibling relationship appears to be particularly a unique context for children to develop their social and emotional development.

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Appendix A

Intersubjectivity Coding Scheme

Intersubjectivity in children's social pretend play

Concordia University

Created by: Howe, N., Petrakos, H., Rinaldi, C. M., LeFebvre, R. (2005)

Updated: June 2012 (By Jamie Leach)

1) Introduction

1.A) Calls for attention

1.B) Play themes (pretense)

2) Maintenance

2.A) Simple maintenance strategies

2.A.1) Descriptions of action

2.A.2) Imitations-Repetitions

2.B) Semantic Typing

2.B.1) Extension

2.B.2) Building On

2.B.3) Explanations/Justification

2.C) Negotiation Strategies

2.C.1) Questions

2.C.2) Ask for help

2.C.3) Tags

2.C.4) Revision

2.C.5) Conciliation

2.D) Responses to negotiation

2.D.1) Acceptance

2.D.2) Disagreement/rejection

2.D.3) Neutral

2.D.4) No-response (ignoring)

2.D.5) Submissive

2.E) Teaching-helping statements (prosocial)

2.E.1) Teaching and helping

2.E.2) Prosocial statements/actions

2.E.3) Shared affect (shared laughing)

3) Non-maintenance actions/statements

3.A) Directives/control

3.B) Negative behaviors

3.C) Irrelevant Act

3.D) Talking to observer

Intersubjectivity in children's social pretend play

Concordia University
Created by: Howe, N., Petrakos, H., Rinaldi, C. M., LeFebvre, R. (2005)
Updated: June 2012 by Jamie Leach

1) Introduction

Involves incorporation of elements to social play interactions that have not been part of the play before, such as new play themes. Can take place anywhere in a turn, in the beginning, in the middle or at the end.

1.A) Calls for attention
Utterances used to gain partner's attention, "*hey*!" "*look*!"
Only coded once in a turn.
Often used to begin pretense with a partner.
Examples: "*watch this*"; "*look at the cows*"; "*wait a second*" (depending on tone of voice)

1.B) Play themes
Clearly a new direction in play **directed** to sibling. Both are engaged in a new theme.
"Hey let's play" ; "Let's make a farm, wanna make a farm?"
Has to be a clear introduction for joint play.
Takes precedence over 2B2. Used to establish a new play scenario.
Examples: "*let's pretend*…"; "*once upon a time*…"

2) Maintenance

Acts that involve maintaining the play interaction by adding information to the ongoing effort, direct expressions of how much players assume their partners know, how much they extend their partners' ideas and how much the players add knowledge to their own ideas in connecting their ideas to their partners'.

2.A) Simple maintenance strategies
These strategies are not specifically used to maintain the play but they keep the children "connected."

2.A.1) Descriptions of action
Declarative statements accompanying ongoing activity or describing past or future action.
"There, then pigs go in here"
Used to organize the play or preparing to play (places objects). Often an expression of a new idea. Includes when a child repeats or revises self, or answers own question.
Examples: '*this is what I'm doing'* statements; "*I need*…"; "*pig*" (sets pig in farm)

2.A.2) Imitations-Repetitions
Repeating partner's prior utterances

Repetition may not be 100% accurate. Can include imitating behaviours. Includes clarifying questions (e.g., Child A: "*A chicken*!" Child B: "*A chicken*?"

2.B) Semantic typing

Adding new semantic elements to partner's previous contribution.

2.B.1) Extension

Children add new information and/or new expectations to partners' idea expressed in the preceding turn. Implicitly assume or explicitly express agreements with the partner as they add new intriguing information to the partner's idea.

Two ways:

1) Acceptance can be expressed as first saying "*yes*" then adding new information to it.
2) Acceptance can be implicitly embedded in the partner's newly expressed idea.

Can only occur in the beginning of a turn.

Y: "this is a bad dog you know, he runs and he jumps and he scares all the sheep"

O: "and this mama will be watching him, in case they get hurt"

Once each child adds new elements to the original idea, all subsequent elements will be coded as 2B1.

Examples:

O: *The animals go in here* (2A1)

Y: *And they fall asleep.* (2B1)

Can be stated as a question, which would take precedence over 2C1 (questions)

Example: "*The pool is always open*" (2A1)

"*What if it's thundering*?" (2B1)

2.B.2) Building on

Includes adding new information to one's previously expressed idea with the apparent purpose of contributing to ongoing shared play. The statements always follow the other acts.

O: "This is a dog" (2.A.1)

Y: "I've got the horses" (2.A.1)

O: "The dog goes in the farm" (2.B.2)

If child answers own question and gives new information can be coded.

O: "What's this?" (2.C.1)

O: "Oh, it's a bench for the child to sit on"(2.B.2)

2.B.3) Explanations/Justifications

Explaining why playing in particular way, justifying action to develop shared understanding about course of action, explaining properties of objects *"they are the same size"*
Y: "that's a horse because it has a nice long tail; dogs have short tails"

Words such as "*because*", "*cause*", "*so*", "*like this*", "*like that*" are often used.
Something is often said before a 2B3 code.
Example: "*The train goes on the track like that*." "*I get the cow 'cause I have the barn*."

2.C) Negotiation Strategies
Direct expression of the degree to which children agree with partner's ideas, indications of sharing the same reference in dialogue.

2.C.1) Questions
Leading to a shared understanding or agreement in the play.
If a child answers their own questions don't code the sibling's response
"What's this for?", "Where is the other chair?"
Used to engage partner.
Example:
"*I'm going to put the farm here. Okay Taylor*?" (2A1, 2C1)

Code questions asked to self as 2C1 and self-answers as 2A1.
Example: "*What's this? Oh, a roof*." (2C1, 2A1)

If the question is prosocial, then do not code it as 2C1 (rather 2E2).
Example: "*Should we put the fence here*?"

2.C.2) Ask for help
Explicit request for assistance, help in building
Example: *Roof keeps falling while trying to build the farm and one child says "help me"*
Example: "*How do you do this*?"

2.C.3) Tags
Verbal devices placed at the end of a conversational turn to elicit a response or acknowledgement *"right?" "ok"*
Code partner's response
Always at the end of a statement.
Example: "*Pigs go in the barn, right*?"

2.C.4) Revision
Involves rejecting the partner's idea and changing it. The principal function of a revision is to express disagreement with the partner and to correct at the same time. To differentiate between a revision and a

directive used to control see if the revision is there to maintain or simply to control the other sibling (breakdown)
Y: "Here is a rooster"
O: "No, that's a chicken"
**Revising self does not count.
Example: "*No Alex, it's for the roof*!" (2C4)
"*No, those are supposed to go here*." (2C4)
"*That's not a cheval, that's a doggie*." (2C4)

2.C.5) Conciliation
trying to find agreeable ground, suggest a compromise
Y: *"all the sheep are dead, he murdered them"* (2.A1)
O: *"No, come on Emm"* (2.D.2)
Y: *"One of them"* (2.C.5)
O: *"Ok"* (2.D.1)

2.D Responses to negotiation
Maintenance and negotiation strategies can be answered by any of the above. If the answer doesn't fit any of these categories they can be coded with these following answers. These are "lower" level strategies and they should be coded only if no maintenance or negotiation strategies can be identified.

2.D1) Acceptance
Agreeing with the other child
can be express in terms of such behaviors as explicit approval of the partner's idea, can also be expressed in terms of implicit acts such as showing interest in the partner's activity.
Needs to be a clear acceptance, otherwise default to neutral. Tone of voice is important.

2.D.2) Disagreement/Rejection
Child negates the partner's idea, or rejects it. "*No*"
Needs to be clear disagreement or rejection. Most "*no*" and "*nope*" responses will be disagreement.
Example: O: "*Do you want this*?" (2C1)
Y: "*No*" (2D2)

2.D.3) Neutral
The child gives a neutral answer or acknowledges other sibling without being positive or negative.
Also coded when sibling is giving an answer to a question, e.g. *O: "Where the duckies go?" Y: "the duckies go in the pond"*
Example: "*I don't know*" (2D3)
Y: "*What's this*?" (2C1)
O: "*A cow*" (2D3)

2.D.4) No-response (ignoring)
The child doesn't respond.
Or responds with an irrelevant statement.
Example: Y: "*Do you wanna put these here*?" (2C1)
O: "*I like these ducks*." (2D4; 2A1)

2.D.5) Submissive
The child submits or complies with the other against his/her will.
Example: O: "*Gimme those pieces*."
Y: "*Fine*."

2.E) Teaching-helping statements (prosocial)

2.E.1) Teaching and helping. Explicit helping that may follow a request.
"Let me help you" or "Let me show you how to do that"
Example: "Oh here, this piece fits there."

2.E.2) Prosocial statements/actions (giving objects, friendly approach, supportive, understanding). *"We"* statements that indicate a joint activity or sense of purpose.
"We are making a big farm"
Includes sharing and complements.
Example: "*Your farm is really perfect*." (2E2)
"*Here you go*." **passes object** (2E2)
"*That's cool*!"

2.E.3) Shared affect (shared laughing)
Is coded for both children.

3) Non-maintenance actions/statements

3.A) Directives/control (Verbal)
Declarative used to control partner's action outside of pretend episode
"do this"
"I have all the horses" (negative tone)
Can be polite controlling statements. Often determined by the tone of voice.
Example: "*Don't!"*
"You got too many cars."
"You don't need to take them all."
"Put those here."
"You don't need the caboose."
"Give me those."
Or taking toys the other child has in front of him/her.

3.B) Negative behaviors (Physical)

Interference in the play, disruptive, attention-getting behavior, derogation, overt aggression (pushing, hitting, name calling, teasing, insulting), break established rules, immature and obnoxious behaviors.
Explicit statements wanting to end play. Throws object to other child instead of passing.
Example: "*This is boring! I'm not playing anymore*"
Or grabs objects from hand.

3.C) Irrelevant act
These acts are irrelevant to the partner's previously expressed idea, and their point of reference is something other than the play. They express disinterest in or failure to understand the partner's idea and interrupt play or bring play to an end. These take place in the beginning of turns and constitute a complete turn because the social episode itself is terminated by such acts. Distracted so child is completely off-task and unable to interact with sibling or play materials.
Example: *"Do you know Julie?"*
"Have you been in my tree house?"
"Did you go to the dentist today?"
"I'm hungry"

3.D) Talking to observer
Child clearly talking to observer.
Talking to anyone off-camera including observer, parents, other family members, and so on.

Appendix B

Internal State Language Coding Scheme

Internal State Coding Scheme
(Recchia & Howe, 2008)
Updated October 2011

General Coding Rules:

- Not every line in the transcript is coded (only lines that contain ISL terms)
- A line in the transcript may contain more than one code.
- Only verbal narratives are coded (NOT actions)
- Only narratives directed at sibling and friend are coded (NOT at observer, parent, etc.)

1) **Goals**: words that apply to goals, specifically desires, obligations, intentions, or attempts.

a. Desires

- change my mind
- desire
- dying to
- hope
- hopefully
- PERSON cry for
- PERSON expect (another person) to
- would like
- would love to
- want, wanna
- need (as in want)
- wish
- would love
- pray for
- aim for
- looking for
- interested

b. Obligations

- got to
- have to/ had to/having to/has to
- make sure
- must
- need to
- not to
- ought to
- should, better
- supposed to
- am expected to/expect someone to
- obliged to

c. Intentions

- accident
- expect to
- intend to
- mean to
- meant
- on purpose
- plan to
- shall
- going to, gonna

d. Attempts

- attempt
- try
- seems

2) **Cognitions:** words that reflect a child's beliefs (thoughts) or knowledge.

a. Beliefs (thoughts)

- Believe (B)
- Deserve (B)
- Decide, as in "What do you think?" (B)
- Dreams (B)
- Consider (B)
- Fair/not fair (B)
- feel ("I feel that you…")(B)
- guess (B)
- kidding/joking (B)
- I'll bet (B)
- Imagine (B)
- Mean it (B) as in " I mean it"
- memories (B)
- might (be) (B)
- probably (B)
- not sure/(to be) sure (B)
- pretend, "I'm making believe", "once upon a time" (B)
- real, as opposed to pretend (B)
- reason, as in no reason (B)
- serious (B)
- suppose (B)
- think, thought (B)
- trust (B)
- wonder (B)
- promised (B)
- worry (B)

- "What is your idea?" ="What do you think?" (B)

b. <u>Knowledge</u>

- Aware (K)
- Confused (K)
- Common sense (K)
- figure out, find out (K)
- forget, never mind (K)
- get it ("Do you get it?") (K)
- idea (K)
- It's true (K)
- know/I don't know (K)
- lying (K)
- "mixed up" as in confused (K)
- notice (K)
- prove (K)
- realize (K)
- remember (K)
- right, as in correct (K)
- understand, "I see" (K)
- wrong, as in incorrect (K)
- "I have no idea" = "I don't know"(K)
- "I mean a cow" – self-correcting (K)

3) **Emotions**: words that indicate a positive, negative, or general (neutral) emotion or a physiological state.

a. <u>tive</u>

- comforted
- curious
- enjoy
- excited
- feel (better/good/ok)
- fun
- funny (applied to object)
- glad
- happy
- laugh
- pleased
- proud
- smile
- surprised (happily), wow
- to love (a person)
- cozy
- ETC.

b. Negative

- afraid
- angry
- bored
- crying
- embarrassed
- feel (bad/worse/awful/hurt)
- hate (a person)
- hurt (mentally)
- jealous
- lonely
- mad
- miss
- sad
- scared
- scream
- surprised (in a bad way)
- upset
- ew, gross, disgusting
- sorry
- ETC.

c. General

- -"How did you feel when you did that?"
- -"Are you alright?"
- -"What is the matter?"
- -surprised (when there is no indication of whether it is negative or positive)

d. Physiological State

- Hunger
- Pain (burn, hurt, ouch, ow, sting)
- Fatigue
- Tired
- Alive, living/, dead
- Sick
- Feel (e.g. feel drops on me; feels cold)
- Taste (without a preference)

4) **Preferences**: words that express a preference.

- hate (something – not person)
- like/dislike (e.g. I like puppies)
- love (something, NOT person)
- "That's my favourite"

- don’t care (lack of preference)
- better (as in choice)
- traits (e.g. being lazy, clumsy, silly, stupid, sissy, funny, not very nice)
- “Do you mind?”
- “I don’t feel like it anymore”
- Yum/yuck/tasty (preference to flavour)