

THEORY OF MIND AND PRETENSE PLAY: PLAY BEHAVIORS

IN 4-YEAR OLDS

by

PATRICIA K. JANES

(Under the Direction of Major Professor Hui Chin Hsu)

ABSTRACT

Theory of mind (TOM) appears to define the developmental shift of the social and cognitive processes evident in children between the ages of 3-5 years when interactions of children become more complex and integrative as manifested in pretense play. An observational study of 4-year old dyads playing in pretense was designed to explore the changing play patterns and behaviors of young children as a function of TOM ability. To obtain differences in children's play interactions, dyads were videotaped free-playing with compatible play partners. From the videotapes, types of dyadic interactions and individual behaviors were measured. It was hypothesized that play interactions exhibited at both the dyadic and individual level will vary as a function of individual TOM scores. Results suggest that dyads with similar or differing TOM ability manifest different play profiles, and that individuals with high TOM ability exhibit more non-verbal signals of playing in pretense.

INDEX WORDS: Pretense Play, Theory of Mind, Preschoolers Play

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CHAPTER 1

INTRODUCTION

Two 4-year old girls are standing in front of a wall unit filled with fantasy play toys. One of the girls reaches for a ring of keys and the playmate sets a tiara on her head and pulls on a flowered skirt over her jeans.

“Let’s go on a trip,” says the child with the keys.

“Yeah,” says the other child, “and we can go to Hawaii. I’m the hula girl and a princess.”

Simultaneously, both girls arrange two chairs side by side and begin to collect and discuss the props that they will need for their road trip to Hawaii. The pretense scenario began with a set of keys and a tiara and ended with a hula dance lesson while on a picnic. The girls played in their pretend world for over 20 minutes.

In pretense play, children share an unreal world of make-believe where pretend events, roles, and objects “represent” the real world (Bretherton, 1986; Fein, 1981; Fein & Rivkin, 1986; Garvey, 1982). The observation of young children free-playing offers an opportunity for researchers to examine the development of children’s cognitive abilities in social relationships (Garvey & Berndt, 1977; Giffin, 1984; Flavell & Miller, 1998; Sachs, Goldman, & Chaille, 1984). With closer inspection of this normal activity of 4-

year olds, it is evident that the play of these children exhibits elaborate and sophisticated skills of representational thinking (Bateson, 1976; Leslie, 1987) and communication skills (Garvey, 1982; Sawyer, 1997). Not only are they implementing traits of pretense (the chairs represent a car that can be driven to Hawaii), they are writing the pretend scenario and performing as actresses (the girls have assumed the roles of the driver and the hula/ princess dancer), and they are integrating their ideas with each other (they are collectively creating a pretend scenario through negotiations and enactment). The ability to integrate their ideas in a social encounter demonstrates a fundamental understanding of social knowledge (Forbes, Katz, & Paul, 1986; Jarrold, Carruthers, Smith, & Boucher, 1994; Lillard, 1998).

The complexity of children's social play develops hierarchically. According to the Howes Peer Play Scale (Howes, 1980; Howes & Matheson, 1992), children's play development moves from parallel play through parallel aware play, simple social play, complementary and reciprocal play, cooperative social pretend play to complex social pretend play. The emerging play forms subsume earlier social and cognitive skills and abilities. Pretense play (i.e., complex social pretend play) emerges in the play patterns of children between the ages of 3- and 5-year-olds (Auwater, 1986; Garvey, 1982; Howes, 1980, 1988; Matheson, 1992), and requires complex and integrative cognitive and social processes in reciprocal role-playing (Howes & Matheson, 1992). In pretend play, each child demonstrates the ability to recognize and to respond appropriately to the implicit message "this is pretend" embedded in the social interactions between play partners (Bretherton, 1984, 1986). The child must also exhibit social knowledge by recognizing that her play partner may have, and indeed mostly usually has, different beliefs and

perceptions about the pretense scenario such as what are the roles of the different participants who are “going to Hawaii,” or how one travels to Hawaii. Success in the play episode is dependent upon the synchronization of the children’s beliefs and desires which is accomplished through strategies of verbal communications (Garvey & Berndt, 1977; Forbes et al., 1986). Thus, recognizing the behavioral signals of pretense and the necessity of planning and negotiations of the play for the purpose of mutual agreement are significant components to pretense play.

Researchers of children’s social knowledge or cognition use the term theory of mind (TOM) to define a child’s ability to reason and to make inferences about another’s mental states, such as beliefs, intentions, and desires (Jarrold et al., 1994).

Developmental changes in the mastery of TOM occur in children between the ages of 3 and 5 (Wellman, Cross, & Watson, 2001). In the example previously stated, the child pretends (mental state) to go to Hawaii and perceives (mental state) that her friend will pretend (mental state) to travel with her. She believes (mental state) that two chairs and a set of keys represent a car that will take her and her partner to Hawaii. She believes (mental state) that her partner will share in this pretense (mental state), but perceives (mental state) that her play partner might not agree on the props to be used or the continuity of the play scenario. According to TOM theorists, the child has imputed mental states to herself and to her playmate (Flavell & Miller, 1998; Taylor, 1996).

It has been conceptualized that components of pretense play and theory of mind ability appear to be parallel (Flavell & Miller, 1998; Harris, 1991; Jarrold et al., 1994; Leslie, 1987). To date research has established that individual children’s TOM ability is correlated with discrete elements of pretense (Neilsen & Dissanyake, 2000; Youngblade

& Dunn, 1995; Taylor & Carlson, 1997) and verbal interactions occurring in pretense play (Astington & Jenkins, 1995; Schwebel, Rosen, & Singer, 1999; Youngblade & Dunn, 1995) as measured by the frequency of play behaviors. Currently, there is no empirical work linking dyadic pretense play interactions to TOM abilities, nor have types of pretense play interactions, such as interactions to direct the play as opposed to interactions of children playing in a character role, been empirically separated and quantitatively identified. Likewise, research is lacking about the embedded signals of pretense exhibited by children in pretense play that alert the child's play partners to play accordingly in pretense.

The purpose of my study was to explore how children's pretense play is shaped by the levels of a child's and her partner's theory of mind through their interactions. Specifically, this study explores the linkage between pretense play and theory of mind at two levels: children's play that takes place between two partners or dyadic interactions, and the exhibition of representational playing by the child's use of verbal and nonverbal signals or individual behaviors. The study was designed to capture the richness of children's spontaneous interactions during free-play. To obtain differences in children's play interactions, four-year-old dyads were videotaped free-playing with different compatible play partners. From the videotapes, types of dyadic play interactions and individual behaviors were measured. TOM ability and a measurement of language ability were assessed on each child. It was hypothesized that play interactions exhibited at both the dyadic and individual level will vary as a function of individual TOM scores.

CHAPTER 2

LITERATURE REVIEW

Pretence Play in Young Children

Pretense play is a universal phenomenon that first appears in children's play patterns between 3 and 4 years of age (Haight, Wang, Fung, Williams, & Mintz, 1999). Researchers use the terms socio-dramatic play, social role-play, fantasy play, social pretense play, and complex social pretense play to designate a social activity of children during which children jointly incorporate reciprocal roles to implement elements of pretense (Bretherton, 1989; Fein, 1981; Garvey, 1982, 1990; Howes & Matheson, 1992). In pretense play children create meaning from their social interactions collectively (Forbes et al., 1986; Giffin, 1984; Sachs et al., 1984; Sawyer, 1997) as they transform toys into props (chairs become a car), take on character roles (a child pretends to be a princess/hula dancer), and loosely follow a dramatic story theme (a trip to Hawaii with her play partner). Together the children decide what props are appropriate to the theme and how the play scenario should be portrayed. The children in the socio-dramatic episode have the social ability to recognize that the play they are participating in is "not real" (Bateson, 1976). Bateson (1976) describes the exchange of messages between the children as: "These actions in which we now engage do not denote those action *for which they stand* would denote." (p.121) The child knows that the chairs are not a car and she is not a princess/hula dancer, except in the mode of "this is play" with her partner.

Preschoolers are skilled in recognizing and trusting the signals “this is play” (Bretherton, 1989; Goncu, 1990) and “this is not play.”

It is accepted by researchers of young children’s play that episodes of pretense play contain three components: the elements of pretense play, the enactment of the pretense play, and the strategies used to create and maintain the pretense play scenario (Fein & Rivkin, 1986; Garvey, 1982; Forbes, Katz, & Paul, 1986). The elements of the pretense scenario are the roles, props, action sequences, and themes; and they encompass the symbolic representations evident in the play episode (Fein, 1981; Fenson, 1984; Goncu & Kessel, 1988). The enactment component or the acting out of the pretense scenario is similar to a theatrical performance as the children perform as actors, not themselves (Auwarter, 1986; Sawyer, 1997). The strategies of production, negotiation and play maintenance are the techniques implemented by the children as they set-up for the play scenario and attempt to maintain thematic continuity during enactment. For example, the trip to Hawaii might change to a picnic in a park by a player suggesting that it is time to eat, and her partner appropriately responding that she will get the food. According to researchers, forty percent of the verbal interaction occurring in socio-dramatic play concerns strategies of planning, negotiation, and maintenance of the play scenario (Auwarter, 1986; Goncu & Kessel, 1988; Sachs et al., 1984). Strategic verbal interactions occur when the children are acting as actresses during the enactment, and also when the children are simply discussing the elements of the pretense scenario. The elements of pretense are symbolic representations, whereas enactment and strategies employed by the children are the play interactions between play partners.

Prior to the acceptance of the theory of mind paradigm, research in pretense play was usually designed around a target child to describe the play elements and/or the play strategies exhibited by individual children. Empirical studies often separated the development of cognitive abilities from the development of social abilities. Nevertheless, pretense play is a social activity that requires reciprocity in communication and use of pragmatic language by children. Although it was acknowledged that children exhibited social knowledge (Garvey & Berndt, 1977; Giffin, 1984; Schwartzman, 1978), the theoretical base of investigation on children's play did not discuss the mental constructs of social knowledge. Research in children's communication behaviors and patterns were the first empirical studies to recognize the importance of social interactions and the cognitive structures inherent to assumptions of social knowledge (Garvey, 1982; Forbes et al., 1986; Sachs et al., 1984). However, the empirical work in children's communication behaviors was limited by methodological procedures. Research studying the usage of communication and language during play was primarily done from transcripts and was unable to quantitatively capture the subtle signals of children playing (Garvey, 1990; Garvey, & Berndt, 1977). Research of social development through interactions was mostly qualitative theoretical discussions (Forbes et al., 1986). The importance of communication and social knowledge in children's pretense play will be reviewed separately in the following sections.

Role of Communication in Pretense Play

Bateson's (1976) theory of play and fantasy provides the theoretical framework for research in children's social interactions during pretense. Bateson suggests that communication during pretense play operates on contrasting levels of abstraction,

referred to as meta-communication in the literature. Meta-communications are messages *about* the play that structure the children's interaction while *in* play. For example, a statement such as "Let's pretend that we're going to Hawaii" explicitly states a strategic plan for the ensuing interaction. Or, the statement "I'm the hula girl and a princess" not only explicitly transforms her identity into a role (Huttenlocher & Higgins, 1978), but in the context of the interaction with her play partner, will implicitly indicate that she is in the pretense mode or pretense frame. The statement "Let's pretend we're going to Hawaii" is a planning technique delivered in the voice of the child herself (i.e., not as the hula/dancer girl). It is referred to as *out-of-frame* metacommunication (Bretherton, 1989; Giffin, 1984). The statement "I'm the hula girl and a princess" is a strategic verbal interaction of planning, negotiation, or maintenance depending on the context of the interaction. If delivered in her normal voice during talk about the play scenario, it would be *out-of-frame*; but if delivered during enactment or in theatrical voice, it would be classified as *in-frame* metacommunication. Children often use modifications in speech and language to represent role-playing (Auwarter, 1986; Garvey, 1982; Garvey & Berndt, 1977; Giffin, 1984). The distinction between *in-frame* metacommunication and *out-of-frame* metacommunication establishes a boundary between "this is play" and "this is for real."

According to Bateson's theory, when engaging in pretense play, children have the ability to abstractly send and receive messages about the play mode (i.e., *in-frame* versus *out-of-frame*) that function to direct the interactions. During play children attend to the status of the play frame by recognizing signals sent between play partners, and they are cognizant of the importance of not violating the play frame (Forbes et al., 1986; Golomb

& Kuersten, 1996). Preschool children do not appear to have difficulty in moving from the *in-frame* play to the *out-of-play* frame (DiLalla & Watson, 1988; Golomb & Kuersten, 1996). However, children pass in and out of the frames with varying degrees of sophistication by exhibiting explicit communication skills and implicit pretense signals (DiLalla & Watson, 1988; Garvey, 1982; Giffin, 1984; Sawyer, 1997; Schwartzman, 1978; Turnbull & Carpendale, 1999). Chronological age and linguistic ability of the child have been found to be positively correlated to play sophistication (Field, DeStefano, & Koweler, 1982; Yawkey & Miller, 1984; Youngblade & Dunn, 1995).

Trawick-Smith (1998) addressed the issue of how children move from one frame to the other during the pretense scenario. He defined metaplay as “the process of suspending actual role playing to think or communicate about pretend themes from outside of the play frame” (p. 433), and developed a taxonomy of metaplay behaviors from the broad categories of initiations (e.g., the suggestion of one child to another to use a chair to represent a car), responses (e.g., the acknowledgement of acceptance of the suggestion to use the chair as a prop), and constructions (e.g., the integration of the chair as a car when traveling to Hawaii). Trawick-Smith’s work added defined structural components to the research concerning the strategic interactions employed by the children to maintain the play scenario during episodes of pretense play.

Giffin’s (1984) qualitative study regarding the strategies preschoolers use to establish shared pretense provided structural guidelines for how children co-construct pretense play. Giffin clearly states the underlying assumption of collectively constructed pretense play: “It is assumed that the purpose of make-believe play with others is to sustain and experience collaboratively a transformed definition of reality” (p.88).

Pretense play was defined by Giffin as pretend play interactions occurring along a continuum ranging from *out-of-frame* interactions to *in-frame* interactions. Giffin concluded that the most sophisticated play is the interactions of play partners within the pretense play frame, or during the enactment (i.e., *in-frame*) (Forbes et al., 1986).

Consistent with Giffin's work, Goncu (1993) documented that *in-frame* communication extends the length of enactment in his study of intersubjectivity in preschoolers pretense play. Intersubjectivity describes the "shared meaning" of pretense and the "shared meaning" of the pretense scenario. The concept of intersubjectivity infers that children acknowledge the implicit and non-verbal messages embedded in the play. In classifying *in-frame* social behavior, Goncu included acts that expanded the play interactions such as introduction of props or extensions of the theme, the strategic interactions employed to preserve the play. However, the study did not differentiate the role identity assumed by the children while executing the expansions. The recognition of the role identity of the child (i.e., the child is playing a character role or the child is interacting as herself) is crucial to establishing *in-frame* play interactions during enactment or *out-of-frame* interactions of metaplay (Auwarter, 1986; Forbes et al., 1986; Sawyer, 1997).

The research efforts of Trawick-Smith (1998), Giffin (1984), Goncu (1993), and Bateson (1976) provide an empirical and theoretical foundation for separating the interactions of children during enactment from the interactions that occur during strategic planning and negotiation, or metaplay. Further, the literature highlights the importance of recognizing the embedded signals of pretense evident to children who play together.

In dyadic pretense play, each child's action whether explicitly or implicitly depicted is inherently dependent upon the dyadic interaction (Sawyer, 1997).

Role of Theory of Mind in Pretense Play

Pretense is a mental state in which the mind is capable of creating and recognizing the two worlds of reality and of fantasy, and behaving appropriately in either world without confusion (Golomb & Kuersten, 1996). For example, the mind can understand that a banana is a yellow piece of fruit that is eaten, but it can also create the fantasy that a banana can act as a telephone in a "pretend" world. In the real world, the banana represents an edible fruit, and in the fantasy world, the banana can also represent a tool (i.e., a telephone). The construct of pretense is a mental representation (i.e., the banana becomes a telephone) of a representation (i.e., the banana is a fruit). Researchers and theorists describe pretense as a metarepresentational ability. The mind of a child can perceive the reality of a situation or an object, but can reason and act as if the situation or the object is something other than true or real. The notion of metarepresentation is congruent with the research on theory of mind (Flavell & Miller, 1998; Leslie, 1987; Schwebel et al., 1999; Wellman, 1990).

What is TOM? Theory of mind is a term used by researchers of social cognition to refer to the cognitive ability to understand that people have and use mental abilities in social encounters. It refers to children's understanding of what people believe, think, hope, desire and other mental states (Taylor, 1996). Conceptually, researchers believe that knowledge about the mind's inner states is central to human understanding. Whether it is called "commonsense psychology" (Forguson & Gopnik, 1988), "belief-desire psychology" (Wellman, 1990), or "mind-reading" (Whiten, 1991), understanding the

processes of the human mind is significant in day to day activities. This cognitive understanding of a social world is best described by Forguson and Gopnik (1988),

“ It is difficult to overestimate the extent to which our commitment to CS (common-sense) psychology is implicated in our everyday lives as adults. Our ability to make cooperative plans; our deeply ingrained practice of blaming, excusing, and justifying behavior; our ability to predict what others will do under various conditions; our ability to influence others’ behaviors (e.g., to cajole, entreat, persuade, bribe, motivate, etc.) all depend on attributing beliefs, expectations, knowledge, wants, fears, wishes, motives, strategies and the like to others and using these attributions in ‘practical reasoning’” (p.227).

Extensive theoretical and empirical work over the past 20 years has established that young children develop a theory of mind, and that the term “theory of mind” reflects the qualitative difference in children’s socio-cognitive competencies that appears to transpire during interactions (Flavell & Miller, 1998). Although some developmental theorists prefer the phrase “developmental shift” rather than “qualitative difference,” it has been documented in the literature that children can and do impute mental states to others, and they begin to manifest the competency between 3 and 5 years of age (Wellman et al., 2001). Research indicates that verbal ability and chronological age are positively related to TOM abilities (Gopnik & Astington, 1988; Gopnik & Slaughter, 1991; Taylor & Carlson, 1997).

Wimmer and Perner (1983) demonstrated that very young children are unable to recognize that people will act upon their own beliefs even if the beliefs are false. The seminal research tested over 180 children between 3 and 9 years of age. In the original false belief task (Wimmer & Perner, 1983), children are shown two dolls: a mother and her son, Maxi. The mother and son dolls have just returned from shopping in which they purchased chocolate. Maxi places the chocolate in a cupboard A and leaves the room. While Maxi is out of the room, the mother moves the chocolate from cupboard A to cupboard B. When Maxi returns to the room, Maxi will look for the chocolate. The child is asked, "Where will Maxi look for the chocolate?" To answer successfully, the child must recognize that Maxi is unaware of the transfer of the chocolate from cupboard A to cupboard B and that Maxi will act upon his own false belief and look in cupboard A. The correct response of the child is considered proof that the child recognizes that others (i.e., Maxi) will act upon their own beliefs (i.e., the chocolate is in cupboard A) even if the belief is false (i.e., the chocolate is in cupboard B). Young children failed the false-belief task, and the older children exhibited complete mastery of it.

Research suggests that children between the ages of 3 to 5 develop the ability to answer the false-belief task correctly, and thereby possess an operative theory of mind (Taylor, 1996). The acceptance of the false-belief task as an evaluation of theory of mind competencies by researchers is important for methodological purposes and for conceptual validation (Moses & Chandler, 1992). Flavell and Miller (1998) describe false-belief tests as assessment measures of " 'serious' mental representations" (p. 869). The implication of this body of research is that the ability to understand that people will act on

their own beliefs, even if the beliefs are false, presumes that one constructs mental states in one's own mind.

The appeal of the theory of mind perspective is that it offers a framework for prediction and explanation of what people think and do (Hall & Carpendale, 1997). Taylor (1996) suggests that researchers of TOM are united by three assumptions: (1) mental states have connections with each other (e.g., intentions are related to pretense), (2) mental states have connections with events in the real world (e.g., a belief that chocolate is in the pantry), and (3) mental states have connections with the actions of oneself and actions of other people (e.g., a person who believes the chocolate is in the pantry will look for the chocolate in the pantry). Understanding the crucial role that mental state knowledge plays in social competency underscores the importance of theory of mind research.

Linkage Between Theory of Mind and Pretense Play

The literature reviewed above has established the components and elements of pretense play in preschool children, and the theoretical foundation and practical application of theory of mind assessment. Empirical research has documented an age-wise parallel development of pretense play and the mastery of social cognition as measured by false belief tasks. We now turn to possible connections between the two emerging skills as documented in contemporary research conducted in observational studies.

The elements of pretense (i.e., the roles, props, action sequences, and themes) are symbolic representations of a non-real world (Fein, 1975, 1981; Fenson, 1984) that are mutually accepted by play partners in pretense play. Two studies have investigated the

association of object substitution and role enactment with TOM ability. Neilsen and Dissanayake (2000) conducted an exploratory study with 40 3- and 4-year-olds playing naturally with a parent to explore the correlations between metarepresentational abilities and specific elements of pretense. The pretense categories of object substitution and role enactment measured by frequency count correlated positively with false-belief scores. Youngblade and Dunn (1995) studied the play behaviors and play partners of 33-month-old children playing at home. The pretend play measure of role enactment, also measured by frequency count, predicted TOM scores assessed 7 months later. In both studies role-enactment was defined as evidence of playing a particular role without the verbal designation of the role.

Other research has also demonstrated a relationship between interactional processes in pretense play and individual differences in TOM. Astington and Jenkins (1995) observed 30 preschool children playing in social pretense in the classroom and investigated the relationship between individual children's TOM and frequency of verbal aspects of pretense play. Transcripts of the 10-minute play period were coded by speaker turns for explicit joint proposals (i.e., reference to both self and play partner within an act of pretence) and explicit role assignments made by each child. Individual TOM scores correlated positively with verbal role assignments (i.e., "you be the mommy") and joint proposals (i.e., "let's go to the store"). The authors suggest that joint proposals demonstrate the recognition that the play partners mentally do not completely share in the understanding of the pretense situation. High TOM scores indicate the child's recognition of the partner's difference in mental states from her own.

Schwebel, Rosen, and Singer (1999) observed 85 preschoolers during free-play in a day care setting. Individual children were coded for evidence of pretense and for frequency of solitary or jointly constructed pretend play. Individual TOM scores correlated positively with children playing in joint pretend play. Youngblade and Dunn's (1995) study established that young children play more frequently with a sibling in pretense play, and that role enactment occurs in sibling pretense play. It would appear that the interactions occurring in pretense play are indicative of TOM abilities not apparent in other social activities. Together, results of these studies suggest that young children's TOM abilities develop through the social interactions occurring in pretense play. However, there is no direct evidence to support this hypothesis.

CHAPTER 3

HYPOTHESES

The literature has provided empirical evidence that TOM abilities are related to pretense play in young children, and suggests that pretense play is an area where TOM abilities are not only manifested, but also develop through the social interactions of two children. Research is needed in the exploration of how children's pretense play is shaped by their theory of mind. It would appear that one child with an established theory of mind would not only display more sophisticated commands of verbal and nonverbal pretense play elements but also affect the play behaviors of the partner.

The play behaviors exhibited by the dyads may change with children's theory of mind abilities. Social interaction in pretense play occurs during *in-frame* enactment and *out-of-frame* metaplay. During enactment, role playing demands that the children interact as actresses and accept the object substitutions used by their partner to ensure continuity to the pretense scenario. In essence, they are required to metarepresent in more than one aspect of the play. During metaplay, the children step out of the pretense play frame to confer over the elements of the play, such as what toy should be used to represent a prop. It would appear that metaplay interaction functions as a support to the metarepresentations required of the children during enactment. Because enactment requires more metarepresentational tasks by both play partners in the pretense scenario, children whose play interactions primarily occur in enactment, should score high in TOM ability. High TOM scores indicate a mastery of social cognition in young children, and

the ability remains stable within a relatively short time frame. However, the manifestation of the ability in pretense play is dependent upon the play partner. Therefore, children whose play interactions are split between enactment and metaplay would indicate that the play partners are dissimilar in TOM ability.

The proposed exploratory study is an effort to link the literature of three bodies of research, namely pretense play, communication processes in pretense play, and social cognition into a contemporary framework. This integration would allow researchers to explore the changing play patterns and behaviors of young children as a function of play partners' TOM abilities. Changes in play behavior will be manifested in children's play interactions measured at both a dyadic and an individual level. Research hypotheses were generated separately for the dyadic and individual play patterns. It is hypothesized that children's dyadic interactions during pretense play will differ significantly according to the TOM ability of their play partner.

Dyadic Play Patterns

With respect to dyadic play patterns, it was expected that dyads comprised of children with high Theory of Mind scores, dyads comprised of children with a high Theory of Mind score and a low Theory of Mind score, and dyads comprised of children with low Theory of Mind scores would exhibit different profiles of enactment and metaplay. Two specific hypotheses were generated regarding the two types of dyadic communication frames during pretense play.

(1a) During play 4-year-old dyads comprised of children with high Theory of Mind scores will engage in enactment for a longer period of time than dyads comprised

of children with a high Theory of Mind score and a low Theory of Mind score or dyads comprised of individual children with low Theory of Mind scores.

(1b) During play 4-year-old dyads comprised of children with a high Theory of Mind score and a low Theory of Mind score will engage in metaplay for a longer period of time than dyads comprised of children with high Theory of Mind scores or dyads comprised of children with low Theory of Mind scores.

Individual Play Behaviors

Empirical evidence is also lacking in the clarification of the implicit pretense signs that children use to signal each other that “this is play.” By envisioning the enactment component as a theatrical performance, it is assumed that the children portray themselves theatrically. Based on the first hypothesis that children with high TOM abilities will stay in the enactment component for longer duration and on the literature reviewed concerning role enactment, the second set of hypotheses refers to the verbal and nonverbal clues implicit to the acting ability of individual children. Therefore, a specific hypothesis was generated for each of these verbal and nonverbal behaviors of individual children exhibited during pretense play.

(2a) During play 4-year-old children with high Theory of Mind scores will exhibit more non-verbal acts of pretense exhibited by the combination of theatrical flair, action sequences, and co-ordination of props than children with low Theory of Mind scores.

(2b) During play 4-year-old children with high Theory of Mind scores will exhibit voice modulations (i.e., changes in tone of voice) to represent the voice of a character role more often than children with low Theory of Mind scores.

(2c) During play 4-year-old children with high Theory of Mind scores will engage in verbal assignment and/or acknowledgement of character roles more often than children with low Theory of Mind scores.

CHAPTER 4

METHODS

Pilot Study

Six months prior to data collection for this thesis project, a pilot study was conducted with 4-year-old children at McPhaul Child Development Center at the University of Georgia. The pilot study was conducted to confirm children's interests in the dyadic play and toys provided, to determine protocols for monitoring and testing the children, and to establish the procedures for video-taping the children. Twenty randomly selected dyads were filmed playing in the observation room, and 23 children were video-taped during TOM testing.

Based on observations of the children's play, it was decided that the first ten minutes of the play time should be allocated to exploring of the play area, establishing a comfort level for the children to play without an adult in the room, and going to the bathroom. The second ten minutes of consecutive playtime without an adult in the room would be allocated for coding play interaction occurring between the play partners. It was also decided that play partners should be selected from a pool of compatible (i.e., school friends) (Gottman, 1983) and same gender playmates to avoid the necessity of resolving personal disagreements. McPhaul Child Development Center is a university program, and some children were non-native English speakers. The decision was made to use the Peabody Picture Vocabulary Test-Third Edition (Dunn & Dunn, 1997) in the

thesis study to eliminate the confounds of vocabulary abilities in play and in scoring the theory of mind tasks.

Based on the observations of TOM testing, implementations of the procedures were clarified. It was decided to begin the TOM testing with a warm-up test to help the children understand the procedure. It was also decided to place a strip of tape on the table as a line of demarcation between what items the child could and could not touch during the testing procedure. The practice of administering the TOM tests was helpful in selecting the items to be used in the testing, such as using the band-aid box as a testing prop instead of the egg carton in the prediction and explanation tasks.

Later a team of research assistants and the researcher developed the behavioral coding systems of the dyadic play interactions and the individual play behaviors from the taped play sessions made from the pilot study.

Current Study

Participants

Nineteen preschool children from McPhaul Child Development Center at the University of Georgia were recruited from the 4-year-old class. The participating children's mean age was 56 months (range: 50–61 months). Twelve children were female (63%), and nine (37%) were male. Three of the 19 children did not speak English in their homes.

Procedure

At the time of data collection, the researcher personally contacted the director of the McPhaul Child Development Center to discuss the research goals and procedures. After permission was granted to conduct the research study in the center, the classroom

teacher and teaching assistants were contacted, and they agreed to support the project and aid in the identification of play partners. The parents of the children were personally contacted and consent forms were signed (see Appendix A). All parents were informed of the nature of the study, the measures being used, the amount of time required for the testing, and the videotaping procedures.

Prior to the initial testing procedure, each research assistant participated informally in the classroom for 15 hours. The purpose of this procedure was three-fold: (1) to develop a sense of trust between the research assistants and the children, (2) to train the research assistants to identify children's play patterns through observation, and (3) to identify children's play partners. A pool of three same-sex play partners was identified for each participating child from natural observations by the research team and the classroom teacher. The researchers assigned each dyad and each child confidential identification numbers that were used throughout the study.

Data collection was done in three separate video-taped stages. During the initial phase, selected compatible dyads were invited to play together in an observation room located in the McPhaul Center for about 30 minutes. Within 2-weeks of the play session, each child was individually invited by a research assistant to return to the room for the TOM testing procedure. New dyads were formed from the pool of each child's play partners based on the results of individual TOM scores (see details on Dyadic Pairing below). In the final stage, the re-paired dyads were videotaped playing together in the same room. Each child was free to accept or reject each invitation to leave the classroom. Children were given a sticker for participation after each phase of the testing.

The Peabody Picture Vocabulary Test-III was also administered to each child in the hall outside the classroom.

The observation room was equipped with three remote-controlled video cameras for video access to the entire room and a one-way mirror. The room was organized similarly to the socio-dramatic area of the children's classroom (Astington & Jenkins, 1995; Garvey, 1990). On one side of the room was a play kitchen area, and on the opposite side of the room was a cave-like area created from a large computer desk. At the end of the room opposite the one-way mirror, an adult-sized couch and matching stuffed chair were placed. Directly below the mirror, toys and costumes conducive to social pretense play were located on tiers of shelving (see Appendix C for a complete listing of the toys and costumes).

For each dyadic playing session, the research assistants followed an established protocol (see Appendix D). The children were made aware of the video cameras and were told they would be taped while they were playing. Toys and costumes were identified and the children were encouraged to play together. After addressing concerns and questions expressed by the children, the research assistant excused herself, and the children were left alone to play freely. The children were closely monitored through the one-way mirror, and the research assistant re-entered the playroom when called by a child. Videos were recorded for the entire play session, and each play episode was recorded in a video log (see Appendix E). The research assistants also followed an established protocol (see Appendix F) for one-on-one testing of TOM skills.

Dyadic Pairing

The goal of the project was to compare the dyadic and individual play behaviors of children in three different groups with three different pairing statuses based on their TOM scores (see the description on TOM scoring below). To determine the children's pairing status, a median-split was performed on individual children's TOM scores separately for boys and girls (see Appendix B). For boys, four boys were ranked below the median (low rank, range of scores: 1 - 4) and three boys were ranked above the median (high rank, range of scores: 6 - 8). The girls split unequally on the median with five girls scoring below the median (low rank, range of scores: 1 - 4), two girls scoring above the median (high rank, range of scores: 7 - 8), and five of the girls scoring on the median (score: 5). In order to retain all subjects, one girl was forced into the low rank and four girls were forced into the high rank. The force-choice was made on the basis of the girls' prediction task. It was decided that the prediction task would be the determining factor, as the task has been suggested to be more difficult (Bartsch & Wellman, 1989).

Based on the high and low grouping status of the individual child, three dyadic groups were formed. The first group (LL) was defined as each play partner's TOM score ranked low. The second group (LH) was defined as one play partner's TOM score ranked as low and one play partner's TOM score ranked as high, and the third group (HH) was defined as each play partner's TOM score was ranked as high. Five dyads were needed for each group for data analysis. After placing the initial dyads into the appropriate group, some of the children were re-paired with another play partner from his/her pool of

compatible play partners. The new dyads for the second play observation were selected to complete the group cells.

Table 1

Identification of Dyads of Children Assigned to Play Groups at Two Times

| Time | LowLow (LL) | LowHigh (LH) | HighHigh (HH) |
|-------------|-------------|--------------|---------------|
| First Time | 03 & 17 | 04 & 09 | 06 & 12 |
| | 11 & 14 | 05 & 10 | 13 & 16 |
| | 01 & 15 | 02 & 08 | 07 & 08 |
| Second Time | 04 & 05 | 06 & 03 | 09 & 10 |
| | 01 & 02 | 18 & 19 | 12 & 08 |

Theory of Mind Tasks

Hughes, Adlam, Happe, Jackson, Taylor, and Caspi (2000) established that standard false-belief tasks show strong internal consistency and test-retest reliability, and that aggregate scores were more indicative of a child’s ability level. The meta-analysis of TOM studies conducted by Wellman, Cross, and Watson (2001) indicated an overall reliability of standard false-belief tasks of .84. Standard false-belief tasks require the child to predict another person’s belief or to recall the child’s own false belief. Selected tasks for the current study followed the accepted protocol of aggregate testing. (Refer to Appendix F for scripts and full details.)

A battery of 5 tasks was given to each child resulting in an aggregate of 8 false belief questions. Two tests were variations of Wimmer and Perner’s (1983) standard change in

location test (i.e., Maxi and the chocolate). One test was conducted by using dolls to change the location of a magic marker. The other test was conducted in storybook form by using pictures to change the location of an apple. In both tests the child was asked to predict where the protagonist would look for the item.

Two tests were given to measure the child's ability to recall her/his false belief and to predict the false belief of another. The unexpected contents test (Perner, Leekman, and Wimmer, 1987) consisted of showing the child a prototypical container (i.e., a "Smarties" tube) and asking the child what she/he believed was in the container. The child was shown the unexpected contents of the container (i.e., a plastic fish) and was asked to recall her/his own false belief and predict what another would believe was in the container. In the appearance/reality test (Flavell, Flavell, & Greene, 1983), a child was asked to recall her/his own false belief and to predict a puppet's false belief about the true identity of a candle that looked like a crayon.

The last test was an explanation and prediction task (Bartsch & Wellman, 1989) requiring a child to explain the actions of a puppet given a false belief, and to predict how a puppet would behave given a false belief. The child was shown an empty prototypical box (i.e., Band-aid box) and a plain box of the same shape and dimension containing the contents of the prototypical box. The child was asked to explain why a puppet would look in the prototypical box for the target contents, and to predict where a naive puppet would look for the target contents.

TOM tasks require at least one control question for each false belief question to reduce the chance of random guessing (Gopnik & Astington, 1988; Perner, Leekman, & Wimmer, 1987). Control questions are asked to ensure validity of the test questions.

Young children may not understand the syntax of the question or they may be unable to focus on the question because of environmental effects, such as the novelty of the toy being used in the test. Control questions test the memory and/or the reality of the story. For example, in the standard change of location task, the child sees and hears that an object was placed in a certain location at the beginning of the story. The memory control question would ask the child to remember where the object was originally placed before the object was moved. The reality control question would ask the child where the object is in reality, after the object was moved. Each false belief question was scored “1” if the control question(s) were answered correctly. The range of scores for the aggregate was 0-8, with a score of “8” indicating all control and test questions were answered correctly (refer to Appendix G).

Play Behavioral Measures

The measurements for dyadic play interactions and individual play behaviors will be described in the following sections. Both verbal and nonverbal interactive behaviors between play partners were observed. Play behaviors exhibited by children were identified at two different levels: dyads and individual.

Dyads as coding unit.

Dyadic interaction implies reciprocity of bids and responses between play partners. Therefore, the continuation of an interactional pattern was indicated either by the verbal response by the play partner or by an evident change in the behavior of the play partner. However, when no verbal response or evident behavioral change was observed in the play partner, the end of the interactional pattern was coded at 5 seconds after the bid given by the first child. The coding was designed to measure duration of the dyadic

interactions. Coding of pretense play patterns and behaviors were completed from the videotapes. Children's dyadic play interactions during the second 10 minutes were coded in real time. Types of interaction coded in the study were based on empirical studies reported in the literature. (Garvey, 1982; Giffin, 1984; Goncu, 1993; Goncu & Kessel, 1988; Howes & Matheson, 1992; Trawick-Smith, 1998).

Four different types of play behaviors were identified second-by-second. (1) *Play Theme Enactment*: The dyadic partners participate in *in-frame* pretend play. Playing "as if" may be identified by the children's conversation, actions, and/or costumes regarding a mutual theme. Both children are interacting within the pretense play frame. Priority in assessment is given to verbal conversation over actions. For example, if a child moves to another part of the room and appears to be leaving the pretense play enactment, but her verbal responses indicates that she is still playing within the pretense play frame, play theme enactment is not interrupted. (2) *Metaplay*: The dyadic partners participate in *out-of-frame* pretense play. The children step out of the pretense play frame to confer over issues regarding the play frame. It may be observed explicitly through conversation, such as statements beginning with "let's pretend" or implicitly by actions, such as the selection of costumes or toys to be used as props. The focus of both children must be concerned with the onset or eventual continuation of enactment. (3) *General Social Interaction*: Scoring for this category includes any dyadic conversation or interaction not pertaining directly to pretense. For example, children may discuss the functional use of a toy or participate in mutual conversation concerning playmates. (4) *Non-Dyadic Play*: The category includes all solo activities involving no dyadic interaction. There is no explicit or implicit relationship apparent between the children, for example, one child is making

bids to the partner, but the partner is non-reciprocating. The focus of at least one child is on his/her own activity without consideration of the partner. (See Appendix H for detailed coding rules.)

Twenty-five percent of the dyads were randomly selected for coding reliability. Kappas ranged from .62 to .87 (mean = .76) and percentage of agreement ranged from 77% to 92% (mean = 85).

Individuals as coding unit.

Individual children's behaviors were coded using a 20-second continuous time sampling strategy, dividing the 10-minute playing period into 30 time blocks. During pretense play, children exhibit subtle behavioral clues or signals that they are playing in a pretend world (Bretherton, 1984, 1989; Goncu, 1990). The behavioral signals were divided into two types: non-verbal and verbal signals. Videotapes were coded in separate runs for each type. Non-verbal signals were coded without the audio tract (i.e., no sound was audible from the videotape), whereas verbal signals were coded only from the audio tract (i.e., video screen was covered).

A total of three non-verbal signals were classified: (1) The behaviors include the emotive non-verbal acts that emphasize the behavior or attitude of a role being played out, such as exaggerated facial expressions to indicate anger or surprise. Another example would be a child wearing 3 or more coordinated costume articles to portray a character (e.g., putting on a hat, a purse, and a skirt to play the role of a mother). (2)

Action Sequences: The behaviors include the temporally sequenced series of at least two actions used to represent an event, such as setting the table with the play dishes or using the telephone by punching the buttons and placing it to one's ear. (3) *Prop Use:* The

observer must sense that the toys are being arranged for a purposeful plan. The behaviors are the arrangement and/or integration of toys to be used as props, such as the multiple arrangement of the play dishes for cooking or the use clothing of as a costume.

Two different verbal signals were identified: (1) *Voice Changes*: The child changes her voice to represent the voice of a character role, such as a mother talking to a baby. The behaviors also include the child using her voice to give animation to a toy or a non-existent character (2) *Role Assignment/ Acknowledgement*: These behaviors include any statement made by the child to assign a role, such as “You be the mommy,” or to designate a role, such as “What are we going to do now, Mom?” (See Appendix I for detailed coding rules.)

Thirty percent of the children were randomly selected, and their individual pretense behaviors were coded independently by a second coder for interobserver reliability. Percentage of agreement was calculated for each individual behavior: theatrical flair, 89.4%; action sequences, 95.6%; prop use, 87.2%; voice changes, 82.8%; and role assignment/ acknowledgement, 84.4%.

Peabody Picture Vocabulary Test—Third Edition

The Peabody Picture Vocabulary Test—Third Edition (PPVT-III, form B) is a vocabulary test in which the child’s task is to select the picture considered to illustrate the best meaning of a stimulus word presented orally by the tester. It is widely used as a standardized measure with preschoolers as a screening device for verbal ability. In this study, PPVT-III was used as an English language proficiency measure for individuals for whom English was a second language (Williams & Wang, 1997). As a group ($N = 19$), the percentile ranks ranged between 34 – 94 ($M = 66.53$). The three non-English

speaking children's percentile ranks ranged between 50 – 68, ($M = 56$). No child was one standard deviation below the age norm. In other words, all children in this study showed normal developing linguistic abilities.

CHAPTER 5

RESULTS

The results are divided into three sections. First, the preliminary analysis conducted to determine the possible confounds of age, vocabulary skills, and TOM scores are reported. The second section addresses the first set of hypotheses, reporting the analysis of the comparisons among the three play groups in their dyadic play patterns and play types. The last section addresses the second set of hypotheses, describing the strength and direction of the relations between the individual play behavioral measures and TOM scores.

Preliminary Analysis

In order to address the relationship of language skills on all 19 children (indexed by PPVT-III scores), child's age, and TOM scores, Pearson product-moment correlations were calculated. The relationship between PPVT-III scores and age was not significant, $r = .24, p = .230$, nor was there a significant relationship between PPVT-III scores and TOM scores, $r = .30, p = .215$. Furthermore, the results of the correlation between age and TOM scores did not yield statistical significance, $r = .27, p = .267$. These findings suggest that in the current sample, children's age and language abilities were not associated with TOM scores as found in the literature.

Furthermore, the Mann-Whitney Test was performed to compare PPVT-III scores between the non-native English-speaking children's language ability ($n = 3$) with their English-speaking counterparts ($n = 16$). There was no statistical significance between the

two groups (English speaking $M = 68.50$, $SD = 14.78$ and the non-English speaking $M = 56$, $SD = 10.39$), $z = -1.58$, $p = .115$. Because no significant differences in children's language abilities were revealed, there is no further consideration of language abilities in the following analyses.

Dyadic Play Patterns

To test the first set of hypotheses that pretense play patterns of 4-year old children would differ according to the pairing of children with different TOM abilities, a 2 (Play Type: Enactment and Metaplay) x 3 (Group: LL, LH, and HH) mixed design ANOVA was performed, with the mean duration of play (seconds) as the dependent variable. Table 2 displays means and standard deviations of the play types of enactment and metaplay for each group. A significant interaction between Play Type and Group was expected to demonstrate the effect of pairing of children with similar or different TOM abilities on the mean durations of enactment and metaplay. Results from the ANOVA revealed a significant main effect for Play Type, $F(1,2) = 10.12$, $p = .008$, eta squared = .457, and a significant interaction effect for Play Type X Group, $F(2,12) = 4.24$, $p = .04$, eta squared = .414. No main effect for Group, $F(2,12) = .674$, $p = .674$, eta squared = .064, was revealed.

These results suggest that children's dyadic play patterns differed on the basis of pairing children with similar or different TOM abilities. Differential profiles were found for children's enactment play and metaplay. Inspection of Table 2 and Figure 1 indicates that children engaged in longer episodes of enactment than metaplay.

Table 2

Descriptive Statistics of Play Groups for Play Type

| Group | <i>n</i> | Enactment | | Metaplay | |
|----------|----------|-----------|-----------|----------|-----------|
| | | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| LowLow | 5 | 35.15 | 27.59 | 21.73 | 25.75 |
| LowHigh | 5 | 38.38 | 32.57 | 36.08 | 27.52 |
| HighHigh | 5 | 63.72 | 15.10 | 15.80 | 11.45 |

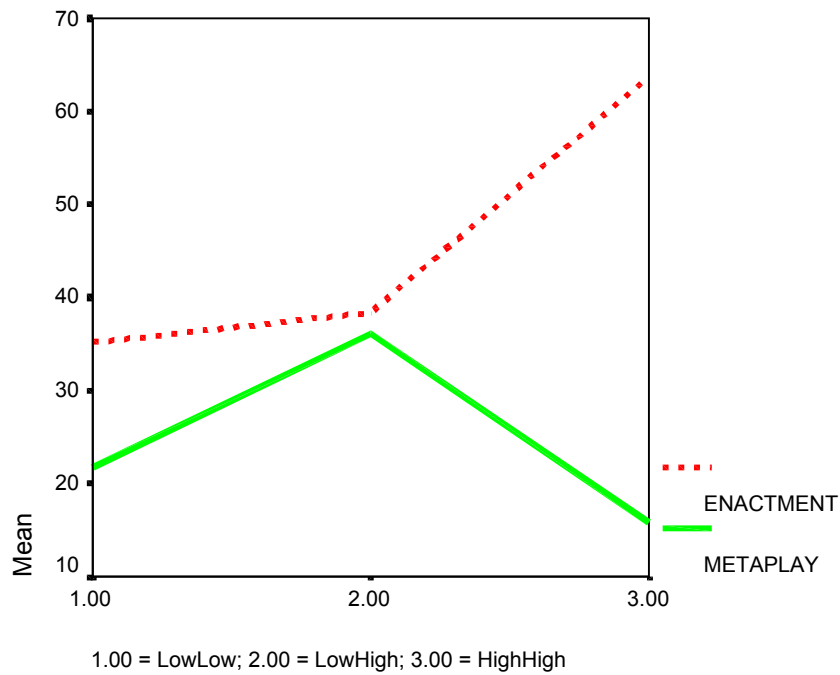


Figure 1. *Mean Durations of Children's Enactment and Metaplay by Play Group*

Because of the small sample size of 5 dyads in each group, nonparametric statistics were also performed to confirm the results based on parametric statistics that there were no statistical differences between the three groups (LL, LH, and HH) on dyadic play of enactment and metaplay. Results of the Kruskal-Wallis Test confirmed there was no significance among the three groups on enactment, $\chi^2(2, N = 15) = 4.42, p = .110$, and there was no significant difference on metaplay among the three groups, $\chi^2(2, N = 15) = 2.49, p = .288$.

The nonparametric statistics of Wilcoxon Signed Ranks Test were conducted to confirm the main effect of play type found in ANOVA, $Z = 2.34, p = .019$. Children, overall, participate in more enactment than metaplay. This confirms the main effect of the ANOVA to reveal the interaction effect of Play Type by Group. Wilcoxon Signed Ranks Tests were then run to compare the mean duration of enactment and metaplay in each of the three groups. No significance was found between mean durations of enactment and metaplay for the Low Low group ($Z = 1.095, p = .273$) or the Low High group ($Z = .000, p = 1.00$). However, significance was detected in the High High group, $Z = 2.023, p = .043$. Results of the non-parametric tests indicate that the mean duration of play episodes of enactment and metaplay of dyads in the Low Low group and dyads in the Low High group played approximately the same. The mean duration of the episodes of enactment for dyads in the High High group was significantly larger than that of metaplay.

Overall, these results demonstrate that Hypothesis (1a) was not supported: dyads comprised of children with high TOM scores did not engage in enactment for longer periods of time than dyads comprised of children with low/ high or low TOM scores.

Also, there was no support for Hypothesis (1b): dyads comprised of children with low/high TOM scores did not engage in metaplay for longer periods of time than dyads comprised of children with high TOM scores or low TOM scores.

Individual Play Behaviors

To test the second set of hypotheses regarding children's individual play behaviors, the behaviors were divided into 3 categories: voice modulations exhibited during pretense play, verbal assignment and/or acknowledgement of character role, and the non-verbal acts of pretense, which was the composite score of three non-verbal actions including sequenced actions, prop use, and theatrical flair. Table 2 contains the means and standard deviations of these three categories, as well as the Pearson product-moment correlations and the nonparametric Spearman rank correlation coefficients between TOM scores and each of the individual play categories. Positive correlations were expected between children's TOM abilities and their individual play behaviors. Correlational analysis with parametric and nonparametric statistics was conducted to test the strength and direction of the association between TOM and individual play behaviors. Significance was determined based on the one-tail test, $p = .10$.

Table 3

Descriptive Statistics of Individual Play Behaviors and Correlations with TOM Scores

| Behaviors | <i>M</i> | <i>SD</i> | Correlation with TOM | |
|--|----------|-----------|----------------------|----------------------|
| | | | <i>r</i> | <i>r_s</i> |
| Non-verbal acts | 22.89 | 11.72 | .468*** | .658*** |
| Voice modulations | 8.95 | 7.47 | .413* | .307 |
| Role assignment and/ or acknowledgement | 6.37 | 7.47 | .129 | -.001 |

Note. $N = 19$; * $p < .10$. ** $p < .05$. *** $p < .002$

Results of the parametric procedure revealed significant positive correlations in the non-verbal acts of pretense and in the voice modulations. The positive correlation was not significant between TOM and verbal assignment and/ or acknowledgement of character role. The nonparametric analysis also suggested that there was a significant correlation between TOM and non-verbal acts of pretense. The nonparametric statistics did not reveal a significant relationship in voice modulations or verbal assignment and/ or acknowledgement of character role.

Together, the correlational analysis of TOM scores and individual play behaviors suggests that 4-year old children with higher TOM scores significantly exhibit more non-verbal acts of pretense. Hypothesis (2a) was confirmed: children with high TOM scores did exhibit more non-verbal acts of pretense than children with low TOM scores.

Hypothesis (2b), which stated that children with high TOM scores would exhibit more voice modulations to represent the voice of a character role, was partially confirmed (parametric test only). Hypothesis (2c) was not confirmed: children with higher TOM scores did not engage in more verbal assignment and/ or acknowledgement of character roles.

CHAPTER 6

DISCUSSION

The overall purpose of the study was to explore the links of pretense play, communication processes, and social cognition. This study was an attempt to extend previous research in four ways: (1) using duration measures to assess preschool-aged children's play behaviors, (2) objectively classifying and measuring two types of pretense play behaviors: metaplay and enactment, (3) evaluating children's play behaviors at both individual and dyadic level, and (4) separating verbal from nonverbal pretense play actions in children's individual play behaviors.

From a proposed theoretical framework connecting the constructs of pretense play, dyadic communication, and socio-cognition, an empirical study was designed to reveal the association of the theory of mind ability with dyadic play interactions and individual play behaviors exhibited in pretense play by 4-year olds. On the dyadic level it was proposed that different types of pretense play interactions (i.e., enactment and metaplay) could be exhibited as a function of the play partners' TOM abilities. On the individual level, it was proposed that children display behaviors of pretense (i.e., non-verbal acts of pretense, voice modulations to represent characters, and verbal assignments and/ or acknowledgement of character roles) would also vary as a function of their individual TOM ability.

In this study, the play patterns were examined using mean durational measurements of the dyadic interactions occurring during the pretense play types of

enactment and metaplay. Individual verbal and non-verbal pretense play behaviors were assessed using continuous sampling over the dyadic play period. Findings from the current study demonstrate that, on the dyadic level, dyadic play profiles differed according to the pairing of children with different or similar individual TOM scores, indicating that children's pretense play interactions are shaped by the compatibility of socio-cognitive abilities of individual children in dyadic play. On the individual level, a significant positive correlation was found between the individual non-verbal acts of pretense and TOM scores. The results indicate that children with a higher level of social cognition exhibit more signals of playing in pretense, such as theatrical flair, actioned sequences, and the co-ordination of props. The following discussion will address the results and implications of the individual play behaviors and the dyadic play interactions separately. The limitations of the study and suggestions for further research will also be discussed.

Individual Play Behaviors

Three categories of individual behaviors were identified as embedded signals of pretense to signify an individual is playing in pretense. In the first category, non-verbal acts of pretense were acts of theatrical flair, sequenced action patterns, and co-ordination of props. A second category identified voice modulations to represent the voice of a character role. The third category was designated as the verbal assignments and/ or acknowledgement of character roles in the children's speech. It was hypothesized that 4-year old children with high TOM scores would exhibit more non-verbal acts of pretense, more voice modulations, and more verbal assignments and/or acknowledgement of

character roles. Consistent and confirmatory evidence was found for non-verbal acts, whereas only partial support was found for voice modulations to represent a character.

Numerous studies have referred to the embedded “signals” of pretense evident between children in pretense play (Bretherton, 1989; Fein, 1981; Garvey & Berndt, 1977; Goncu, 1993), but little empirical research addressed what those signals were. Perhaps this lack of empirical data stemmed from procedural difficulties due to limited technology. By using videotapes to code verbal and non-verbal acts separately, the identification of the variables was made easier. Coding for the non-verbal acts of pretense was accomplished by turning off the audio tract of the videotape, forcing the coders to identify acts representing pretence. The coding procedure was similar to watching a theater production (Sawyer, 1997); the non-verbal acts appeared exaggerated. In a similar procedure, the coding for voice modulations was accomplished by covering the video screen. Only when the coder could recognize the change in voice without the aid of visual presentation, were voice modulations identified. This coding strategy of separating the non-verbal acts from the verbal cues enabled the current study to operationally define the embedded “signals.”

The non-significant results regarding verbal assignment and/ or acknowledgement of character roles was unexpected and contrary to the results of Astington and Jenkins’s study (1995). They found that the frequency counts of assignment and/or acknowledgement of character roles was positively correlated with TOM ability. The discrepancy may be attributed to the time sampling strategy adopted by the current study. Only presence of verbal assignment and/ or acknowledgement was noted over a 20-second time block irrespective of the number of assignments or acknowledgements

actually made. In future studies, a smaller sampling window such as 5-seconds may capture these verbal cues more precisely.

Dyadic Play Patterns

It was hypothesized that children's dyadic interactions during pretense play will differ significantly according to the TOM ability of the play partner, and that the differences would be evident in the differentiated profiles of the duration measurements of enactment and metaplay in pretense play. The result of this study revealed that 4-year old children are competent in participating in pretense play as all of these groups exhibited; they engaged in significantly more enactment than metaplay. In other words, they spent more time in frame than out of frame. Furthermore, a significant interaction effect was found between the play types and the pairing status of individual children's socio-cognitive ability, as indexed by TOM scores. In other words, the amount of time that children participate in enactment and metaplay is dependent upon the pairing of children with different TOM abilities.

The significance of this study centers on the meaningful results regarding the play profiles of the three groups of children with similar or different social-cognitive abilities. The manifestation of the sophistication of pretense play is a product of two children (Howes, 1992). Each child brought his/her individual TOM abilities into the interactions of pretense play, and the observed behavior was reflected in the differing play profiles of the dyads.

Children with high TOM scores who played together (HH), participated primarily in enactment with some time delegated to metaplay. Children with low TOM scores who played together (LL) also participated in enactment. Children in the LL group spent

about the same amount of time in metaplay as the HH group. The play profile of interest in this study is that of the mixed group (LH), with one child of low TOM ability and one child with high TOM ability. Children in the mixed group participated approximately the same amount of time in enactment as the LL group, but showed a pattern of elevated metaplay than either group (not statistically significant). The following discussion will focus on enactment and metaplay differences evident in the mixed TOM dyads. The findings of this study suggest that the play profile exhibited by dyads is dependent upon the TOM abilities of the children as a dyad, rather than as two individuals. The question is, what is the difference between these two types of play interactions that reflects TOM abilities?

Enactment occurs inside the frame of pretense play (i.e., *in-frame*) requiring the children to integrate the flow of the play scenario while they are playing in pretend roles. The children create meaning from their social interactions collectively while interacting inside the frame of pretense. Metaplay occurs outside the frame of pretense play (i.e., *out-of-frame*). The children leave the realm of role-playing, stepping outside the frame of pretense to discuss issues of the pretense scenario. In metaplay, while they have not left the pretense play scenario, the children are interacting as themselves. Bateson (1976) refers to the change of play type as crossing the boundaries between “this is play” and “this is not play.”

The acquisition of individual TOM abilities is considered a constant, in that once a child has achieved theory of mind skills, the ability to impute mental states to others remains stable. This has received support from the results of the individual behaviors of children with high TOM scores as the children with high TOM scores exhibited more

non-verbal acts of pretense. However, this study further revealed that the exhibition of the skills in pretense play is dependent upon the social context. Specifically, in this study, the exhibition of the TOM skills in pretense play appears to be dependent upon the TOM ability level of the play partner. In dyadic play, children with high/high TOM scores play primarily in enactment where these embedded signals of pretense are recognized by the partner and acted upon in the enactment. The observed play profile of children with high scores is distinctive. These children are capable of long periods of enactment.

The results of this study suggest that enactment duration was about the same as metaplay when a high TOM child played with a low TOM child (i.e., LH group). It can be speculated that the high children are capable of sustained periods of enactment, but when playing with children with low TOM scores, enactment remained at the level of the low children. This finding suggests that low TOM scoring children may be limited in their ability to sustain play inside the pretense frame even when playing with a proficient player.

Interestingly, metaplay in the mixed group showed a pattern of increased duration in metaplay in comparison to the HH group or the LL group. Metaplay occurs outside the pretense frame and is defined by the interactions of the children in planning and/ or negotiating the issues regarding the pretense play frame. In metaplay, the children discuss the elements of the pretense, such as what props will be used or what roles should be played. The children talk about the pretense scenario. The elevated level of metaplay exhibited by the mixed group, suggests that the play activity of metaplay offers an interactional play type where both children can and do actively participate.

In this study, the observed play profiles of the children with similar or different TOM abilities varied according to the play partner's TOM. The results of the study, in combination with the literature, leads to the suggestion that in the mixed dyads, the high TOM play partner affects the play profile by increasing the metaplay activity for the low TOM play partner, and that the low TOM play partner affects the play profile by decreasing the enactment activity of the high TOM play partner. This suggests that it is the sustained activity of enactment in pretense play that reflects theory of mind proficiency. It is suggested that sustained dyadic playing *in-frame*, where children are interacting as actresses and integrating the elements of pretense, denotes TOM ability. Thus, metaplay (*out-of-frame* play) would function as a “zone of proximal development” where children of limited TOM ability develop and practice socio-cognitive skills from an expert partner (Flavell, Flavell, & Green, 1987; Rubin, Fein, & Vandenberg, 1983).

The significant results of this study corroborate the theoretical discussions and empirical studies of young children's play. In the theoretical literature, Vygotsky (1978) wrote extensively about the effects of interactional activities on partners of the interaction when he referred to the zone of proximal development in children. He defined the zone of proximal development as “the distance between actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaborations with more capable peers” (p. 86). Vygotsky explicitly writes that children's play is a zone of proximal development. “In play a child is always above his average age, above his daily behavior; in play it is as though he were a head taller than himself” (p. 102). Vygotskian theory supports the significant findings of this study concerning the differential play

profiles of children paired with a partner who has a similar or different level of socio-cognitive abilities.

The empirical studies of dyadic interactions and communications have established that children's play partners affect children's play behaviors. The extensive work of Judy Dunn and her collaborators (e.g., Dunn, 1988; Dunn & Dale, 1984; Youngblade & Dunn, 1995) have highlighted the differences in the play behaviors that are exhibited by children when playing with mothers or siblings. The research work of Garvey and associates (Garvey, 1982; Garvey & Berndt, 1977; Garvey & Kramer, 1989), Goncu and Kessel (1988), and Howes (1992) emphasize the importance of the play partner in the social behaviors of children during play. Although no previous empirical research has been conducted to specifically separate the constructs of enactment from metaplay in pretense play as variables in the play profile, the empirical work of these researchers support the argument of this study that play partners exert an influence on the manifestation of children's pretense play.

Limitations and Further Research

It is important to recognize the substantial limitations of this study. The population of children was small ($N = 19$) and unevenly split between girls ($n = 12$) and boys ($n = 7$). In order to create 15 same-gendered dyads, several of the children played more than once although not with the same child. This resulted in a violation of the statistical assumption of independence. Also, TOM scores of the girls did not split equally. The design of the study required 5 dyads in each of the three groups (LL, HL, HH). Because five of the girls scored on the median, the designations of high TOM scorers and low TOM scorers were forced.

With these limitations in mind, it is important that future research address these statistical limitations. With a larger sample of children, dyadic behavior could be observed without the violation of statistical independence in the participants. Another issue that could be resolved with a larger sample would be children with more variation in TOM scores, which would clearly define the groups. Further study of children's dyadic interactions during pretense play will substantially increase the understanding of how TOM abilities are manifested in children's pretense play.

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APPENDIX A

Parent Letter and Informed Consent

August 24, 2001

Dear Parents:

We invite your child to take part in a research project. This is a study conducted by Dr. Hui-Chin Hsu of the Child and Family Development Department, University of Georgia. We would like to find out whether 3-5-year-olds use different ways to show and manage their feelings during free play with peers and a familiar adult, and how children express pretense during free play.

We will observe your child playing with a peer. We will also play games and read stories with your child and ask your child questions about how s/he feels (such as being happy, mad, sad, or scared) in different situations. These procedures will be videotaped. [Your child's teacher will be asked to fill out assessments about your child's behavior at school.] In addition, we will need basic demographic information from you, such as education level of mother, number and age of children etc.

Your child will get a small toy for participating in the project. Information provided by you will be kept confidential. Your child's participation in this study would help us better understand how young children learn to express and manage their feelings. If you have any further questions, or if you want to learn more about this research, please do not hesitate to contact us. Thank you for considering participating in this project.

Sincerely yours,

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PARTICIPANT INFORMATION AND INFORMED CONSENT--Parent

Purpose of the Project:

This project is designed for the researchers to find out: (1) whether 3-5-year-olds use different ways to show and manage their feelings and to understand other people's point of view, (2) whether differences in children's understanding of own and other's feelings is related to their play with a peer, and (3) how children's play develops into pretense, and (3) whether parents affect how children show and manage their feelings [as well as how children understand other's feelings and point of views].

Procedures to Be Followed:

Procedures Your Child Will Be Involved In:

- (1) Observation: Your child will be observed in the classroom while interacting with other children and teachers in classroom and on playground.
- (2) Interactions: Your child will be taken out of the classroom to interact with a researcher in 4 different conditions: (1) Your child will be praised for solving an easy puzzle. (2) Your child will be given a baby rattle as a winning prize for a problem-solving task. (3) The researcher pretends to hurt her finger by your child during free play. (4) Your child will be instructed not to play with attractive toys sitting on a table after the researcher gives the instruction not to touch the toys until she gets back from an errand. All these interactions are designed for the researchers to observe your child's reactions to different situations. A small gift will be given to your child when the interaction sessions are completed.
- (3) Peer play: Your child will be playing games with his/her friend for about 45 minutes. Age-appropriate toys will be provided. After done playing, your child will be asked to help with clean up.
- (4) Interviews:
 - a) Pictures: Your child will be asked to name the facial expression shown in photos and drawings (for example, happy, mad, sad, or scared). Your child will also be asked to tell a short story about a pictorial drawing in which a girl/boy is expressing his/her feelings in a specific situation. For example, a boy is smiling when playing with his friend outside.
 - b) Stories: Your child will be asked to talk about things that happened at home, in the classroom, and during the interactions and to talk about how s/he feels (such as being happy, scared, sad, or mad) in these different situations. In addition, your child will be asked about the stories that are read to him/her. The stories are about a girl/boy in a situation where s/he might feel happy, scared, sad, or mad. Finally, your child will be asked to describe her/his relationships with peers in the classroom by using facial drawings.
 - c) Puppet Shows: Puppet shows will be presented to your child. The stories in these shows are about how different people may have different point of views. Your child will be asked questions about one of the story characters' point of view. For example, two puppets, Bert and Ernie, who are best friends, will be introduced to your child. One day, when Ernie is playing outside, Bert replaces the band-aids in a band-aid box with crayons. Your child will then be asked whether Ernie would think those are band-aids or crayons in the box, when he sees the box. We will videotape your child using a camera set up in the corner of the room during the interactions, peer play, and interviews.
- (5) Vocabulary evaluation: Your child will be given a vocabulary test appropriate for his/her age. The evaluation will aid the researchers in selecting appropriate play partners and evaluating the development of pretense play shown in pre-schoolers.

Procedure Your Child's Teacher Will be Involved in:

Your child's teacher will be asked to fill out questionnaires regarding your child's behavior at school. In addition, teachers' reports on your child's peer relationships will be gathered.

Further information about this project:

Your child might become upset during the interaction sessions, peer play, or interviews. If this happens, we will stop the interaction or interview immediately and send your child back to the head teacher. If your child is upset after s/he goes home, you can call the McPhaul Clinic at the University of Georgia at (706) 542-4486 for help.

The videotapes will be kept in locked drawers. Only the researchers can review these materials. If you choose to sign the "Consent for Videotape Release" (see next page), videotape segments or still photographs made from the videotape of your child may be shown to university classes or to other researchers in the field for demonstration. However, in these cases, your child's name will not be used. We will only use an ID number. Furthermore, after you and your child have completed the interactions and interviews, you may request to have the audio or video recordings erased.

Your participation in this study is voluntary. The information we learn from you and your child will be used for research purposes only. However, we are required by law to report any evidence of illegal activity such as child abuse or neglect. If you have any questions, or if you want to learn more about this research, please feel free to contact us.

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Parent's Consent Form

Consent for Child's Participation:

I agree to have my child participate in this study. I will maintain the right to withdraw my child from this study at any time.

Parent's Signature

Date

Consent For Videotape Release:

_____ I give my permission for the release of videotapes for the purpose of presentation in instruction or research conferences, as long as any information identifying my child is removed.

_____ I do not give my permission for the release of videotapes for the purpose of presentation in instruction or research conferences.

Parent's Signature

Date

Research at the University of Georgia that involves human participants is overseen by the Institutional Review Board. Questions or problems regarding your rights as a participant should be addressed to Julia D. Alexander, M.A., Institutional Review Board, Office of the Vice President for Research, University of Georgia, 606 A Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-6514; E-Mail Address JDA@ovpr.uga.edu.

APPENDIX B

Identification of Children in TOM Groups

Identification of children in TOM Groups

| <u>High Scorers</u> | <u>Low Scorers</u> |
|---------------------|--------------------|
| 06 | 01 |
| 07 | 02 |
| 08 | 03 |
| 09 | 04 |
| 10 | 05 |
| 12 | 11 |
| 13 | 14 |
| 16 | 15 |
| 19 | 17 |
| | 18 |

Table 1

Identification of Dyads of Children Assigned to Play Groups at Two Times

| Time | LowLow (LL) | LowHigh (LH) | HighHigh (HH) |
|-------------|-------------|--------------|---------------|
| First Time | 03 & 17 | 04 & 09 | 06 & 12 |
| | 11 & 14 | 05 & 10 | 13 & 16 |
| | 01 & 15 | 02 & 08 | 07 & 08 |
| Second Time | 04 & 05 | 06 & 03 | 09 & 10 |
| | 01 & 02 | 18 & 19 | 12 & 08 |

APPENDIX C

Toys and Costumes for Pretense Play in the Playroom

Toys and Costumes for Pretense Play
In the Play Room

1 Red telephone
1 Red binoculars
1 Set play dishes (1 tray, 2 bowls, 2 plates, 2 forks, 2 knives, 1 spoon, 1 ladle, 12 small food items)
15 Foam blocks
1 Fire Hat
2 Construction Hats
Child's toy sink
Highchair

| | |
|--------------------------------|---------------------------|
| 1 Crown and earrings | 1 Black baby doll |
| 1 Play horse | 1 Child's broom |
| 1 Tool kit (12 tools, 1 caddy) | 1 Cash register (battery) |
| 1 Doctor's kit | 1 Shaver (battery) |
| 1 Flashlight (battery) | 4 Small baby dolls |
| 1 Toy bird w/ feathers | 2 Plastic flowers |

| | |
|---------------------------------|------------------------|
| 1 Minnie Mouse doll | 1 Stuffed dog |
| 2 Men's neckties | 1 Tiedye skirt |
| 1 Men's vest | 1 Man's button-shirt |
| 1 Sports shirt | 2 necklaces |
| 1 Purse | 1 Cloth bag |
| 2 Fabric pieces (blue, leopard) | 2 Hats |
| 1 Set of keys | 1 Billfold |
| 1 Heart-shaped pillow | 1 Large pillow |
| 1 Small quilt | 1 Small table covering |
| 2 Yogurt cups | 4 feathers |
| 2 Beach towel | 1 Doll carrier/bed |
| 1 Play glasses and nose mask | |

APPENDIX D

Protocol for Moving and Supervising Children

Protocol for Moving and Supervising Children

Entering the play room:

This is the play room where I want you to play together. You can play with any of the toys that are in here. I want you to play pretend together. (Show toys, answer questions).

There are three cameras in the room. Can you help me find them? (point to each.) These cameras are used for my work, so please do not touch the cameras. You can play with anything else in the room, but please, do not touch the cameras, okay?

I want you to play pretend together. You are helping me by playing.

I am going to leave the room so that you can play. If you need me for anything, just call "teacher," and I will come in. Please don't open the door. When you call "teacher", I will come to you. Child's name, what do you say if you need me? (Ask the other child the same question)

You can play with anything in here except the cameras, and I hope that you will play pretend together.

Clean-up: (~10 minutes)

(You will sense that the dyads are finished playing either by several bids in a short time period, asking to return to the class, or general boredom. They should not play longer than 30-35 minutes, but this is a case-by-case judgment. Don't wait until they are overly tired. Enter the room.)

Okay, it is time to clean-up! Let's put everything back just the way it was when we came. (Help them and encourage them to help you). Is this the way it looked? Okay, have a seat at the table. I am going to leave this toy for you to play with while you are sitting at the table. I will be back in a few minutes. (Wait 5 minutes to re-enter the room. Remove the toy. Let the children select a sticker.)

Common questions:

Where are you going? I am going to another room so that you can play together. I will come back if you need me.

What are you doing? I want to see what toys you like to play with and how you play together.

What do the cameras do? The cameras are for my work. They help me to remember what you play with.

Answering bids:

- 1.) Enter the room friendly and confidently.
- 2.) Answer questions honestly and simply.
- 3.) Ask each child if he/she needs anything, even if only one child made the bid.
- 4.) Encourage the children to express their emotions and to resolve difficulties themselves.
- 5.) If one child needs to go to the restroom, take both of them. Encourage both of them to use the facilities.

- Leave all toys, props in the play room
 - Have each child flush the toilet and wash his/her hands
 - Wipe noses, and teacher washes hands
- 6.) Answer bids resulting from boredom by introducing the toys, props on the shelves.

Leaving and returning to the classroom: (Health and safety first!)

- 1.) Check in with the teacher.
- 2.) Identify child(ren). Ask child(ren) to come with you to play in the playroom. Encourage the child(ren) to use the restroom before leaving the class.
- 3.) Sign out child(ren)
- 4.) Walk with child(ren), especially on the steps (hold hands).
- 5.) Stop outside the secretary's office and encourage the child(ren) to speak to Ms. Trisha as you pass through her office.
- 6.) Encourage clean-up of the playroom together.
- 7.) Thank the child for his/her help and allow the child to pick a sticker
- 8.) Make contact with the teacher or helper that you have returned child(ren).
- 9.) Sign child into the class.

General:

Any toy item placed into the mouth needs to be sanitized after the play.

Any behavior that is destructive or unsafe is not acceptable. If the behavior is questionable (i.e., maybe rambunctious but not destructive), enter the room and sit down until the behavior subsides.

When a child focuses on the moving camera, stop using that camera.

If a child is hurt, both the camera person and the monitor enter the room (leave camera running). Stay calm. Take the children to the main office/ classroom for help. Contact Pat or Dr. Hsu..

In the event that a fire drill occurs while taping, use the fire exit.

No toys, props should leave the playroom. Keep track of the keys and the necklaces.

Children are given one sticker and a thank you for their help.

Don't be surprised by the unexpected. These are children!

Remember your ethical responsibility when observing young children.

APPENDIX E

Video Log Page for Each Play Session

APPENDIX F

Theory of Mind Scripts

Theory of Mind Scripts

Fall, 2001

Contol, Warm-up: Unexpected indentification: Appearance/Reality
Gopnik and Astington (1988)

Procedure : Sitting next to the child, open the book (title) to the frog. Show the child the picture. Look at one or two pictures until the child is comfortable and responding to your questions.

Script: *Look at this picture.*

Control Question: *What do you see?*

Script: *What do you think this is (point to the item)? ... So, you think this is _____.*

Let's open the page and see what it is.

Control question: *What is it really?*

Script: *Close page. It looked like (what the child said), but when you open the page (open page) it really is (what the child said). Close the page.*

(Own belief): *When you first saw this page, what did you think this was?*

Control Question: *What is it really?*

This is (Stuffed animal). He/she has never seen this book before.

(Other belief): *If we show him/her this picture (page is closed), what will he/she think it is?*

Control Question: *What is it really?*

Props: Book

Test 1. Unexpected identification: Unexpected Contents (first order FB)

Perner, Leekman, and Wimmer, 1987

Procedure : Place the prototypical item (M&M container) on the table across from the child.

Script: *(Name of child), do you see what I have put on the table? What do you think is inside the box (container)?* The child is not to touch the box.

Script: *Okay, you think that there are _____ in the box. Let's open it and see. Together open the box. Take out the item, show it to the child. Look, what is really inside the box? Let the child look at the item. (Name of child), let's put the (fish) back into the box (container) and close it. Help the child close the box. Set the box back on the table.*

(1A-Q1) Test Question (Own belief): Before you looked inside, what did you think was in the box?

Prompt: *When you first saw this box, did you think that (candy) or (a fish) was inside it?*

(1A-Q2) Control Question: What is really inside the box?

Look, here is Charley. Charley has not seen this box before. He/she does not know what it is inside this box.

(1B-Q1) Test Question (Other-belief): What does Charley think is in the box?

Prompt: *Does Charley think there is (candy) or (a fish) inside the box?*

(1B-Q2) Control Question: *What is really inside the box?*

Props: M&M box, small fish, stuffed animal

Test 2. Standard change in location:

Wimmer and Perner, 1983

Procedure (1): Set small pillow, cigar box, crayon, 2 note-cards on table.

Script: Introduce Sam doll. *This is Sam. He likes to draw pictures. His favorite crayon is the red crayon. He likes to draw pictures with his red crayon.* Simulate drawing on card. Sam's mother is calling him. Sam puts his crayon and picture in his special box, and Sam goes to see his mother. Simulate the action and have Sam leave.

Introduce Mary doll. *This is Mary. She is Sam's sister. Mary wants to draw a picture with the red crayon. She takes Sam's red crayon (simulate action) from the box and draws a picture. When she is done, she puts the red crayon under her pillow and goes out to play. Mary doll leaves and Sam doll returns (simulate action). Sam returns to finish his picture. He wants to use his favorite red crayon.*

(2-Q1) Test Question (FB 1): *Where will Sam look for the red crayon?*

Prompt: Forced answer—*Where will Sam first look for his crayon, in his special box or under the pillow?*

(2-Q2) Control Question (Reality): *Where is the red crayon really?*

(2-Q3) Control Question (Memory): *Where did Sam put the red crayon?*

Props: crayon, 2 papers, small pillow, cigar box, 2 dolls (Sam and Mary)

Test 3. Unexpected identification: Appearance/Reality

Flavell, Flavell, and Greene, 1983 (representational ability discussed by Woolley & Wellman, 1990)

Procedure : Place the candle/crayon on the table across from the child.

Script: *(Name of child), do you see what I have put on the table? When you look at this, what does it look like?* The child is not to touch the candle/crayon.

Script: *Okay, this looks like a (crayon) to you. Hand the candle/crayon to the child and let him/her look at it carefully. Look at it carefully, what is it really? (answer) Yes, it is really a candle.* Let the child look at the item. Set the candle/crayon on the table.

(3A-Q1) Test Question (Own belief): When you first saw this, before you touched it, what did you think it was?

Prompt: *When I first put this on the table, when you first saw it, did you think that it was a ___ or a candle?*

(3A-Q2) Control Question: What is it really?

Look, here is Charley. He has never seen this before.

(3B-Q1) Test Question (Other-belief): When he/she first sees this, what will Charley think this is?

Prompt: *Will Charley think this is a ___ or a candle?*

(3B) Control Question: What is it really?

Props: Candle/crayon, stuffed animal

Test 4. Explanation task/ Prediction task: unexpected contents, first order FB
Bartsch and Wellman, 1989

Procedure (1): Place the prototypical box (band-aids) and a plain box on the table.

Script: *Look (child's name), I have a band-aid box and I have a plain box. Point to the box that you think has the band-aids in it. Open each box. Show that the prototypical box is empty but that the expected contents are in the plain box. Close boxes Introduce puppet. Look her is Charley. Charley has a cut ,see? Charley wants a band-aid.*

(4A-Q1) Test Question (prediction): Where do you think s/he will look for the band-aid?

Prompt: *Will Charley look for the band-aid in this box or in this box?*
Move Charley to the box designated by the child.

(4A-Q2) Control Question (Memory/reality): *Will s/he find the band-aid?*

Script: Introduce stuffed animal. This is Charley's friend Ling-Ling. Ling-Ling also needs to have a band-aid. Move Ling-Ling towards the band-aid box. Mimic that s/he is wants to open it.

(4B-Q1) Test Question (explanation): *Why do you think Ling-Ling is looking in that box?*

Prompt: (Must mention Ling-Ling's belief. Prompt is unsure of the response.) *What does Ling-Ling think is in the box?*

(4B-Q2) Control Question (Memory/reality): *Where is the band-aid really?*

Props: band-aid box, plain box, Charley, Ling-Ling

5. Standard change in location

Wimmer and Perner, 1983

The task involves four pictures. The first picture introduces the story characters, showing Andy with a bag and apple, and Sally with a box. The children were then told a story in which Andy puts his apple in his bag to keep it safe (picture 2), but while he is outside playing Sally transfers the apple to her box (picture 3), and then goes out to play. Next, Andy returns, because he wants a bite of his apple (picture 4). At this point, the child is asked the test question.

(5-Q1) Test Question: *Where will Andy look for his apple?*

Prompt: *Is the apple in the bag or in the box?*

(5-Q2) Control Question (Reality): *Where is the apple really?*

(5-Q3) Control Question (Memory): *Where did Andy put the apple?*

Props: Storybook with pictures.

Completion: Thank child for his/her help. Let the child select a sticker.

APPENDIX G

Theory of Mind Score Sheet

Theory of Mind Score Sheet

Child's ID _____ Bday _____ Age (mos.) _____ Date _____

Tester _____ Camera _____ Testing Time _____

| Test Question | Test Answer | Control Answer | Control Answer | Score |
|---------------|---------------------|------------------|----------------------|-------|
| 1A | <i>Candies</i> | <i>Fish</i> | | 1A |
| 1B | | | <i>Candies Fish</i> | 1B |
| 2 | <i>Box</i> | <i>Pillow</i> | <i>Box</i> | 2 |
| 3A | | | <i>Crayon Candle</i> | 3A |
| 3B | | | <i>Crayon Candle</i> | 3B |
| 4A | <i>Band-aid Box</i> | <i>No</i> | | 4A |
| 4B | <i>Belief</i> | <i>Plain Box</i> | | 4B |
| 5 | <i>Bag</i> | <i>Box</i> | <i>Bag</i> | 5 |

Total

C= correct I=incorrect

Score= 1 only if all control and test questions are Correct
0 if any control or test question Incorrect

APPENDIX H
Dyadic Coding Guidelines

Dyadic Coding Guidelines

Dyadic implies bid and response. Code after the response.

Play Theme Enactment: Dyadic partners participate in pretend play or playing “as if.” Identifiable by conversation, action, and/or costumes regarding a theme. Focus of both individuals should be within the pretense play frame. Priority is given to verbal conversation over actions (i.e., child moves to another part of the room and appears to be leaving the enactment, but his/her verbal responses indicates that he/she is still part of the enactment).

Clear Boundary: A clear bid is made and clearly acknowledged (this may occur verbally or by definitive actions signifying a complete change of focus). Code after the partner’s response.

Cloudy Boundary: Look for subtle clues for bid and response such as voice change, focus of attention, change of location in the room. Clearly determine when the new bid begins. Code after the partner’s response if the response falls within 10-seconds. In the event that no response is evident, code 5 seconds after the bid. Be aware that a response might actually be a new bid.

Metaplay: Dyadic partners step out of the pretense play frame to confer over issues regarding the play frame. It may be observed explicitly through conversation (i.e., “let’s pretend...”) or implicitly by actions (i.e., selection of costumes or toys/props). Focus of both children must be concerned with the onset or eventual continuation of enactment. “General Talk” or “Other” often occurs inside metaplay. Bids and responses are often unclear.

Discussions concerning the function and use of toys can be ambiguous; therefore, any pretense exhibited by working together will be coded either **Play Theme Enactment** or **Metaplay**.

- 1.) If conversations and focus is on how object works, code **Metaplay** if object is not part of the current scheme.
- 2.) If conversations and/or subtle clues (i.e., eye focus, voice change, body movement) depicts a role enactment, it signals a bid for **Play Theme Enactment**. Code after an agreement by response which also may be subtle. Listen carefully for conversational clues.

General Social Interaction: Any dyadic conversation not pertaining directly to pretend play issues (i.e., functional use of a toy without any pretense exhibited, mutual conversation concerning playmates, etc.)

Non-dyadic Play: Solo activities involving no dyadic interaction. No explicit or implicit relationship is apparent between the children (i.e., one child is making bids to the partner, but the partner is non-reciprocating). Focus of at least one child is on his/her activity without consideration of the partner.

The bid for **Non-dyadic play** may be a definitive action or a subtle body expression. Code after the response. If no response is definitively made, code 5-seconds after the bid.

Observer Participation: Code is recorded after one child makes the initial bid for the observer. Code new behavior within five seconds after the observer exits. If no bids or responses are made, code **Non-dyadic play**.

Guidelines to Code changes:

To determine the point at which one behavior changes to another, first consider the focus of the dyads. Assume the focus is stable to the original code unless

- 1.) A clear bid is made and clearly acknowledged (this may occur verbally or by definitive actions signifying a complete change of focus). Code after the partner's response.
- 2.) Unclear bid: Look for subtle clues such as voice change, focus of attention, change of location in the room. Clearly determine when the new bid begins. Code after the partner's response if the response falls within 10-seconds. Be aware that a response might actually be a new bid.

- 3.) Unclear response: If there is no definitive response within 10-seconds (i.e., similar change in voice, focus of attention, change of location by partner), code "Other" at 5 seconds from the time that the bid was made. New behavior must last an additional 5 seconds. A clear example of this is when one partner's attention is shifting from dyadic interaction to "Other."

All codes must be at least 5 seconds in duration. The beauty of coding from tapes is that you can rewind and replay several times to accurately assess the code.

If in doubt:

- record the time of the bid and your reasons
- record the time of the response and your reasons

APPENDIX I

Individual Play Behaviors Coding Guidelines

Individual Behaviors Coding Guidelines

NON-VERBAL: Code without the sound.

Theatrical Flare: The emotive non-verbal acts that emphasize the behavior or attitude of a role as being played out.

Examples:

Exaggerated hand or body movements (i.e., arms waving as if flying;
adjustment of costume to suggest the child is portraying a role)

Exaggerated facial features

Wearing 3 or more co-coordinated costume articles to portray a
character role

Action Sequences: Temporally sequenced series of actions used in a non-pretense fashion to represent an event. Coder may also score for Props in complex behaviors.

Examples:

Setting the table with play dishes

Eating (at least 2 actions to represent the act of eating: chewing and
wiping one's mouth)

Using the telephone (at least 2 actions to represent the act of using the
telephone: placing the phone to the ear and pushing the phone buttons)

Shopping (at least 2 actions to represent the act of shopping: taking
money and using the cash register)

Co-ordination of Props: The purposeful arrangement and/or integration of toys to be used as props. Observer must sense that the toys are being arranged for a plan.

Determine if it is the action with the toy (code Action Sequence) or the integration of the toy (code Co-ordination of Props) that signifies the pretense. Coder may score both in complex behaviors.

Examples:

Putting on more than 2 co-coordinated costume articles

Arrangement of toys in a pattern to be used as props

Multiple toys are used to represent cooking

VOICE CODING: Code without watching the video.

Voice Modulations: The changing of one's voice to represent the voice of a character role. Caution: Do not code for voice changes used only to emphasize a statement.

Examples:

Giving animation to a toy or non-existent character by using a high or low pitch voice

Speaking in a voice that represents a mother talking to a baby

Speaking in a different voice while in enactment (listen for voice register, word flow, accents)

Verbal Assignment and/or Acknowledgement of Character Role: Any statement that assigns a role or designates a role.

Examples: "I am a mother."

"You are the sister"

"Sister, give me the baby"

"What are we going to do now, Mom?"

APPENDIX J

Individual Play Behaviors Score Sheet

Child ID:

Tape ID:

Coder:

VHS start:

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| NO SOUND | 20s | 40s | 60s | 1:20 | 1:40 | 2:00 | 2:20 | 2:40 | 3:00 | 3:20 | 3:40 | 4:00 | 4:20 | 4:40 | 5:00 | 5:20 | 5:40 | 6:00 | 6:20 | 6:40 | 7:00 | 7:20 | 7:40 | |
| Theatrical Flair | | | | | | | | | | | | | | | | | | | | | | | | |
| Action Sequence | | | | | | | | | | | | | | | | | | | | | | | | |
| Props | | | | | | | | | | | | | | | | | | | | | | | | |
| NO VIDEO | 20s | 40s | 60s | 1:20 | 1:40 | 2:00 | 2:20 | 2:40 | 3:00 | 3:20 | 3:40 | 4:00 | 4:20 | 4:40 | 5:00 | 5:20 | 5:40 | 6:00 | 6:20 | 6:40 | 7:00 | 7:20 | 7:40 | |
| Voice change | | | | | | | | | | | | | | | | | | | | | | | | |
| Role Assignment | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|-------|
| | | | | | | | | | | | | | | | | | | | | | | | | | Total |
| NO SOUND | 8:00 | 8:20 | 8:40 | 9:00 | 9:20 | 9:40 | 10:00 | 10:20 | 10:40 | 11:00 | 11:20 | 11:40 | 12:00 | 12:20 | 12:40 | 13:00 | 13:20 | 13:40 | 14:00 | 14:20 | 14:40 | 15:00 | | | |
| Theatrical Flair | | | | | | | | | | | | | | | | | | | | | | | | | |
| Action Sequence | | | | | | | | | | | | | | | | | | | | | | | | | |
| Props | | | | | | | | | | | | | | | | | | | | | | | | | |
| NO VIDEO | 8:00 | 8:20 | 8:40 | 9:00 | 9:20 | 9:40 | 10:00 | 10:20 | 10:40 | 11:00 | 11:20 | 11:40 | 12:00 | 12:20 | 12:40 | 13:00 | 13:20 | 13:40 | 14:00 | 14:20 | 14:40 | 15:00 | | | |
| Voice change | | | | | | | | | | | | | | | | | | | | | | | | | |
| Role Assignment | | | | | | | | | | | | | | | | | | | | | | | | | |