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Children's Representation of Narrative Perspectives in Storytelling and Pretense in Relation to Theory of Mind

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Children's Representation of Narrative Perspectives
in Storytelling and Pretense in Relation to Theory of Mind

by

Hande Ilgaz

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To my mother, Nilgun Ilgaz,

for nurturing my fascination with books

and relentlessly supporting my love of challenges.

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Finally, I would like to thank all the teachers who welcomed me into their classrooms and to the children who participated in this study. If they had not shared what they know about narratives, I would not have had a story to tell.

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ABSTRACT

This study contributes to the theoretical arguments that conceptualize storytelling and pretend play as narrative contexts in which children practice perspective-taking and, in turn, improve their theory of mind abilities (Harris, 2000; Hobson, 2004; Nelson, 2009). Specifically, the relationship between children's understanding of stories' trick content, their expression of three aspects of perspective (character representation, perspective-shift, and evaluatives) in two narrative activities (retelling and reenactment) and ToM abilities were investigated.

Seventy-four 4-, 5-, and 6-year-olds were presented with two psychologically rich stories, one easy and one hard. One of the stories was told with the aid of pictures, while the other story was enacted with replica toys. Children were then asked questions tapping their understanding of the tricks (comprehension) and were subsequently asked to either retell or reenact the story (production) based on the same mode of story presentation they observed (telling or enactment).

The results indicated that children's abilities to understand the trick content of the stories increased with age, and overall the hard story was more difficult for them. Interestingly, enactment of the hard (but not easy) story scaffolded 6-year-olds' comprehension of the trick content. Children's ability to express perspectival aspects in story production differed by the three ways they were measured. While all three aspects increased by age, children's ability to represent characters was not affected by story context or story complexity. Children used more evaluatives for the easy story

independently of retelling or reenactment condition. Furthermore, 4-year-olds used more perspective-shifts for the easy story in the reenactment condition.

Regression analyses indicated that character representation and perspective-shift in stories produced through reenactment predicted first-order ToM while only perspective-shift in stories produced through retelling predicted 2nd order ToM above and beyond the effects of language and working memory. Interestingly, a reciprocal relation for first-order ToM contributing to character representation and perspective-shift for stories produced through reenactment was also found. These results indicate that, while perspectival expression in narratives contributes to theory of mind abilities, this effect is bidirectional. However, perspectival expression in narratives seems to contribute uniquely to 2nd order ToM abilities.

CHAPTER 1: INTRODUCTION

During the past 30 years we have witnessed an intense surge of interest in how children develop an understanding of persons as mental agents. This line of investigation, most commonly referred to as 'theory of mind', entails that the understanding that persons' behaviors are governed by their desires, thoughts, and beliefs about the world (i.e., first-order theory of mind) and about others' mental states (i.e., second-order theory of mind) (Astington, 2003; Carpendale & Lewis, 2006; Flavell, 2004). Theory of mind abilities have been proposed to be underlie the development of various other abilities such as, metacognition, morality, communication, and school readiness (Astington, 2003; Miller, 2009).

Research aimed to understand theory of mind development has provided evidence for the contribution of multiple factors. Among these factors are a range of linguistic abilities as well as executive functioning abilities (for reviews see Milligan, Astington, & Dack, 2007; Perner, 2000). Still other research has shown that neither language nor executive functioning are sufficient to fully explain theory of mind development (Carpendale & Lewis, 2006). In fact, some researchers have argued for revisiting perspective-taking as a component of social understanding that fundamentally contributes to children's understanding of theory of mind (e.g., Chandler, 2001). In support of this argument, researchers who subscribe to a cultural/experiential view of theory of mind development suggest that children learn about how minds and behavior are coordinated through narrative experiences (e.g., storytelling, role play) that are hypothesized to facilitate children to think and talk about others' perspectives and further their theory of

mind understanding (e.g., Harris, 2000; Hutto, 2008; Nelson, 1996, 2007, 2009; Peterson & Slaughter, 2006). In the cultural/experiential theory point of view, narrative is conceptualized as a unique platform that allows, and possibly requires, the reader or the listener to take the perspectives of multiple story characters to appreciate the full extent of the narrative's meaning (Nelson, 2009). Similar to narrative, role play is conceptualized as providing children with a unique platform in which they practice creatively with perspective-taking in an enjoyable context (e.g., Harris, 2000).

There is some support, albeit indirect, for this argument that comes from studies that investigate the relationship between participation in storytelling, or role play activities and theory of mind. This line of research seems to share the assumption that relations between narrative, role play, and theory of mind exist due to children's practice with taking the perspectives of others (i.e., story characters, or play roles) within these contexts. Specifically, these studies show that the *amount of experience* children have in shared storybook context (either with parents or bookreading interventions at school) and the *frequency* with which they take on roles in role play are related to their theory of mind understanding (e.g., Adrián, Clemente, Villanueva, and Rieffe, 2005; Youngblade & Dunn, 1995). An intimately related yet largely unexplored question (but see Nicolopoulou & Richner, 2007, for an exception) is whether children's ability to represent perspectives in production of narratives contributes to their theory of mind competence. Specifically this question focuses on whether the quality of the perspectives children create in narrative contexts (when telling or role playing stories) relate to their theory of mind abilities.

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The aim of the current study was to investigate whether there is a relationship between children's ability to take perspectives in storytelling and a special form of role play (i.e., story enactment with toys) and their theory of mind abilities. Specifically, this study aimed to contribute to our understanding of the relationship between perspective-taking in narrative contexts and theory of mind through investigating children's ability to understand mental content of perspectivally rich fables, and their ability to talk about the mental content of the story, to represent psychologically rich characters, to shift between character perspectives, and their general use of perspectival language in relation to their theory of mind abilities.

In the rest of this chapter, I will first present a brief description of theory of mind development and the hypothesized relationship between theory of mind and perspective-taking. These sections will be followed by reviews of research that establishes the relationship between narrative and theory of mind, and role play and theory of mind. In each of these review sections, I will first review the empirical evidence that links these symbolic contexts to theory of mind before moving into a critical review of what this research tells us about the relationship between the ability to take perspective in these contexts and theory of mind. Finally, I will discuss the similarities and differences between these two symbolic contexts in relation to theory of mind before presenting the current study.

Theory of Mind

First-order theory of mind

Between the ages of three and five, children master first-order theory of mind abilities. These abilities encompass predicting people's behavior according to their false beliefs, understanding self and others' false beliefs, and manipulating others' beliefs in order to deceive them.

Children arrive at first-order theory of mind understanding through a long journey. Preverbal infants embark on this journey through developing abilities of discriminating intentional from non-intentional (and accidental) actions, sharing attention with others, and directing others' attentions (for a review see Carpenter, Nagell, & Tomasello, 1998). According to some theories, the acquisition of language opens the doors to a new world for children. Language allows one to label unobservable mental states such as desires, beliefs and thoughts that govern the way people behave (e.g., Bretherton & Beegly, 1982; Bartsch & Wellman, 1995). The syntax of language (e.g., sentential complements) allows one to express propositions that conflict with reality or between people (de Villiers J. & Pyers, 2005; de Villiers, P., 2005). And it is through language that one takes part in conversations that elucidate the difference between speakers' points of view (Harris, 2005).

Armed with a keen sense of observation and a multi-faceted tool to think and talk about how behavior is influenced by mental states, young children start solving the mystery of the mental world, beginning with understanding desires, then moving to understanding true and false beliefs of self and others. Around 4½ years of age, children start reliably passing tasks that are designed to tap their understanding of false beliefs. One of these tasks was developed by Wimmer and Perner (1983) to investigate when

children can reliably predict how a character with a false belief about the location of an object will act. In this task children were asked where Maxi would look for his chocolate after placing it in one of the cupboards. What Maxi didn't know, but the children did, was that Maxi's mother had changed the place of the chocolate after he had left the kitchen. Would Maxi look for his chocolate where he left it, or would he look for his chocolate at the new location? This seemingly straightforward task has proved very challenging for children younger than 4 years of age. Replications of this study, including those that considerably simplified the original narrative of the task, yielded similar results (Flavell, 1999). Wimmer and Perner's (1983) Maxi task has become one of the classic tasks of mindreading abilities and is now widely called 'the unexpected displacement task' (Flavell, 1999; Harris, 2006).

Wimmer and Perner (1983) showed that understanding others' false beliefs is a cognitive challenge that is only overcome around 4 years of age. A related question that follows is whether children understand their own false beliefs. Perner, Leekman and Wimmer (1987), devised the unexpected contents task, in which they showed children a candy box and asked them what they thought was inside the box. Children of all age groups stated that there was candy in the box. The experimenter then showed the children that contrary to their expectations the box contained a pencil. Children were then questioned about what they thought was in the box when they first saw it. Amazingly while children who were 4 years of age and older could correctly report their initial, and in this case, false beliefs about the contents of the box, younger children made 'realistic errors' (Wellman & Woolley, 1989) claiming that they always thought there were pencils

in the box. This experiment was reliably replicated many times (e.g., Gopnik &

Astington, 1989; Wellman & Woolley, 1989) and became another classical experiment of

theory of mind understanding.

Wellman, Cross, & Watson (2001) carried out a comprehensive meta-analysis of

first-order theory of mind research which provided strong evidence for a normative age

difference between 3 and 5 years of age. At 30 months of age children were

approximately 20% correct, whereas this percentage increased to 50% by 44 months of

age, and to 75% correct by 56 months of age.

Second-order theory of mind

As just reviewed, children acquire the ability to reason about other persons'

behavior as based on their mental states around 4 years of age (first-order theory of

mind). Although this is a necessary understanding for theory of mind development it is

hardly sufficient for the effectively navigating the complexities of social life. For

example, children need to go beyond reasoning about single characters in isolated

situations and achieve an understanding of other people's reasoning about third person's

mental states. In other words, a bigger challenge that children must undertake to

effectively navigate the complexities of social life is the coordination of different

persons' mental states which is termed second-order theory of mind (Sullivan, Zaitchik,

& Tager-Flusberg, 1994). Research indicates that children acquire second-order theory of

mind abilities between five to seven years of age.

Second-order theory of mind ability entails understanding of embedded mental

states such as "Kate thinks that Mike does not know where the drug store is." The

original second-order theory of mind task was developed by Perner and Wimmer (1985). In this task, children listened to a story about John and Mary who are playing at the park when they see an ice cream truck. Mary realizes that she does not have any money with her and decides to go home to get some and return to the park to buy some ice cream. After Mary leaves the park, the ice cream truck starts to drive away. John asks the ice cream man where he is going and learns that he is going to school. John goes home for lunch. As Mary is leaving her house to go back to the park, she sees the ice cream truck passing by. She asks the ice cream man where he is going and learns that he is headed to school. Then, Mary goes to school to get ice cream. Children are asked about John's beliefs about Mary's mental state ("Does John know that Mary knows where the ice cream cart is?" or "Where does John think Mary will go to get ice cream?").

Perner and Wimmer (1985) tested 5- to 10-year-old children with variations of this standard task in a series of six experiments. They found that children succeeded on the second-order theory of mind tasks starting at age 6 and more reliably at age 7. Other research that has used modified versions of this task (e.g., Astington, Pelletier and Homer, 2002) found that children as young as 5 years of age could pass this task when the text was simplified.

Theory of mind & perspective-taking

Over the years, several theories have been developed to explain how children develop theory of mind abilities and each of them proposed different mechanisms as being central to this development. Some of these mechanisms include children's innate capacities (modularity theory, e.g., Leslie 1987, 1994; Baron-Cohen, 2001), their ability

to construct theories that explain the mental world (theory theory, e.g., Wellman, 1990; Gopnik & Wellman, 1994), their ability to simulate other's experiences (simulation theory, e.g., Harris, 1992), and their experiences in a social world that is full of interactions with others' minds in the forms of family conversations, or shared bookreading (e.g., Nelson, 1996, 2007) have been proposed as underlying mechanisms whereby children develop theory of mind abilities.

Among these explanations, two (i.e., simulation theory and experiential theory) highlight the importance of perspective-taking abilities for theory of mind development. These theories conceptualize theory of mind as requiring children (and adults) to understand different and/or conflicting perspectives of reality while taking different frames of reference or points of view (e.g., Perner, Stummer, Sprung, & Doherty, 2002). Specifically, in this view, understanding one person's (self or other) mental states about the world requires that we take the perspectives of those people (e.g., Hobson, 2004). In more complex social situations, such as those that involve more than 2 people, one has to coordinate more than one subjective perspective (e.g., Martin, Sokol, & Elfers, 2008). Based on these views, both simulation and cultural/experiential theory emphasize the importance of children's experiences in perspectivally rich contexts (e.g., conversations, role play and narratives). They argue that children practice taking another's perspective (story character, conversation partner) and coordinating this perspective with others (story characters, self) (Harris, 2005; Hobson, 2004).

Perspective-taking as simulation

Simulation theory proposes that we understand others via a special type of perspective-taking ability named simulation. This ability, much like role-taking, involves putting ourselves in other people's shoes and imagining thoughts, feelings, and actions from their perspective (e.g., Harris, 1991, 1992; Mitchell, Currie, & Ziegler, 2009). The act of simulation involves departing from one's immediate subjective reality to take on the mental attitude of another person. Some researchers propose that this special perspective-taking (i.e., simulation) ability is made possible by the developing imaginative powers of the child, which are a necessary part of cognitive capacity that children best practice through naturally engaging in two symbolic contexts that allow for multiple perspective-taking opportunities: narrative and pretend play (Harris, 2000, 2009; Kavanaugh, 2006; Kavanaugh & Engel, 1998).

Perspective-taking as emerging from children's experience in intersubjective contexts

Peter Hobson (1993, 2004) conceptualizes young children's ability to understand self and others In the first few years of life, as emerging from their experiences with significant others in emotionally-charged, social contexts. He suggests that children derive a preliminary understanding of self and others via identifying with significant others' attitudes to the world and then come to differentiate their own attitudes from those of others. Hobson (2004; with Hobson J., 2007) defines identification as the taking another's observable psychological stance such that that stance becomes a potential way through which the observer relates to the world. For instance, a child who sees a dog for the first time, and finds it slightly alarming, can identify with the mother's stance toward

the dog and approach it. Hobson argues that this type of identification is effortless on the part of the child and allows the child to experience and latter differentiate two separate viewpoints. In this view, much like simulation but with an affective-motivational component, the mechanism of identification supports young children's understanding of the social world. Hobson argues that, identification is the main proponent of perspective-taking, which later enables symbolic thought: "Thinking becomes possible because the child separates out one person's perspective from another's. More than this: thinking arises out of repeated experiences of moving from one psychological stance to another in relation to things and events. (…). The process by which all of this occurs is identification" (Hobson, 2004, p.105).

Identification in young children is described as an effortless, spontaneous way of relating to emotionally significant others. Once children get older identification aids them in taking roles during pretend play. In fact, Hobson points to the lack of spontaneous imaginative role play in children with autism as an important indicator of their inability to identify with others and engage in social understanding (Hobson, Lee, & Hobson, 2009).

Perspective-taking as emerging from children's experience in social-cultural contexts

The experiential view construes the child as gradually entering a 'community of minds' rather than acquiring a "theory of mind" (Nelson, Skwerer, Goldman, Henseler, Presler, & Walkenfeld, 2003; Tomasello, Carpenter, Call, Behne, & Moll, 2005). In this view, theory of mind development is construed to be a part of the enculturation process, through which children come to effectively function in the social and cultural spheres.

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This process relies on children's experience with social and cultural forms of thinking of or relating to others such as reminiscing about the past with parents, pretend play and narratives.

Among these social and cultural forms of thinking and relating to others, Nelson (1996, 2007) strongly emphasizes the importance of narratives. In her latest book, she argues that in children's development of self and understanding of others, narrative plays a critical role allowing children to practice understanding multiple perspectives. Highlighting the critical role of narrative she states that "stories bear directly on the problems of different minds, different selves, and different times that are central to children's emerging understanding of the world" (2007; p.172).

The cultural/experiential view draws on both the simulation theory and Hobson's views on identification in explaining how children make meaning of the social-cultural experiences that are relevant to theory of mind development without focusing on the theoretic differences of these two views with regard to the ontogeny of taking the perspective of others (Nelson, 2007; Tomasello, 1999). While Harris (2000) conceptualizes simulation as a cognitive capacity that is a component of children's abilities of imagination, Hobson (1993) situates identification as emerging from children's emotional bonds with significant others. Researchers from the cultural/experiential tradition seem to use both simulation and identification as mechanisms that aid children in entering a cultural community in which focusing on others' minds through conversation, play or narrative is a natural aspect of everyday life.

Children's ability to take another's perspective is an important step towards building an understanding of self and others. This type of ability allows children to understand simple theory of mind dilemmas in which one character's beliefs are at odds with reality. Some researchers have pointed out that this type of first person perspective-taking may not be sufficient to successfully navigate more complex social situations in which one has to reason about several people's perspectives (e.g., Martin et al., 2008). Recognizing that mere identification would not provide adequate support by itself, several researchers have proposed complimentary processes. Hobson argues that children need to develop the ability to shift between perspectives in order to understand more complex social situations (García-Pérez, Hobson, & Lee, 2008).

Similar to Hobson's notion of perspective-shifting, Nelson (2009) and Hutto (2008, 2009) highlight the importance of taking a third person point of view in making meaning of narratives. Third person perspective entails maintaining one's subjective stance while viewing the psychological interaction of more than one character. This allows for a coordinated understanding of the different points of view of the characters involved. Nelson sees this type of perspective-taking necessary in appreciating the psychological complexity of most narratives (and by implication most social situations). In line with this argument, other researchers have pointed out that understanding certain aspects of narratives such as appreciating situational irony relies on a third person perspective (e.g. Dyer, Shatz, &Wellman, 2000). Readers or listeners of a story with situational irony should be able to step out of the perspective of the characters to appreciate how the events of the story contrast with previous expectations.

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While Hobson seeks perspective shift in both oral (García-Pérez et al., 2008) and role play narratives (Hobson et al., 2009), Nelson construes third person perspective-taking as developing in the realm of oral storytelling (both personal and fictional). Nelson's emphasis of oral narratives stems from her conceptualization of the child entering a decontextualized world in which both personal and collective consciousness is constructed and shared via representational modes of thought. In this view, narrative becomes a mode of thought, a way of thinking and talking about the relationships of self, others, and events without having to rely on embodied forms of expression such as play acting.

There are no empirical studies that focus on perspective-taking in role play versus oral storytelling contexts which limit our understanding of the possible relationship between children's theory of mind development and portrayal of narrative perspectives. The current study aimed to address this issue, among others.

Summary. Researchers of various theoretical orientations have conceptualized perspective-taking as one of the main mechanisms through which children come to understand self and others. These researchers share a conviction that role play and narrative provide children with enjoyable natural contexts to practice taking perspectives other than one's own (e.g., Harris, 2000, Hobson, 2004, Nelson, 2007). Nelson (2005, 2007, 2009) adds to this line of research, by positing that narratives may provide children with a unique arena to coordinate and organize more than one mental world. In the current study, we will focus on the potential relationship between these two contexts (i.e., storytelling and role play) and preschool children's theory of mind development.

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Narrative and Theory of Mind

Narratives are unique linguistic representations of "temporally unfolding situations that involve different characters and multiple events causally related to the goals and mental states of their protagonists" (Nelson, 2007, p.151). It is widely argued that the abilities of understanding and telling narratives is related to socio-cognitive as well as linguistic and cognitive capacities (e.g., Astington, 1990; Nelson, 1996; Tager-Flusberg, 1995). In this section, I will first review the research that looks at the relationship between theory of mind and children's narratives in: (a) comprehension, (b) production, (c) naturalistic bookreading contexts with parents, and (d) narrative intervention programs are related to their theory of mind abilities in order to provide the empirical background that establishes this relationship. Next, I will review some of this research and others that have more specific implications for the focus of the current study, the hypothesized relationship between children's perspective-taking in narrative and their theory of mind development.

It is important to note that the research that will be reviewed in this section have viewed the relationship between narrative and theory of mind from two competing perspectives. Some have construed theory of mind as contributing to children's narrative competence, while others have sought to understand whether children develop theory of mind abilities through narrative practices. There is also some evidence that suggest this relationship is of simultaneous and bidirectional nature (e.g., Brockmeyer, 2009). While the rationale for the current study is based on views that conceptualize narrative contexts as facilitating theory of mind development, the possibility of a simultaneous bidirectional

relationship is also considered to be probable. Hence, the review of literature is not organized according to directionality of effect, but according to lines of research that have investigated this relationship by modality (comprehension, production) and context (shared bookreading with parents, in interventions).

Is there a relationship between children's comprehension of mental content of narratives and theory of mind abilities?

Some researchers propose that narratives (personal and fictional) may serve as a context for learning about the relationship of the mental world with the world of actions (Hutto, 2007; Nelson, 2007). Narrative in this view is construed as a special symbolic context that allows children to more fully understand the relationship between the 'landscape of action' and 'landscape of consciousness" through identifying with characters (Nelson, 2007; 2009).

In line with this view, some researchers have investigated whether children are more successful in understanding first-order theory of mind problems when they are presented in narrative format as opposed to short vignette type texts that are followed by forced choice questions as is often the case with standard first-order theory of mind tasks (Lewis, Freeman, Hagestadt, & Douglas, 2004; Ratner & Olver, 1998; Szarkowicz, 2000). Lewis and his colleagues (1994) investigated this question in a series of experiments in which they used a picture book version of the standard change of location task specially created for their study. The picture book described Kiki who put her cat in its basket in the bedroom and went to the living room to watch television. While Kiki was in the living room the cat escaped from the bedroom through the window, went around

the house, and entered the kitchen from another window, eventually ending up asleep on a chair in the kitchen. At the end of the story children were asked two memory control questions (i.e., 'Where did Kiki leave her cat?', 'Where is the cat now?'), and one target question (e.g., 'Which room will Kiki go into to get her cat?'). Lewis and his colleagues hypothesized that children would perform better when the theory of mind scenario was presented in a storybook context as compared to the standard assessment task. Confirming this expectation, their results showed that 61% of the children (*M*=48 months) who failed the standard task, succeeded in the storybook task (Experiment 1).

Furthermore, 3½-year-old children who were below the age at which children generally pass first-order theory of mind tasks were more likely to pass the narrative version of the theory of mind task as compared to the standard version (Experiment 3). However, this study showed that there are limits to the scaffolding effect of narratives. For instance, when the wording of the questions were changed to include mental state words, or when the story was made slightly more complex to include an additional opening scene younger children's performance was no longer different than chance.

Lewis and colleagues used a story that was based on the change of location task. Some of the storybooks children enjoy are much richer in character and mental state content than the ones that are devised as assessment tools for theory of mind understanding. Other studies investigated whether children understand the mental content of stories better in commercially available stories that are rich in character information and imaginative components as compared to theory of mind tasks. For instance, Ratner and Olver (1998) read a fairytale (*The Brave Little Tailor)* that contains deception themes

(e.g., the tailor scares a giant through showing him that he can 'squeeze the milk from a stone' when in fact he is squeezing a piece of cheese). At predetermined points in the story the experimenters asked children questions about characters' false beliefs while reading the fairy tale. Children also received several theory of mind tasks (i.e., unexpected contents and appearance-reality). Ratner and Olver found that children performed better at both the standard and narrative theory of mind tasks with age. Contrary to their expectations children seemed to perform comparably in the standard and narrative theory of mind tasks regardless of age.

Szarkowicz (2000) replicated these findings with a larger sample of children using the book *Harry the Dirty Dog* (Zion & Graham, 1954). This book tells the story of Harry the dog who is a white dog with black spots who does not like to wash. Harry gets so dirty that he becomes a black dog with white spots and his family no longer recognizes him. The theme of the story rests on a component of first-order theory of mind understanding, the family's false belief that the dog with white spots is not Harry. Szarkowicz used appearance-reality tasks that focuses specifically on false beliefs caused by mistaken identity to measure children's theory of mind competence, and also included a receptive vocabulary measure in this study (PPVT). Like Ratner and Olver (1998), Szarkowicz found that children's performance on standard, and narrative theory of mind tasks were comparable. However she also showed that children who had an age appropriate receptive vocabulary score (Standard Score = 109) were 3 times more likely to pass the narrative questions rather than the standard false belief task. Indicating that children who had age-appropriate language abilities, were more likely to succeed in

understanding false belief dilemmas in the narrative context as compared to theory of mind assessments.

To summarize, studies that have investigated whether children understand false belief concepts more effectively when they are presented in the narrative context as compared to standard theory of mind tasks have not been able to provide convincing evidence that favors the narrative context. Lewis and colleagues (1994) provided partial evidence for the effectiveness of very simple narratives in young children's theory of mind understanding. However, others who have used more conventional narratives, have shown that children reason about the false beliefs of others competently in both contexts around the same time (Ratner & Olver, 1998; Szarkowicz, 2000). These studies provide a look at children's comprehension of false belief content in narratives.

Is there a relationship between children's narrative productions and theory of mind?

While children did not seem to perform better in understanding false belief content in narratives as compared to theory of mind tasks, another line of research has looked at whether there are relationships between children's ability to represent mental content when telling stories and their theory of mind abilities. Telling narratives requires children and adults alike to construct imaginary worlds in which characters act in accordance with their mental appraisal of events and situations. It is a special pragmatic formation that attains coherence and meaning through the relationship between characters and events in the story (e.g., Bruner, 1986). Studies that have looked at children's narrative productions in relation to theory of mind abilities have mainly focused on

children with autism who are known to have difficulties in the areas of language and communication as well as theory of mind abilities.

Studies with atypically developing children. Researchers who have investigated whether there is a relationship between autistic children's theory of mind and narrative abilities expected that these children's pronounced difficulties with theory of mind would affect the quality of the narratives they tell. Furthermore, they expected that these children's narrative abilities would be correlated with their theory of mind understanding.

In one of the earlier studies, Tager-Flusberg and Sullivan (1995) investigated the relationship between theory of mind understanding and narrative competence of autistic children in comparison to children with mental retardation and typically developing children. All children narrated the wordless picture book *Frog on His Own* (Meyer, 1969), but only the atypical groups were tested on four unexpected contents theory of mind tasks.

Looking at the narratives children told, Tager-Flusberg and Sullivan found no differences across the three groups on a number of narrative qualities such as narrative length (as assessed by number of propositions and number of words), lexical cohesion (as assessed by number of temporal and causal connectives), number of affect terms (e.g., happy), number of behavioral emotion words (e.g., cry), physiological state words (e.g., tired), and cognitive state mental words (e.g., think). However, they found that when asked questions about the feelings of the characters in the story autistic children had significantly more difficulties than the other groups in generating appropriate answers. Furthermore, correlational analyses revealed that indices of narrative length and use of

causal connectives were related to autistic children's performance on theory of mind tasks. However, this relationship did not hold for children with mental retardation. It was also found that autistic and mentally retarded children who produced more cognitive state language were more likely to pass theory of mind tasks. Since the typical children did not receive theory of mind tasks, this study does not provide an understanding of the relationship between theory of mind and narrative competence for typically developing children.

Tager-Flusberg and Sullivan used a wordless storybook to elicit narratives. It is possible that when scaffolding in the form of pictures were provided differences between atypically developing populations and typically developing populations were minimized. In this type of story elicitation, children can rely on the pictures to describe the events in the story. Pictures can also depict character's emotions through facial expressions. It is, then possible that children with autism tell more impoverished stories in spontaneous narrative contexts that lack the scaffolds provided in structured narrative contexts.

Capps and colleagues investigated this question with two studies (Capps, Losh, and Thurber, 2000; Losh & Capps, 2003). In the first study, Capps and her colleagues (2000) investigated the relationship between narrative retellings of a wordless storybook and theory of mind in autistic, developmentally delayed, and typically developing children. In addition to the structured narrative task, they also had short semi-structured conversations with children about vacations, friends, and school.

Autistic children's narratives displayed simpler syntax and less syntactic diversity in their storybook narratives. There were also significant differences between the

storybook narratives of the autistic group as compared to the typically developing group regarding 'pragmatic' aspects of narrative. Although the number of evaluatives (e.g., number of causal statements, negatives, hedges, character speech, attention getters) did not differ between groups, autistic children used a more restricted repertoire of evaluative comments. Interestingly, the number of affective and cognitive mental state words used when narrating the storybook did not differ between children with autism and other groups. However, autistic children were found to be significantly less likely than typically developing children to situate the characters mental states and emotions within a causal framework (e.g., "The boy started crying 'cause the cat scratched him" p.199). Capps and her colleagues also reported that autistic children were more likely to express emotional states as external manifestations of behavior (e.g. 'the frog ate the bug and made his mouth sad'). Confirming expectations, autistic children's difficulty with spontaneity was reflected in their language in the conversational context. Children with autism provided significantly less novel and relevant information as compared to developmentally delayed participants in their semi-structured conversations.

Correlations between children's storybook narratives and theory of mind abilities showed that there were significant relationships between syntactic diversity, number of evaluative statements, evaluative diversity, number of mental state words, and number of affective mental state words theory of mind performance. Interestingly, none of these relations held for the developmentally delayed children. Since typically developing children were not administered theory of mind tasks, this study does not provide an

understanding of whether the hypothesized relationship between theory of mind and narrative existed for typically developing children.

Aiming to bridge this gap, in their second study Losh and Capps (2003) investigated the relationship between narrative and theory of mind in high functioning children with autistic spectrum disorders problems (including Asperger Syndrome) and typically developing children. In this study, all children complete theory of mind tasks. Children were also asked to tell two stories using a wordless picture book, 'Frog, where are you?' (Mayer, 1969), as well as spontaneous personal stories. In order to elicit personal stories Losh and Capps asked children questions about their family, friends, pets, and favorite activities. After children got comfortable, the experimenters asked children to tell stories about the topic of conversation.

Losh and Capps found that autistic children used simpler syntactic formations in their personal narratives as compared typical children. However, no difference in syntactic complexity was observed for the storybook narratives. A similar pattern was observed in terms of the evaluatives children included in their narratives. While use of evaluatives in the storybook context was comparable across groups, children with autism used significantly fewer evaluatives in the personal story context. When the authors analyzed the type of evaluative devices employed by the children, they found that autistic children made significantly less use of causal explanations when describing the behaviors and mental states of the characters across both narrative contexts.

Almost all of the narrative indices of both storybook narratives and personal narratives were correlated with autistic children's theory of mind performance.

Specifically story length, frequency of complex syntax, diversity of complex syntax, frequency of evaluatives, frequency of mental state language and frequency of causal statements significantly correlated with autistic children's theory of mind performance. Importantly, these relationships were not observed between any of the narrative indices and theory of mind abilities for the typical children. Losh and Capps refrain from concluding that the link between narrative and theory of mind is unique to atypical populations since their typically developing sample was composed of older children who were matched in chronological and verbal IQ (8- to14-year olds). These children would be expected to pass more complex theory of mind tasks than the ones used in this study. Losh and Capps also argue, research that investigates the link between narrative and theory of mind in typically developing children with age appropriate theory of mind measures is necessary.

To summarize, research that focused on the possible relationship between narrative and theory of mind in children with autism have shown that the narratives these children tell, especially ones that are scaffolded by picture books, are not very different from those of typically developing children. However some expressive aspects of these children's narrative productions from picture books seem to reflect these children's socio-cognitive difficulties. For instance, while the number of mental state terms these children used were not different from those of typically developing children, autistic children seemed less likely to include causal statement about mental states (Capps et al., 2000; Losh & Capps, 2003). This finding suggests that autistic children may have been using the labels for internal states without fully appreciating the relationship between

how these states are linked to the events in the story, or characters' behaviors. Tager-Flusberg and Sullivan's (1995) findings also support this argument. They showed that children with autism had difficulties explaining characters' feelings in response to experimenter questions, while the frequency of mental state language they used were very similar to that of typically developing children.

In sum, the studies reviewed in this section have all shown a relationship between narratives and theory of mind for children with autism, but interestingly the one study that included theory of mind measures for the typically developing children did not provide evidence for such a relationship. With respect to this finding it is important to note that, the typically developing children were age matched to their atypically developing peers and hence had already passed the major developmental mile stones for theory of mind. Thus, consequently the theory of mind measures used were not age-appropriate for the typically developing children. Next, I will review studies that focused specifically on the relationship between narrative and theory of mind for typically developing children.

Studies with typically developing children. Children's mental state discourse- their use of words that express intentions, desires, emotions and beliefs- have been conceptualized as a naturalistic measure of children's developing abilities to think and talk about mental worlds (e.g., Bartsch & Wellman, 1995; Bretherton & Beegly, 1982). Symons, Peterson, Slaughter, Roche, and Doyle (2005) investigated whether children's use of mental state terms in their narrative discourse was related to their theory of mind abilities. They showed 51 5- to 7-year-old children 4 pictures and asked them to tell a

story about each picture. Children also completed two theory of mind tasks (i.e., unexpected location, and a false-emotion task). The results showed that children who used more cognitive state words in particular, and more mental state words in general when telling stories tended to perform better on theory of mind tasks even after the effects of age and language abilities were controlled for.

Mental state word usage provides a useful, yet partial glimpse into children's theory of mind abilities as reflected in their narratives. One of the defining features of theory of mind competence is the ability to coordinate characters' mental states with their behavior and events. Pelletier and Astington (2004) investigated the relationship between theory of mind and narrative competence with the premise that theory of mind is a precursor of narrative abilities. They investigated 4- to 6-year-old children's understanding and coordination of story characters' mental worlds and actions. In order to test this, they used stories with pictorial representations that depicted characters with thought bubbles. Children were tested on language, theory of mind and non-verbal IQ tasks in the fall (time 1). Approximately 3 months later (time 2) preschoolers listened to an experimenter and their teacher narrate two wordless storybook. Children were read two stories that were specially created for this study. One of the stories was read by an experimenter and the other was read by the teacher in the group context. Children were then asked individually to retell the same story with the aid of the pictures. After listening to each story, children retold the story to the experimenter using a picture sequence that depicted the events of the story. These retellings were scored for frequency of reference to actions outside the thought bubbles, actions inside the thought bubbles, and

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coordinated instances in which children meaningfully related the contents of the thought bubble to the character.

As expected, older preschoolers coordinated the mental world of the characters (inside the thought bubbles) with their actions (outside the thought bubbles) more frequently as compared to younger preschoolers. Importantly, this ability was found to correlate with theory of mind performance. Pelletier and Astington also carried out a regression analysis to test whether theory of mind performance had a unique contribution to children's ability to coordinate characters' mental worlds with their actions. While there was a trend in the expected direction, theory of mind abilities fell short of making a unique contribution to the frequency with which children coordinated the mental world of story characters with the plane of action.

To summarize, there is some evidence that children's use of cognitive words in their narrative productions are related to their theory of mind abilities. The ability to think about the mental world of characters is a partial indication of theory of mind competence since theory of mind entails understanding the relation or coordination of these mental states with events or behavior. In a longitudinal study, Astington and Pelletier (2004) have provided some preliminary evidence for this relationship.

Does shared bookreading with parents contribute to children's theory of mind abilities?

This line of research conceptualizes shared bookreading as a unique platform of collaborative meaning making in which adults and children simultaneously focus on story characters' mental worlds (Nelson, 2009). In line with this premise, it has indeed it been

shown that mothers and children use mental state references more frequently in narrative contexts as opposed to other types of everyday interactions (Sabbagh & Callanan, 1998).

Research in this tradition has predominantly investigated concurrent or longitudinal relations between mothers' talk during bookreading and children's theory of mind performance in order to investigate whether narratives provide a *unique* opportunity for children to learn from mothers' talk about the mental world of characters and thus about their theory of mind development. Ruffman, Slade, Devitt, and Crowe (2006) has lent some indirect support for this argument through a longitudinal study. Fifty-five mothers were asked to describe to their 3-year-old children 10 photographs in which people were shown performing everyday actions. Children also completed a standardized language measure (CELF) and several first-order theory of mind tasks. A year later, when the children were 4-years-old they were invited to the lab with their mothers and best friends. Mothers were asked to instruct their children and the friend to use a special drawing toy, that required the children to coordinate their actions to accomplish a goal. Ruffman and colleagues showed that mothers' mental state talk during instructing the children to play with the drawing toy did not uniquely predict their children's later theory of mind development whereas their mental state talk while talking about the photographs did, even when effects of children's age, language abilities, and parenting factors such as maternal responsiveness were controlled for.

Other studies that specifically investigate talk about narratives seem to support the argument that children's participation in bookreading with parents facilitates theory of mind development. In fact, Adrián and colleagues (2005) have shown that the frequency

of shared bookreading as reported by mothers predicts their children's theory of mind abilities when measured concurrently. This was true even when children's verbal mental age and the education level of the parents were controlled for. In this study, 34 Spanish mothers were observed while reading 4 storybooks to their children and mothers' use of mental state words was tallied. Children completed an unexpected location theory of mind task along with a language measure (WPPSI). The results showed that both the amount and variety (e.g., affective, cognitive) of mothers' mental state talk concurrently predicted children's theory of mind competence even when strong correlates such as children's verbal mental age, maternal education, the number of words mothers used and the frequency of book reading at home was accounted for.

Mothers' mental state talk in narrative contexts was shown to be a factor that uniquely predicts children's theory of mind in English-speaking samples as well. Ruffman, Slade, and Crowe (2002) had 72 mothers talk about different pictures all depicting people engaging in common actions (e.g., mother bathing a baby, girl climbing a tree) to their young children (2- to 4- year olds) at 3 different time points over the course of a year. Children completed a standardized language task (CELF), and theory of mind tasks at each time point. Ruffman and colleagues analyzed mothers' talk during picture descriptions not only for the number of mental state words they used, but also for descriptive talk, didactic talk (fact-based teaching), talk about causes, linking the events in the picture to the child's life and other elaborative talk about the pictures. The results revealed that while all aspects of mothers' talk was correlated with children's theory of mind abilities, only mothers' mental state talk uniquely predicted children's theory of

mind abilities longitudinally. This relationship held even when strong mediators such as children's age, previous theory of mind competence, and mother's education were controlled for.

Taken together, these studies support the claim that there is something unique about mothers' mental state talk in narrative contexts that promote children's theory of mind abilities. As stated previously, some scholars have argued that stories, especially fictional stories, enable children to make meaning of the mental world of story characters in collaboration with adults. However, mental states during bookreading can be used to talk about the characters as well as the reader and the listener. Do parents use mental state talk during book readings mainly to elucidate the characters' points of view? Recent research that looks at the relationship between shared bookreading contexts and theory of mind has started addressing this question through empirical studies that look at the referent of mental state talk. These studies will be reviewed in the section that focuses on the relationship between narrative, perspective-taking, and theory of mind.

Can children's participation in bookreading interventions promote their theory of mind abilities?

Previous research has established a relationship between shared bookreading with parents and children's theory of mind abilities. Is it possible to promote children's theory of mind development through bookreading interventions at the school setting? To address this question, Guajardo and Watson (2002) carried out two training studies which sought to investigate the relationship between children's participation in a book reading intervention and theory of mind abilities. In the first study, Guajardo and Watson had

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small groups of 4 to 5 preschoolers participate in interactive bookreading sessions in which adults asked questions and offered explanation. Each group participated in 12-15 bookreading sessions. A control group did not receive any intervention. The authors did not find significant effects of the intervention on children's theory of mind abilities. In a second experiment, Guajardo and Watson had 54 preschoolers between the ages of 3 and 5 years participate in a series of 13-15 bookreading sessions. This time the intervention resembled mother-child bookreading conditions in that the sessions were conducted with individual children rather than with small groups as was the case in the first study. Again, children in the control condition did not participate in any training program, but followed their usual preschool routine. Guajardo and Watson found that children who engaged in repeated conversational book readings in which adults asked questions and provided explanations improved theory of mind performance above and beyond a control group of children who did not participate in book reading activities. However, when the authors administered follow-up tests 3 to 4 weeks after the completion of the intervention, they saw that the significant effects of the intervention had dissipated. This study provided some preliminary evidence for the effectiveness of one-to-one bookreading interventions at the preschool setting that resemble mother-child bookreading that occurs naturally. However, it failed to provide evidence for the effectiveness of small group interventions, which is a more common bookreading practice in the preschool setting.

Another important feature of this study was that children who participated in bookreading discussions were compared to children who received no training at all. The absence of control groups in which aspects of narratives were not manipulated, does not

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enable us to understand which aspects of narratives facilitate theory of mind development. Naturalistic bookreading studies which looked at effects of parental bookreading showed that mental state language parents use affects children's theory of mind development. Peskin and Astington (2004) aimed to test this relationship with a bookreading training study which manipulated the mental state talk in the narrative texts. They hypothesized that if storybooks were rewritten to include mental state language, they would emphasize the mental content of the narratives. Alternatively, if books used minimal mental language, they would still represent mental content albeit in an implicit way. One group of children had teachers, experimenters and parents read the explicit mental state version of these stories while another group listened to the implicit mental state versions. The intervention lasted 4 weeks. Peskin and Astington found that, while all children's performance improved on forced-choice theory of mind questions, surprisingly children who listened to the implicit mental content version of the stories improved more than those children who listened to the explicit versions on a theory of mind explanation task. The results are important in underlining the richness of the narrative context in highlighting different mental perspectives. This study suggests that listening to stories and actively trying to make meaning of the relationship between characters, their mental worlds, and their actions provides children with a unique opportunity to further their understanding of the mental world.

    In sum, a few studies have shown that children's theory of mind development can benefit from dyadic (Guajardo & Watson, 2002) and a combination of dyadic (with parents and experimenters) and large group (with teachers) bookreadings (Peskin &

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Astington, 2004). Importantly, it was also found that explicit mention of mental state terms were not necessary for children to benefit from bookreading contexts in relation to their theory of mind abilities.

     Summary: Narrative and Theory of Mind. Research that looks at the relationship between narrative and theory of mind has provided some evidence that establishes this relationship. Specifically, children's success in theory of mind tasks seems to be related to their concurrent ability to understand the false belief content of narratives (Ratner & Olver, 1998; Szarkowicz, 2000)). In the context of storytelling, typically developing children's talk about thoughts and beliefs (as assessed by cognitive mental state talk) is related to their theory of mind competence (Symons et al., 2005). In addition, children's abilities to relate the thoughts (as represented in thought bubbles) of the story characters to their actions was also found to be correlated with their theory of mind abilities (Peskin & Astington, 2004). Furthermore children whose parents read to them more frequently seem to have better theory of mind abilities (Adrián et al., 2005), and mothers' talk that focuses on the 'landscape of consciousness' (as assessed by use of mental state words) is both concurrently and longitudinally predictive of their children's theory of mind abilities (Adrián et al., 2005; Ruffman et al., 2002).

     Studies with children with autism have shown a unique relationship between many aspects of narratives and these children's theory of mind abilities. Importantly, this line of research can be perceived as a concentrated effort to look at multiple aspects of narratives that provide clues for investigating these issues with a typically developing sample. The current study focuses on the relationship between perspective-taking in

typically developing children's narrative productions and theory of mind abilities. The studies reviewed so far have some implications with regard to perspective-taking. The next subsection will focus on some of these implications, but also present some new research that has focused more directly on perspective-taking.

Narrative, Perspective-taking, and Theory of Mind

Narrative is a unique platform that both allows and requires us to take multiple perspectives to appreciate the full extent of its meaning (Goldie, 2007). Capps and colleagues (2000) state that "through narrative, individuals imbue experience with meaning and impose order to otherwise disconnected events by sequencing them in time and rendering them from a particular *point of view*" (p.193, emphasis added). Nelson (2007, p.172) highlights these aspects of narrative in children's developing understanding of the social world and argues that narrative provides grounds for children to reflect on the relationship between a character's mental world and actions as well as complex social relationships that involve the interaction between different characters. Narrative is thus conceptualized as a cultural tool, which eventually becomes a personal mode of thought, and provides a way of understanding and representing different perspectives (e.g., Hutto, 2008; Nelson, 2007, 2009; Peterson & Slaughter, 2006).

As I explained earlier, there is ample theorizing about the relation between the perspectival nature of narratives and theory of mind. However, research that specifically focuses on perspective-taking abilities in narrative and theory of mind is scarce. In the next section I will revisit some of the research that was just reviewed to provide some support for whether and how perspective-taking in narratives may contribute to theory of

mind development. I will also review other research that has specifically focused on delineating the perspectival aspects of narrative.

Perspective-taking in Parental Bookreading Contexts and Theory of Mind.

Previous research has established that mothers' mental state talk when reading storybooks to their children predicts their children's theory of mind development above and beyond the effects of strong correlates such as age, language, or parental behaviors (e.g., Ruffman et al. 2002). Other researchers suggest that talk that focuses on story characters serve to facilitate children's understanding of the perspectives of these characters and hence promote theory of mind (e.g., Nelson, 2009; Symons et al., 2005). Mental state talk can be conceptualized as an indication that mothers are highlighting the mental world, or the content of a characters psychological depth. However, mental states can also be used in reference to the reader/narrator or the listener. Which aspects of mothers' mental state talk promote theory of mind? Is it general mental state talk that occurs in bookreading contexts, or one that specifically references the characters in the story? In order to address this question, Symons and colleagues (2005) had 52 mothers of 5 and 6-year-old children narrate a storybook called the 'First day Jitters' (Danneberg, 2000). This story is about Sarah who is scared of going to school, and is hiding under the blanket in her room. Her father tries to persuade her with colorful imaginings of how fun school is going to be. Finally he orders her downstairs to have breakfast, after which drops her off at school. At the end of the story, it becomes apparent that Sarah is not a child but an adult who was starting her first day as a teacher. Both mothers' and their children's utterances were analyzed for elaborations about the story, overall mental state

talk as well as character-referenced mental state talk. In addition, all children completed a set of first-order theory of mind tasks and a standardized language task (i.e., PPVT). The results showed mothers' mental state talk about the characters correlated with theory of mind abilities of their children, whereas mothers' overall mental state talk, children's overall mental state talk, and children's mental state talk about the characters did not. This study lends some support to the position that narratives provide the opportunity for children to think and talk about the perspectives of story characters with the aid of adults (e.g., how they feel, what they think, what they desire). This in return seems to promote their theory of mind understanding. However, the cross-sectional design of this study does not allow us to establish the direction of this relationship, that is, whether talk about characters promotes theory of mind development or the other way around .

Such evidence is provided by Adrián, Clemente, and Villanueva (2007) who further investigated which aspects of mothers' talk in bookreading contexts relate to their children's theory of mind development longitudinally. They analyzed mothers' mental state talk during bookreading interactions according to referent (characters, children or mothers themselves), function (asking, explaining and other functions), and type of mental state verbs they used at two time points that were approximately a year apart. A factorial analysis showed that mothers' mental state talk in reference to themselves and to their children loaded on a different factor (Factor 1) than their talk about story characters (Factor 2). Further analyses showed that mothers' mental state talk in reference to themselves and to their children predicted their children's theory of mind understanding both concurrently and longitudinally. Importantly mothers' talk about story characters

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predicted children's theory of mind abilities longitudinally even after the effects of children age, language ability, mothers' education and mental state talk about the child and mother (Factor 1) were accounted for. This finding seems to imply that children benefit from talk that utilizes the different perspective-taking opportunities narratives naturally provide, especially talk about characters' mental worlds.

To summarize, these two studies provide evidence that mental state talk that focuses on characters in fictional stories is both concurrently related to and longitudinally predictive of children's theory of mind abilities. Adrián and colleagues (2007) provided some evidence for the argument that character mental state talk is an important component of narrative contexts that lend support to the hypothesis that these contexts have unique perspective-taking opportunities that also facilitate theory of mind development.

Perspective in Bookreading Interventions to Promote Theory of Mind

As reviewed earlier, there is some evidence which shows that bookreading interventions can facilitate theory of mind development (Guajardo & Watson, 2002), and that children benefit from thinking about story characters' mental worlds even when mental state talk is absent in the narrative text to scaffold their understanding of the story (Peskin & Astington, 2004). Two other studies have manipulated perspectival aspects of how children engage with narratives in bookreading interventions and investigated the effects of these manipulations on participating children's theory of mind abilities. Specifically, Lu, Su and Wang (2008) investigated the effects of asking children about the characters in the story as compared to other aspects of the story, while Brockmeyer

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(2009) compared the effect of a bookreading intervention that used a pretend play (i.e., enactment) component to facilitate children understanding of characters' perspectives.

Lu and colleagues investigated what aspects of narratives may help to promote theory of mind competence in Chinese preschoolers. Chinese preschoolers' theory of mind development presents an interesting case, as the prevalence of mental state language is much less than as observed in Western cultures (i.e., Wang & Fivush, 2005). However, Chinese preschoolers seem to follow a similar timeline in developing theory of mind abilities. Lu and colleagues investigated what aspects of narratives other than mental state language were responsible in supporting Chinese preschoolers' theory of mind development.

Lu and colleagues first conducted a longitudinal study in which children were tested when they were 3 years of age on language and theory of mind tasks. These children were also asked to talk about some recent experiences. Children's autobiographical narratives were analyzed for mental state talk as well as talk that referenced others without using mental state words. A year later, the children completed all the tasks they were tested with at time 1. Lu and colleagues classified children into 3 categories (i.e., novice, growth, expert) based on their theory of mind performance on both testing points. The novice group consisted of children who failed theory of mind tasks at both time points, the expert group consisted of children who passed theory of mind tasks at both time points, and the growth group consisted of children who improved their theory of mind competence from time 1 to time 2. The results showed that although none of the groups differed from one another in their use of mental state words at either

time point, the growth group significantly increased the amount of references to other people in their autobiographical narratives.

As a second experiment, Lu and colleagues carried out a training study to see whether a bookreading intervention that focused on others (story characters) would promote Chinese preschoolers' theory of mind abilities. They had two groups of children listen to 4 fictional stories. One group was asked questions about the story characters while the other group was asked questions about the setting and objects in the story. After an 8-week intervention, the group that was asked questions about the story characters showed significant improvement on theory of mind tasks above and beyond the group that engaged in conversation about other aspects of the stories.

Through stories children may not only practice using mental state language, but perhaps more importantly learn to think about the characters' perspectives through the consideration of the reasons for characters' behavior. Turnbull and colleagues (2008) lend some support to this argument with a study in which they had 78 mothers tell a story from a 17-picture wordless book (based on the unexpected location theory of mind task) to their 3- to 5- year-old children. Turnbull and colleagues used a novel approach while analyzing mothers' storytellings. They analyzed talk about the about fifteen critical elements of the story that depended on understanding the false belief content of the story. These elements were coded without regard whether they contained mental state talk or not. In addition, mothers' mental state talk was also analyzed. The results showed that while mothers' mental state was correlated with their children's theory of mind competence, it was mothers' overall talk about the critical false belief elements of the

story that predicted theory of mind concurrently. In light of their findings Ruffman and colleagues argue that "what is important about (storybook) talk is the presence of information about important aspects of human activity and not just the presence of mental state terms" (2008; p.381). Taken together the findings of these studies (Lu et al., 2008; Turnbull, et al, 2008) provide impetus for investigating what other aspects of narrative experience may facilitate children's theory of mind development. Along this vein, Lu and colleagues proposed that studies that look at the children's perspective-taking in storytelling such as when telling or enacting pretend narratives may provide better understand the relationship between narrative and theory of mind (p.1734).

Speaking to this gap in research, Brockmeyer (2009) carried out a training program with preschoolers where she investigated the effects of story themes (i.e., presence or absence of theory of mind themes) in tandem with whether a pretend play (i.e., enactment) facilitated preschoolers' theory of mind development. She had sixty-seven preschool children engage in interactive bookreading sessions in small groups (3-4 children per group) with an adult. The results of this study revealed that that all children who participated in bookreading sessions (regardless of the book theme) improved on their theory of mind abilities as compared to a control group who did not participate in bookreading. However the effect of bookreading on theory of mind abilities was greater when children also engaged in story enactment. Brockmeyer attributes this effect to the increased perspective-taking opportunities enactment provided.

To summarize, Lu and colleagues have shown that general talk about the characters may be one way through which children (whose cultures use less mental state

talk) develop theory of mind understanding. Turnbull and colleagues (2008) provides some evidence that the effect of narratives on theory of mind development is not limited to the amount of mental state talk it generates. These results are also in line with Peskin & Astington's (2004) findings which showed that children who participated in a bookreading sessions that used minimal mental state talk facilitated children's theory of mind abilities even more so than children who participated in bookreading sessions that included mental state language. In this vein, mental state talk could be conceptualized as one of several ways in which character perspectives could be highlighted. Brockmeyer has added onto this suggestion, by showing that when children engage with stories in a way that makes identification with story characters more accessible, children may further their understanding of theory of mind, regardless of whether the storybooks contain false belief themes or not.

Representation of perspectives in storytelling and theory of mind

Studies with atypically developing populations. Studies that have looked at children's representation of the characters' or the narrators' perspectives in storytelling are scarce. Research that has looked at children's representation of perspective in relation to theory of mind development has been carried out mainly with atypically developing populations -autistic children, in particular (e.g., Tager-Flusberg, 1995; Tager-Flusberg & Sullivan, 1995; Losh & Capps, 2003).

Some of these studies looked at whether there is a relationship between children's use of perspectival language in their storytellings and their theory of mind abilities. These studies have assessed children's perspectival language through their use of evaluative

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devices. These studies have already been reviewed in some detail earlier, so here I will briefly highlight some of their findings with respect to perspective-taking in narratives. This line of research has mainly investigated children's use of evaluative devices in their narrative productions.

Evaluatives are linguistic devices that convey a perspective on events. They may express the subjective mental states and views of the characters (i.e., internalizes, character speech), modify events, objects and mental states in terms of quality (e.g., modifiers) or severity (i.e., enrichment devices) or compare the actual events in the narrative with possible unrealized events (e.g., contrastives) (e.g., Labov & Waletzky, 1968; Bamberg & Damrad-Frye, 1991). Evaluatives convey a narrators' expression of their own perspective as well as those of the characters in the story. In this vein, research with autistic children has conceptualized evaluatives as an expression of general perspectival language as well as an expression of character perspectives through mental state words.

Studies that looked at autistic children's story productions and their theory of mind competence found that these children's theory of mind competence concurrently predicted their use of evaluatives (e.g., number of causal statements, negatives, hedges, character speech, attention getters) among other narrative measures (e.g., Losh & Capps, 2003). However, when these studies included other populations (e.g., developmentally delayed, typically developing) as control groups, the relationship observed in autistic children's narratives between the use of perspectival language and theory of mind was not present (Capps et al., 2000; Losh & Capps, 2003; Tager-Flusberg & Sullivan, 1995).

As discussed previously, the typical children used as controls in these studies were matched in age with the autistic populations and hence had passed the critical ages for theory of mind development. So these studies do not provide much insight into whether there is a relationship between children's portrayal of perspective in narratives and theory of mind.

As I discussed earlier, neither general evaluative use or nor use of mental state words provides a thorough understanding of the psychological complexity of the characters children create. Nevertheless, these studies provide some insight into the general perspectival content of children's stories. Furthermore, other aspects of autistic children's narratives can also be interpreted as showing their difficulties with their mentalistic conceptions of the person. For example, it was found that autistic children displayed a number of problems with understanding story characters' mental worlds displayed by inaccurate answers they gave to questions inquiring about characters' feelings (Tager-Flusberg & Sullivan 1995). Children with autism also had problems presenting a coherent understanding of how characters' actions causally relate to their mental worlds in that they were consistently shown to use less causal attributions for mental state words (Tager-Flusber, 1995; Capps, et al., 2000; Losh & Capps, 2003).

Autistic children's problems with representing the perspective of characters was also documented through a story production task that aimed specifically to assess narrative perspective-taking abilities. Garcia-Pérez, Hobson and Lee (2008) presented 15 children with autism and 15 children with mental retardation pictures of characters and different settings. The children were asked to select 3 characters and a setting to tell a

story. After children told their stories, the experimenter prompted them to retell the same story, this time taking the different perspectives of the characters involved. Each participant produced 3 different versions of the same story, each time taking a different character perspective. Garcia-Pérez and colleagues looked at the amount of mental state words children used and found no differences between the two groups. However they found that autistic children had significant difficulties with perspective shifting as compared to developmentally delayed children. The lack of theory of mind measures in this study do not allow for interpreting the results in terms of the link between autistic children's socio-cognitive, and narrative perspective-taking abilities. As reviewed earlier, Hobson (2004; with Hobson J., 2007) has theorized that a first step in understanding others is through identifying with their perspectives, a second step Hobson deems necessary for complex social understanding is being able to shift between others' perspectives. Narrative telling provides a unique context in which children can practive taking and shifting perspectives. This study lends some support to Hobson's argument that children with autism have special difficulty in shifting perspectives. Whether the ability to shift perspectives in narratives is relevant to typically developing children's theory of mind development is an empirical question that awaits investigation.

To reiterate, these studies seem to show that even when use of mental state words did not differentiate the narratives of children with autism from other atypically and typically developing groups, other aspects of their narratives gave clues as to how their socio-cognitive difficulties were reflected in the narratives. Taken together these studies alert us to look at children's general perspectival language by use of evaluatives, as well

as mental state words that are used in causal attributions. Hobson's (e.g., 2002, 2006, with Hobson J., 2007) unwavering focus on perspective shift may also prove useful in exploring how children come to reason about the perspectives of two or more characters.

Studies with typically developing children. Interest in the relationship between typically developing children's narrative competence and their theory of mind abilities especially in terms of representing perspectives is newly emerging (i.e., Comay, 2008; Nicolopoulou & Richner, 2007).

Comay (2008) investigated the relationship between 4-, 5-, and 6-year-old children's ability to take different perspectives in narrative production and their theory of mind abilities. Children were asked to tell two spontaneous narratives and to retell two short fables. After children listened to the experimenter tell each fable, they were asked to retell the story and to answer comprehension questions. Children also completed theory of mind as well as important correlates such as language and working memory. Similar to Peskin and Astington (2004), Comay included mental state words in one fable but excluded them from the other to see if the presence or absence of mental state words would affect children's ability to convey perspectives as well as their comprehension of the narratives. Children's retellings were coded for 3 types of perspectives: characters'; listener's, and scribe's. Character perspective was coded through children's use of mental state words, whether they were used in in causal sentences or not as well as character dialogue. Awareness of listener's perspective was coded through a subset of evaluative categories (i.e., connectives, negatives, & referential strategy). Comay also introduced a new category which she referred to interchangeably as scribe's perspective or text

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awareness. This perspective entailed children's awareness of story as text and included such indices as reflection on text (revisions) and accommodation of the scribe (e.g., slowing down to let the scribe finish a sentence).

The results showed that children's competency in representing all 3 types of perspective increased by age, as older children were more competent at relaying perspectives in their narrative productions. In addition, Comay found that children's theory of mind competence concurrently and uniquely predicted children's portrayal of characters' perspective, listener's perspective and scribe's perspective above and beyond the effects of important correlates such as age, language and working memory. Comay based the rationale for her study on the theoretical framework that conceptualizes theory of mind as promoting children's narrative competence (e.g., Astington, 1990; Astington & Pelletier, 2005). Hence, she did not investigate whether children's portrayal of narrative perspectives also made contributions to their theory of mind understanding. A few studies have provided some preliminary empirical evidence for a bidirectional relationship between narrative abilities and theory of mind (e.g., Brockmeyer 2009; Peterson & Slaughter, 2006). Accumulating theoretical work in this area warrants the investigation of the perspectival aspects of narratives as contributing to theory of mind abilites (Hutto, 2008; Nelson, 2009; Nicolopoulou, 2006).

The view that conceptualizes theory of mind as promoting narrative competence considers children's understanding of mental state words as critical to their understanding of the mental world (e.g., Bartsch & Wellman, 1995). Comay's manipulation of the mental state content of stories shows that children used more mental state words in their

retellings of fables that included mental state words as compared to those without. However, surprisingly, older children used significantly fewer mental state words and more dialogue when the narratives did not include mental state words. Comay interprets these findings as older children's attempts to convey perspective through character speech while also telling narratives that stylistically resembled the original fable (i.e., make no or little use of mental state words). However, these results may also be taken as showing that while mental state words are important facilitators of perspective-taking, narrative may possibly have other tools at its disposal for elaborating, communicating and facilitating perspective-taking. A closer look at children's conceptualization of the person as reflected in their narrative constructions is thus warranted.

Nicolopoulou has approached preschoolers' narratives from several complementary angles and has investigated children's developing representation of characters, children's use of character as an organizational device as well as children's construction of main character (Nicolopoulou, 2009; Nicolopoulou & Richner, 2007; Richner & Nicolopoulou, 2001). Nicolopoulou's emphasis on character is unprecedented as developmental psychology has maintained an exclusive focus on the narrative structure, specifically children's construction of full episodic structures, which contain a problem, attempts to resolve the problem and consequences of these attempts (e.g., Peterson & McCabe, 1983; Stein, 1988). This type of narrative analysis focuses more heavily on the action structure of narratives and consequently pays little attention to the depth and richness of character representation.

Nicolopoulou and Richner (2007) carried out a detailed analysis of children's representation of characters in preschoolers' spontaneous stories collected through a storytelling/story-acting activity that combines storytelling and play, an activity that is adopted from Paley, (1990). This activity allows and encourages children to dictate stories to teacher. These stories are acted out by the authors and their peers for the entire class. A total of 617 stories from 10 children in each age group of 3, 4, and 5 were included in this study. Nicolopoulou and Richner developed a typology for character representation that included 3 levels: "actors" (described solely in terms of actions), "agents" (psychological characters with limited depth such as simple physiological or affective capacities), and "persons" (with fuller psychological depth and whose mental states and actions are meaningfully coordinated). Nicolopoulou and Richner's conceptualization of "persons" is comparable to mental agents as described by theory of mind research.

The analysis of the stories revealed that children's representation of characters developed from actors to agents and persons throughout the school year. While 3-year-olds represented characters mostly as actors, 4-year-olds represented characters most predominantly as "agents," and at 5 years of age children began to represent characters as "persons." To the best of my knowledge, this study is the first to systematically analyze the psychological depth of children's representation of story characters. The results provide insight into children's capacity to represent characters at different ages and impetus to take this conceptual framework forward to systematically investigate children's representation of perspectives in typically developing children's stories.

Summary: Narrative, Perspective-taking, and Theory of Mind

Research that looks at the relationship between narrative and theory of mind has suggested that narrative is a privileged context for talking about the perspectives of others in the form of story characters (e.g., Sabbagh & Callanan, 1998). Furthermore, the amount of bookreading children experience at home and the mental state content of mothers' bookreading language predicts theory of mind competence (e.g., Symons et al., 2005). Several bookreading intervention studies have shown that children benefit from participating in shared bookreading contexts. While explicit mental content of the books does not seem to make a difference in terms of how much children improve on theory of mind abilities (Brockmeyer, 2009; Peskin & Astington, 2004), children who don't have age-appropriate theory of mind competence benefit from bookreading questions that focus on characters (Lu et al., 2008). Studies that have looked at children's abilities to portray perspectives in narrative productions and their theory of mind competence have mainly focused on clinical populations. These studies have shown a link between autistic children's abilities to understand and talk about characters' mental states, their general perspectival language as assessed by use of evaluatives and their theory of mind abilities. We know less about whether there is a relation between typically developing children's portrayal of perspectives in their narratives and their theory of mind abilities. Comay (2008) has provided some preliminary evidence for a relationship between children's portrayal of characters, their use of perspectival language and theory of mind abilities. Nicolopoulou and Richner (2007) have provided a nuanced typology that focuses on character development in children's narratives that seems to parallel their theory of mind

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development. The current study intended to add onto these two studies in deepening our understanding of the potential relationship between typically developing children's portrayal of perspectives in narratives and theory of mind.

Pretend Play and Theory of Mind

Pretend play (also referred to as symbolic play, make-believe play, dramatic play and imaginative play) is best described as "the voluntary transformation of the Here and Now, the You and Me, and the This or That, along with any potential for action that these components of a situation may have" (Garvey, 1990; p.82). It is a universal and ubiquitous activity in which children temporarily depart from immediate reality to create an imaginary context complete with characters, objects and actions (Lillard, 2007).

Two main components of pretend have been investigated in relation to theory of mind: (1) children's ability to create imaginary objects (e.g., act as if an empty cup has tea) or substitute imaginary identities for real objects (e.g., pretend a banana is a telephone) in pretend play and (2) children's role play in which they create an imaginary character to interact with (i.e., imaginary companions) or take on the role of an imaginary character themselves (e.g., pretending to be a fireman).

In this section I will review some of this research in order to provide evidence that establishes the relationship between pretend play and theory of mind, before going onto review the relationship between perspective-taking, theory of mind and a specific type of pretend play (i.e., role play) which for reasons I will explain was the focus of the current study.

Object Substitutions in Pretend Play and Theory of Mind

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Research that investigates whether there is a relationship between children's ability to represent imaginary objects or substitute an imaginary identity for a real one, and theory of mind is based on the premise that these two abilities share a common cognitive component (Flavell, Flavell, & Green, 1983). This component involves the ability to take a cognitive stance on the world that re-represents the observed events (or objects) from a particular point of view (that of the imaginary). Pretending from this view is very much analogous to other forms of cognitive behavior such as thinking or believing and is taken by some to be one of the first manifestations of children's ability to interact with and understand the mental world (Leslie, 1987; Leslie & Roth, 1994).

Flavell, Flavell and Green (1983) were the first to point to the similarities involved in pretend play with objects and a theory of mind tasks that focuses object identities, that is, the appearance reality task. In this task, children need to understand that an object may look like one thing (e.g., a rock) but in reality be something else (e.g., a sponge). In pretend play, children regularly represent a missing object through using a body part or a different object, and these are called object substitutions. Flavell and colleagues (1983) suggested that children develop the ability to pass appearance reality tasks using a capacity that develops through and is first manifested in the context of pretend play. Three studies have looked at the relationship between children's ability to substitute objects in pretend play and their theory of mind abilities. These studies have shown a relationship between object substitution ability and theory of mind.

Schwebel, Rosen and Singer (1999) observed preschoolers' play in two experiments. In both studies, preschoolers were observed during free play time in their

classrooms on 3 separate days. While the first study used more subjective measure of imaginativeness in order to assess children's ability to take a pretend perspective, the second study used a modified imaginativeness scale that specifically focused on object substitutions. This detailed 5-point scale rated object substitutions ranging from using replica objects according to their intended function (e.g., pretending to eat from a toy spoon) to multifaceted transformations that simultaneously included pretending non-existing objects to be present as well as assigning pretend identities to objects (e.g., pretending to drive an imaginary bus, and using a curved block as the stirring wheel). In both experiments children completed a battery of theory of mind tasks that included appearance reality tasks as well as unexpected location tasks. These experiments consistently showed a relationship between the appearance reality task and engagement in object substitutions even when the effects of age were controlled for. However none of the other theory of mind measures correlated significantly with the pretend play measures. These results suggest that the ability to understanding that an object possesses two disparate identities may be related to a component of theory of mind that entails considering multiple identities of objects.

Other studies (Nielsen & Dissanayake, 2000; Suddendorf, Fletcher-Flinn & Johnston, 1999) investigated the link between theory of mind and object substitutions with a structured pantomime task. This task asks children to perform pretend actions with objects and observes whether children use a body part to perform the action or whether they can imagine the absent object without relying on any props. Suddendorf, and colleagues (1999) had 44 3-and 4-year-olds complete an object substitution task in which

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children were asked to perform 6 actions without the aid of objects (e.g., writing with a pen). The children also watched an experimenter demonstrate 3 actions without the aid of objects and were asked to imitate the experimenter. All children also completed one unexpected location and one appearance-reality task. The results showed a developmental difference in object substitutions in that 4 year-olds engaged in more imaginary object substitutions both spontaneously and when imitating a modeled action as compared to 3 year olds. Furthermore, modeling did not result in more frequent imaginary object substitutions, which substantiates the argument that children's abilities to represent objects in play develop throughout the preschool years. Most importantly, Suddendorf and colleagues found a significant correlation between theory of mind and imaginary object substitutions even when effects of age were controlled for.

Nielsen and Dissanayake (2000) added to the studies reviewed by looking at both semi-naturalistic play observation and structured object substitution task in relation to theory of mind. They had 40 preschoolers attend two lab sessions with each of their parents. Children and their parents were shown into a room full of toys and were asked to play for 40 minutes. The videotaped play episodes were coded for naturally occurring object substitutions as well as role attribution (to self, parent or to a doll), engaging in role appropriate behavior, and joint proposals (e.g., let's have dinner now). In line with Suddendorf and colleagues, Nielsen and Dissanayake found that older children engaged in more imaginary object substitutions as compared to younger children. When the effect of age was controlled, children's theory of mind competence significantly correlated with

their role assignments in play with parents as well as object substitutions elicited through the structured pretend task and as observed during semi-naturalistic play with mothers.

To summarize, the studies reviewed in this section have shown a link between children's ability to think of an object as having a pretend identity that is different than its real one and their understanding of objects as having real identities and deceptive appearances. The findings are inconsistent with regard to the relationship between theory of mind tasks that specifically focus on others' false beliefs (i.e., unexpected location, unexpected contents tasks). While Scwebel and colleagues demonstrated a relationship between only a particular component of theory of mind abilities (understanding mistaken identities through appearance-reality task), others (Nielsen & Dissanayake, 2000; Suddendorf et al., 1999) have shown that theory of mind is related to general theory of mind ability as assessed by various theory of mind tasks. Pretend play seems to encompass several different perspective taking opportunities. As explained earlier, pretending with objects is one of several components of the pretense context, more relevant to the focus of the current study is whether there is a relationship between children's ability to take on roles in play and their theory of mind abilities. Conceptually, role play and theory of mind seem- to share similarities in understanding another's perspective which has more immediate implications for the current study.

Role play and theory of mind

Role play is the type of pretense in which "the child acts out the part of someone other than the self, using pretend actions and utterances" (Harris, 2000; p. 30). Types of role play include physically enacting a role, projecting a role onto a doll or a stuffed

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animal as well as creating imaginary characters (Harris, 2000; Taylor, 1999). Role play

has been argued to be a special context in which children enjoy practicing and furthering

their understanding of persons as mental agents whose behavior is coordinated with their

desires, intention, emotions and beliefs (e.g., Fein, 1995; Harris, 2000; Kavanaugh &

Engel, 1998).

Two types of role play have been investigated in relation to children's theory of

mind abilities: (1) creation of imaginary companions and (2) social (collaborative) role

play. While a third type of role play, role play with replica toys, seems to provide insight

into children's ability to develop character perspectives, it has not been investigated in

relation to theory of mind abilities.

I will first review research that seeks to establish a relationship between theory of

mind and role play (imaginary companion play, and social role play), before I review

theoretical and empirical work on role play that has implications for our understanding of

the relationship between perspectival aspects of role play and theory of mind.

Creating Imaginary Companions. Some children create imaginary companions

that they interact with frequently over a stretch of time. Children who have imaginary

companions typically make these characters a part of their lives, taking them to school,

grocery store, and trips- sometimes as an accomplice that 'initiates' or 'engages' in

mischief, sometimes as a friend that shares fun times (Taylor, 1999). Other forms of

imaginary companion play include attributing a consistent imaginary persona to a

favorite toy such as a stuffed animal or impersonating a character (e.g., Rapunzel,

Spiderman) on and off during the course of several weeks, sometimes months (e.g., Harris, 2000; Taylor, Cartwright, & Carlson, 1993).

Investigating the relationship between children's creation of imaginary companions and theory of mind, Taylor and Carlson (1997) found that children who either had an imaginary companion or consistently impersonated a character performed significantly better in theory of mind tasks. This effect was especially strong for older 4-year-olds, for whom engaging in role play through creating imaginary companions or impersonating characters uniquely predicted theory of mind above and beyond the effects of age and language. This finding provides some preliminary evidence that role play in the form of creating and interacting with imaginary characters or engaging in character impersonation are relevant abilities for children's developing understanding of persons.

A follow up of the children who participated in this study into elementary school years showed that creating imaginary companions continues to be relevant for children's developing understanding of persons (Taylor, Carlson, Maring, Gerow, & Charley, 2004). In this study, 31% of the sample had imaginary companions, and 95% of them reported that they engaged in role play impersonating characters. Importantly, the children who reported not to engage in impersonation games scored significantly lower on advanced theory of mind measures that targeted emotional understanding.

To summarize, this line of research pioneered by Marjorie Taylor and colleagues have shown that children who create imaginary companions, or impersonate characters seem to practice their abilities of theory of mind in the process. Interestingly, children seem to continue engaging in this type of play even after preschool years and those who

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report never having engaged in such play were found to display socio-emotional difficulties.

  Social role play and theory of mind. Social role play (also referred to as sociodramatic play) is a type of pretense in which children take on role and act out play narratives in collaborations with others. Children start taking on roles in social pretend play starting at 3 years of age and continue to develop their sociodramatic play skills throughout the preschool years (Howes, Ungerer & Mattheson, 1992; Smilansky, 1968; Smilansky & Shafetya, 1991).

  Youngblade and Dunn (1995) have provided some preliminary evidence for a relation between the frequency with which young preschoolers engage in role-taking behavior and their theory of mind abilities. They observed 33-month-old children interact with their parents and siblings at home. Approximately 7 months later, these children were tested on theory of mind tasks as well as an affective perspective-taking task. It was found that children who engaged frequently in role enactment at 33 months of age also scored higher on theory of mind and on the affective perspective-taking tasks as compared to peers who engaged in role play less frequently.

  Social role play is uniquely rich in talk that requires children to switch back and forth between the actual world "as is" and the imaginary or possible world "as if" to coordinate their and play partners' understanding or actions. Commonly referred to as metacommuniction (e.g., Trawick-Smith, 1998), this type of talk is used to assign roles to self and others, attribute pretend identities to objects, modify the play plot, clarify ambiguities and resolve conflicts (e.g., Howes et al., 1992).

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Research that investigates the link between theory of mind abilities and metacommunication have specifically focused on children's role assignments (e.g., "you be the daddy") and joint proposals about play ("let's bake cookies") that serve to clarify aspects of play and propose further direction (e.g. Astington & Jenkins, 1995; Jenkins & Astington, 2000). Astington and Jenkins (1995) investigated the relationship between children's verbalizations during social role play at the preschool setting and their theory of mind abilities. They videotaped 30 children at the house corner of their classroom during free play time. The results showed that, although amount of pretend play (as assessed by the number of verbal play turns) did not correlate with concurrent measures of theory of mind competence concurrently, the amount of role assignments and joint proposals significantly correlated with theory of mind competence even after age and language ability were controlled for. This study provided evidence for a concurrent relationship between metacommunicative aspects of children's social role play and their theory of mind abilities.

In a subsequent study Jenkins and Astington (2000) investigated this relationship longitudinally with a focus on the directionality between metacommunication and theory of mind. They had 20 children complete a set of theory of mind tasks as well as a comprehensive language task (TELD) at three different time points over the course of 7 months. Children also played in pairs in a room at their preschool with toys provided by the experimenters. As in the previous study (Astington & Jenkins, 1995), the videotaped pretend play episodes were coded for the number of joint proposals and verbal role assignments, as well as amount of pretend play. They found that children's theory of

mind competence at time 2 uniquely accounted for the change in children's joint planning and role assignment in pretend play at time 3. Thus, Jenkins and Astington (2000) provided evidence for a longitudinal relationship between metacommunicative aspects of social role play and theory of mind.

Summary: Pretend Play and Theory of Mind

Research that sought to establish the relationship between theory of mind have focused on two components of pretend play: a. children's ability to assign pretend identities to objects or creating imaginary objects and b. their ability to assign pretend roles to self and others as well as creating imaginary characters. The former line of research has not produced convincing evidence for this relationship. More relevant to the focus of this study, the latter line of research has shown that the amount of role play children engage, and the number of verbal statements children make that serve to coordinate characters (e.g., joint proposals) seems to facilitate their theory of mind understanding. However, important questions remain about the complexity of the roles children create and their theory of mind abilities. More specifically, whether children's ability to portray characters in role play as psychological persons (with motivations, perceptions, feelings, and beliefs) and their ability to coordinate these perspectives relate to their theory of mind understanding is an important question that awaits investigation.

Role play, perspective-taking and theory of mind

Nelson (1996) conceptualizes pretend play as a medium of *narrative expression* that "allows the child to escape the boundaries of everyday living and to externalize thoughts about others' roles and imagined worlds" (Nelson, 2007, p. 172). According to

Hobson (e.g., 1993; 2002) and Harris (2000) role play provides children a unique and powerful arena to exercise their understanding of others and experiment with perspective-taking. In role play, children can identify with characters, and simulate their mental worlds with ease (Harris, 2000). From a perspective-taking stance, in role play children can take on the perspective of another, someone with different motivations, thoughts, and feelings in the company of siblings, parents and peers (i.e., social role play) or create characters with different perspectives as in imaginary companion play. These two types of role play have been reviewed earlier with relation to theory of mind. Another type of role play, role play with replica toys in which children enact narrative scenarios with the aids of dolls, figurines, and props has been argued to be a context in which children develop their understanding of persons (Fein, 1995). This claim is yet to be investigated empirically.

In this section, I will revisit some of the research that has already been reviewed with a focus on what research can tell us about the perspectival aspects of these types of play and theory of mind. I will also briefly review role play with replica toys and discuss its potential in learning about children's perspective-taking and theory of mind.

Creating Imaginary Companions and Perspective-taking

Researchers who have investigated children's imaginary companions argue that imaginary companions do not solely mirror children's own state of mind and actions, but that their imaginary companions can have different desires, intentions, and feelings in relation to the children who create them. This becomes apparent as evidenced by children's 'imaginary' arguments with them that sometimes result in resentment and

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sadness (Taylor, 1999). Based on such observations, it is likely that imaginary companion play provides children with an opportunity and the challenge of not only creating a perspective, but also coordinating self and imaginary companions' perspective. Children may also have to shift between these two perspectives in order to interact with these characters. These stipulations are likely to remain as hypotheses that are impossible to test directly since the bulk of imaginary companion interaction is bound to remain, by definition, a part of children's private world.

Trionfi and Reese (2009) recently provides some indirect evidence through investigating narrative productions of children with imaginary companions. They investigated whether children who have imaginary companions use richer language, as assessed by their use of evaluatives, in their narratives as compared to peers without them. Forty-eight 5-year-olds were interviewed about whether they had imaginary companions. All children completed two narrative tasks: retelling of a story read by the experimenter and a personal narrative. The quality of children's narratives were coded through analyzing their use of evaluatives (adverbs and adjectives, dialogue, character names, and temporal–locative–causal terms). Interestingly, while children with and without imaginary companions did not differ on how well they remembered the story that was read to them, children with imaginary companions told narratives that were significantly richer in evaluative use in both retelling and personal narrative contexts.

In sum, investigating the psychological richness of imaginary characters that children create may not be empirically possible as children may choose to interact with imaginary characters when alone. However, this finding supports the idea that children's

ability to create an imaginary perspective in role play may be related to their use of evaluatives which has been taken by some to indicate an expression of perspectival competence in narratives (e.g., Comay; 2008; Losh & Capps, 2003).

Social Role Play and Perspective-taking

Like imaginary companion play, social role play may provide children with unique challenges and opportunities in terms of perspective-taking. Children not only have to take on a perspective of a character, but also have to collaboratively coordinate the perspective of their characters with others' characters shifting between the realms of pretense and reality in the process (Schwebel et al., 1999). For instance, a child who is acting the role of baby may have to pretend that she is hungry and also in distress. Furthermore, she may have to communicate why she is crying to another child who has the role of the mother, signaling at the same time that the sunscreen tube that's lying in the play area will serve as baby's bottle.

As we saw the amount of role play is longitudinally related to later theory of mind abilities (Youngblade & Dunn, 1995). We also know that assigning role to self and others is also concurrently and longitudinally related with theory of mind abilities (e.g., Astington & Jenkins, 1995; Jenkins & Astington, 2000). Furthermore, joint proposals that aim to coordinate the actions of two characters (e.g., Let's have a picnic) are also related to theory of mind development. These results taken together seems to imply that taking on roles -as indicated by time spent in role play, or verbal indications in the form of role assignments- and coordinating roles –in the form of joint proposals- are related to children's theory of mind.

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A remaining question, one that I argue has direct implications for understanding how theory of mind relates to role play, is whether the nature or *complexity* of the roles children create are related to theory of mind development. In other words, do children's ability to create roles with increasing complexity relate to their social understanding including theory of mind? It seems plausible that children's ability to represent psychologically rich characters whose thoughts and beliefs contrast with reality, or are coordinated with their actions may be related to the capacity with which they interpret or predict others' actions based on their mental worlds. While previous social role play research provides a rationale for looking at children's ability to represent characters or their ability to coordinate them, direct investigation of these abilities has not been undertaken. This may be due to the fact that social role play is collaborative in nature and is affected by the dynamic relationship among all participants. Therefore, the quality of social role play episodes cannot be attributed to one participating child, but is rather the product of all participants' collaborative input. There is however another form of role play that is may empirically be more suitable to investigate the abilities of individual children with regard to character representation or the ability to coordinate characters, namely role play with replica toys.

Role play with Replica Toys.

Replica play, a form of role play, requires that children attribute mental worlds to toy figurines and enact scenarios with them. When this type of play happens in the solitary play context, children are confronted with the unique challenge of coordinating multiple perspectives of the different characters (Rubin & Wolf, 1979; Scarlett & Wolf,

1979; Wolf, Rygh, & Altshuler, 1984). Children's ability to adopt roles in replica play has been studied most extensively in the 70's and 80's before the surge of theory of mind research (e.g., Rubin & Wolf, 1979; Watson & Fischer; 1977, 1980; Watson & Jackowitz, 1984; Wolf, Rygh, & Altshuler, 1984).

This line of research documented important developments in children's ability to construct imaginary roles throughout early childhood. In solitary play around 19 months, children can comfortably use a doll as a passive play partner, directing actions to them. By 24 months, children can display behavior which signals to the attainment of agency of the doll in child's play (see, Bretherton & Beeghly, 1989; McCune-Nicolich, 1981, for reviews). However, it is not until children are 3 ½ years of age that they can start portraying characters with full psychological depth that have beliefs as well as motivations, emotions and perception. At this age, children acquire the ability to engage in solitary role play "with several interacting figures *about whom* the child talks as a narrator and *for whom* the child talks as vicarious actor" (Bretherton & Beeghly, 1989; p. 246, emphasis original). This line of research shows that important developments occur in children's ability to portray characters in this type of role play.

Scarlett and Wolf (1979) have suggested children's replica play develops from pure pretend play to storytelling throughout the preschool years. This development is marked by children's increasing ability to shift effectively between different perspectives. It is possible that this type of play has the potential to demonstrate individual children's mastery of different perspectives in the realm of solitary role play especially in relation to their developing abilities to understand different mental perspectives in the realm of

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theory of mind. Whether and how these developments in the realm of pretend play may relate to understanding of others as mental agents is an open question that warrants investigation. This is an especially intriguing empirical question given recent theoretical work that emphasizes children's ability to shift between perspectives as one of the driving forces of theory of mind understanding (e.g., Hobson et al., 2009).

Similarities and Differences between Storytelling and Role play as contexts that promote Perspective-taking

Storytelling and pretense have been described as natural contexts for children to practice their understanding of different perspectives (Harris, 2000; Hutto, 2009; Kavanaugh, 2006; Kavanaugh & Engel, 1998; Nelson, 2007, 2009; Nicolopoulou, 2005; 2006). Both of these contexts require that children depart from the immediate reality and construct narratives about imaginary characters. However these similarities may nevertheless be qualified by context-specific strengths that each symbolic medium offers. As Nicolopulou (2005) notes, the similarities between these contexts have been more intensely scrutinized as compared to their differences.

Storytelling and role play share narrative plots along with characters and their psychological worlds. While role play utilizes mimetic and embodied forms of narrative expression, storytelling relies on decontextualized forms that utilize children's linguistic competence both for comprehension and production. The major strength of role play is hypothesized to be its natural focus on characters which may aptly utilize children's natural propensity to identify flexibly with play characters (Fein, 1995). In other words, children's natural proclivity to take on roles and simulate the characters' mental worlds

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through enactment may provide an especially powerful context for developing character perspectives. Some researchers view this aspect of pretend play as its primary strength that contributes to children's developing narrative capacities (e.g., Harris, 2000; Hobson, 1993; 2002). For instance, Rubin and Wolf (1979) state that "the ability to invoke the actions and feelings of a range of characters" in pretend play fosters the development of storytelling capacities (pp.16-7).

Taking this idea further, Fein (1995) suggests that "replica play figures alone might support storytelling without the adult-crafted themes found in picture sequences and story stems. Put another way, the knowledge base that feeds good stories is characterological, not episodic. It is about actors and their expected roles, rather than events and their sequencing" (p.155). However, it may be necessary to approach this claim with caution. As Bruner (1986, 1990) suggests, narratives involve a coherent integration of characters' intentional worlds as well their worlds of action. Good narratives result from the active interplay among characters, the plot they exist in, and the narrator's voice that organizes and interprets the narrative in telling.

Nicolopoulou (2006) adopts a nuanced stance towards the similarities and differences between storytelling and pretend play which is informed by her extensive studies with a storytelling and story-acting activity at preschool settings. She conceptualizes pretend play and narrative as "distinct but complementary modes of narrative activity which offer children *complementary challenges and benefits*" (p.249, emphasis added). In line with Hobson (1993, 2002) she views pretend play, especially social role play, as a privileged medium in which children can engage in role taking

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abilities when understanding or telling stories. However, for the young child, the storytelling context may contain a more explicit message signaling that "this is narrative" and naturally emphasize plot construction. She bases this hypothesis on her extensive studies with the storytelling and story acting activity which meaningfully integrates narrative and pretend play (e.g., Paley, 1990). She has carried out this activity in a diverse array of preschool classrooms (both low-income and middle-class) and has observed that there is little thematic cross-fertilization between the stories young children tell and their naturally occurring pretend play (Nicolopoulou, 2006). For young preschoolers storytelling seems to be an arena in which they work on developing a plot whereas pretend play seems to be a context in which they develop characters.

Nicolopoulou's observations suggest that only as children become more competent at play and storytelling, the thematic cross-fertilization between these two symbolic contexts can occur. That is, children tell coherent narratives in both realms that integrate the 'landscape of action' and 'landscape of consciousness'. Nicolopoulou states that "in comparative terms, early pretend play emphasizes increasing depth and richness in character representation, whereas early storytelling emphasizes increasing complexity, coherence, and sophistication in plot construction" (2006, p.260).

Is role play a privileged context, in which children have less trouble creating and coordinating character perspectives? While there is ample theorizing that favors role play as an advantageous context for children to develop perspective-taking abilities (e.g., Kavanaugh & Engel, 1998), empirical work that specifically looks at the psychological richness of the characters children create and their ability to coordinate these characters is

scarce (for an exception see Nicolopoulou & Richner, 2007), and work that compares children's abilities in storytelling versus role play contexts is lacking.

As reviewed earlier, Nicolopoulou and Richner have addressed a gap in the literature about the potential relationship between children's representation of characters in storytelling and their theory of mind competence. They have developed a theoretically and empirically informed typology of looking at the characters children create in stories. This typology conceptually parallels the advances children make in understanding of persons as characters whose mental representations coordinate with their behavior and at times contrast with reality or others' mental agendas.

Several questions remain that can build on this research and further our understanding of the complex relationships between children's experiences in storytelling and role play contexts as well as their theory of mind competence. The current study aimed to compare children's perspective-taking in storytelling versus role play contexts and to investigate whether children's competence in these two contexts relate to their first and second order theory of mind abilities.

The Current Study

The current study aimed to investigate the relationships between children's representation and coordination of character perspectives in two related yet different symbolic contexts that entail narrative frameworks: role play and storytelling. As reviewed earlier, both of these contexts have been widely theorized to provide children with symbolic media not only as tools of expression that display their existing capacities, but also as vehicles that further their abilities of meaning making through practice with

different types of perspectives (Nelson, 2007, 2009; Richner & Nicolopoulou, 2001).

However, representing and coordinating different mental worlds in storytelling and role

play has generally been investigated separately with little regard for the perspectival

aspects that these symbolic contexts entail and how they may be developmentally related

to children's theory of mind abilities.

In the realm of storytelling, children benefit from participating in narrative

activities both at home and in preschool settings in developing theory of mind

understanding (e.g., Adrián et al., 2005, 2007; Brockmeyer, 2009, Peskin & Astington,

2004). However, our knowledge of whether and how typically developing children's

representation of the perspectival aspects of narrative in their story constructions is

related to their theory of mind abilities is limited. Recent emphasis on the perspectival

aspects of children's narratives and their conceptualization of the mental worlds (i.e.,

Comay, 2008; Nicolopoulou & Richner, 2007) provide impetus for the current study.

In the realm of role play, studies have mostly focused on whether children engage

in certain types of role play (creating imaginary companions) or the frequency with

which children take on roles as an index of perspective-taking in pretense (e.g., Taylor &

Carlson, 1997; Youngblade & Dunn, 1995). There is some preliminary research that

shows a relationship between children's ability to relate or coordinate characters in social

role play (as assessed by joint proposals) and their theory of mind abilities (Astington &

Jenkins, 1995; Jenkins & Astington, 2000). These studies though have not investigated

the quality of the characters children create in relation to their theory of mind abilities. In

addition, while narrative framework has been emphasized as constituting a unifying link

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between the contexts of storytelling and pretend play, our knowledge of the developmental interdependencies and differences between these symbolic mediums is largely incomplete.

Adopting the conceptualization of pretend play and storytelling as "complementary modes of narrative activity" (Nicolopoulou, 2006, p. 495), the current study aims to investigate the relationship between three aspects of taking or representing perspectives (character representation, perspective-shift, and general perspectival language) across these two different symbolic contexts with their mentalistic conceptions of the person as assessed by standard theory of mind tasks.

In order to study these two contexts, we used structured narrative tasks where perspectively rich stories were told to children either with the minimal aid of pictures or were enacted with replica toys (figurines). The use of structured narrative contexts enabled us to compare children across contexts. This decision was also supported by the wide use of retelling to assess children's narrative competence (e.g., Comay, 2009; Trifonti & Reese, 2009), and reenactment as a form of narrative expression (e.g., Pellegrini & Galda, 1992; 1993; Rowe, 1998; Williamson & Silvern, 1991, 1992).

In short, the current study had two separate yet related objectives. The first question concerned the similarities and differences between children's ability to take perspectives of narrative characters as manifested in storytelling and role play. This question aims to address the conceptualizations that view role play as a privileged context for children to practice perspective-taking. More specifically, we investigated whether there are differences between children's representation of character perspective, their

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ability to shift between character perspectives, and their general perspectival language in storytelling and role playing contexts. We also investigated whether the age of children and the complexity of the stories children were asked to tell had any effect on their abilities to take perspectives in narratives.

Almost all research that looks at the relationship between narrative, play and theory of mind have focused on the preschool years during which children develop first-order theory of mind competence. However, as Nelson (2007, 2009) has argued, real life social situations and literary narratives involve complex situations that require children and adults to coordinate more than one perspective. In fact, the ability to coordinate two or more characters perspectives is one of the defining features of second-order theory of mind competence. In the current study we included preschoolers (4- and 5-year-olds) as well as kindergarten children (6-year-olds) in order to gain a fuller understanding of the relationship between children's abilities to take perspectives in the two narrative contexts (storytelling and role play) and their theory of mind development.

Based on previous research that have conceptualized role play as an advantageous medium for children to exercise perspective taking abilities (e.g., Harris; 2000; Hobson, 2004) we hypothesized that especially younger children (4-year-olds) would benefit from enacting stories in the role play context. It is plausible that the scaffolding effect of role play is stronger when children are asked to tell more challenging stories. Previous research has used narratives of varying complexities to look at the relationship between narratives and theory of mind. These narratives range from shorter (Lewis et al., 1994) or longer stories (Turnbull et al., 2008) that are modeled on theory of mind tasks to richer

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narratives such as the Meyer's (1968) wordless picture books to fairy tales (Ratner & Olver, 1998). It is conceivable that the psychological complexity of the stories children are asked to tell, may affect how well they represent perspectives in these stories. In this study we used two trickster fables that each had two psychologically developed characters. These fables were also used recently by Comay (2008) who reported that 4- to 6-year old children in her study found one of the stories to be harder. While in both stories characters played tricks on one another, the tricks in one of the stories could be understood by focusing on one of the characters, while the other story required the reader/listener to focus on both characters to understand these tricks. We investigated whether the psychological complexity of these two stories interacted with the hypothesized scaffolding effect of role play in affecting children's abilities to take perspectives in narrative production.

The second question is whether the opportunities to represent perspective in narratives (storytelling and role play) are uniquely related children's theory of mind abilities above and beyond the contributions of language ability. In other words, the current study aims to investigate the unique effects of children's ability to portray characters, their ability to shift between character perspectives, as well as their use of general perspectival language. The expectation is that these contexts provide children with opportunities to practice and possibly further develop the ability to take different perspectives and contribute to their theory of mind development above and beyond the expected effects of language and verbal working memory.

In the current study then, 4-, 5- and 6- year olds were presented with two

psychologically rich narratives. After the experimenter presented the story to the child

(either in the storytelling or the role play context) first children were asked questions that

tapped into their understanding of the characters' mental worlds. This was followed by

narrative production in which children were asked to retell or reenact the story.

Children's responses to comprehension questions were analyzed for their understanding

of the tricks played in the narrative. Children's story productions were analyzed for their

talk about the trick content of the story, their representation of characters' perspectives

(as assessed by Nicolopulou and Richner's character representation typology),

perspective-shift (as assessed by a coding scheme adapted from O'Neill, Pearce, & Pick,

2004), and their use of general perspectival language (as assessed by use of evaluatives).

Children also completed a battery of theory of mind tasks (first- and second-order theory

of mind), a standardized language task that assessed various aspects of linguistic

competence, and a verbal working memory task.

Research Questions & Hypotheses

Question 1

Do symbolic contexts (storytelling and role play) interact with children's age to

bring forth characters' perspective, perspective-shift and general perspectival language

differently?

Hypothesis 1a

Younger children will understand story characters' tricks better when they watch

story enacted with puppets as compared to when the story is told with pictures. The effect

of story presentation context will be especially prevalent for the hard story as compared to the easy story.

Hypothesis 1b

Younger children will be better able to represent characters in the reenactment context as compared to the retelling context. This effect will be especially prevalent for the hard story.

Hypothesis 1c

Children will be better able to shift perspectives between characters when telling the story in the reenactment context as compared to the retelling context. This effect will be more prevalent in the younger age group (4-year-olds) especially for the hard story as compared to older children.

Hypothesis 1d

Children will tell perspectivally richer stories in the reenactment condition in which they enact the story with puppets, as compared to the retelling condition in which they tell the story with pictures. The effect of story context (e.g., retelling, reenactment) will be especially prevalent for the hard story as compared to the easy story, especially for the younger children.

Question 2

Does children's ability to express perspectival information in narratives, via representing psychologically rich characters, shifting between character perspectives and use of general perspectival language predict their theory of mind abilities?

Hypothesis 2

Children's ability to express perspectival information in narratives, via representing psychologically rich characters, shifting between character perspectives and use of general perspectival language will predict their first-order and second-order theory of mind competence above and beyond language and working memory abilities.

CHAPTER 2: METHOD

Participants

Seventy-four children were recruited from several preschool classrooms in a

northeastern city in the US. Only children who spoke English as their first language were

included in the study. There were 24 children at each age group of 4;0, 5;0 and 6;0 (plus

or minus three months). There were approximately equal numbers of boys and girls in

each age group (53% boys). All children included in this study reported a combined

income equal to or greater than $21,000, and were above the poverty threshold used by

the US Census Bureau for 2010.   Forty-three percent of participating children were

identified as Caucasian, 23% as Hispanic, 10% as African American, and 24% as Mixed

race/ethnicity by their families. The majority of these children had 1 or 2 siblings (54%),

or no siblings (34%). Children who came from larger families constituted the smallest

group (5%). Half of the sample came from 2-parent households, 35% were raised by

single parents, and some children lived with extended family (7%). While half of the

mothers reported having a 2- or 4-year college degree, 12% reported having completed

post-graduate school, and 35% of the mothers reported having completed high school.

Table 2 summarizes the demographic characteristics of participants (gender, ethnicity,

maternal level of education, number of siblings, household structure and combined

income) by age distributions.

General Procedure

All children completed 3 cognitive assessment tasks (language, working memory,

theory of mind tasks) and 4 narrative tasks (narrative retelling and comprehension,

narrative reenactment and comprehension). The tasks were administered over three sessions in a quiet room at children's preschools (See Table 1 for the order of tasks and sessions). Session 1 was audiotaped and Session 2 was videotaped. Session 1 and 2 were administered in counterbalanced order. Session labeled 3 was always administered last. The three sessions were carried out mainly in the span of a week, but due to school absences a few children were tested in the span of 10 days. The children were invited to a room in their schools to "play some games" and were presented with a sticker of their choice after each testing session.

Theory of Mind Measures

First-order theory of mind battery

This battery consisted of 3 first-order tasks (unexpected location task, unexpected contents task, and deception) used widely in the literature.

Unexpected location task. This task assessed children's ability to predict a person's behavior based on their false belief about the location of an object (Wimmer & Perner, 1983). Children listened to the experimenter narrate a scenario with the aid of 5 pictures. The gender of the protagonist was matched to the participant's gender.

> First Picture: Jenny (or Johnny) and her mom are in the kitchen of their house. Jenny's mom makes a cake and gives a piece to Jenny. However, Jenny wants to go out and play in the yard.
>
> Second Picture: So Jenny puts the cake in the cupboard to save it for later.
>
> Third Picture: Jenny goes out to the yard to play with her ball.
>
> Fourth Picture: Later Jenny's mom said to herself: "Hmm… It is hot in the cupboard. I better put the cake in the refrigerator so the frosting doesn't melt." So she took the cake out of the cupboard and put it in the refrigerator.

Fifth Picture: Jenny's mom got in her car and drives away to the grocery store to buy something for dinner.

After children listened to the story, they were asked two control questions (i.e., "Where did Jenny put her cake?"; "Where is the cake now?"). Children were probed once if they answered one of the questions incorrectly. The task was continued only if the children answered the control questions correctly. The target question, "When Jenny goes back, where will she look for her cake first?" was asked followed by explanation questions (e.g., "Why will she look there?", "Will she find the cake when she looks in there?"; "Why/Why not?"). Children received 1 point if they answered the target question correctly ("in the cupboard") and could give an explanation for their answer. Children received 0 points if they answered the target question incorrectly or gave an explanation that did not match the story.

Unexpected contents task. This task assesses children's ability to understand that beliefs are open to change in response to new information and that others who are not privy to this information may hold and act according to their false beliefs (Gopnik, & Astington, 1988). In this task children were first shown a typical band aid box and asked to predict the contents of the box (i.e., "What is in the box?). Following children's response, the surprising content of the box – crayons- were revealed by the experimenter. After children put the crayons back in the box, they were asked two control questions (i.e., "What did you think was inside this box before you opened it?", "What is really inside the box?"). The control questions were followed by the target question (e.g., "Your friend _____ has not seen this box yet. What will she say is inside the box before she

opens it?"), and an explanation question (i.e., "Why will she say that?"). Children

received 1 point if they answered the target question correctly ("band-aids") and could

give an explanation for their answer (e.g., "there are Band-Aids on the box", "she didn't

look inside the box"). Children received 0 points if they answered the target question

incorrectly or gave an explanation that did not match the story.

Deception Task. This task (adapted from Chandler, Fritz, & Hala, 1989) assessed

children's ability to manipulate another person's thoughts through deception. Children

were asked if they wanted to play a hide-and-seek game. A sandbox was shown, and

three cups of different colors were set face down on one side of the box. The

experimenter introduced two dolls, named Sue and Mark. Children were informed that

one of the dolls would be on their team, and they would hide the sticker from the other

doll. Children were asked who they wanted on their team. The doll that was not chosen

was put behind the experimenter's back. The experimenter explained that the doll could

not see or hear what children and the doll they chose to be on their team would be doing

from then on.

The experimenter then demonstrated how to hide a sticker under one of the cups

with the help of the doll. The doll was made to walk slowly from one side of the sandbox

to the other end, and place the sticker under one of the cups. If children did not

spontaneously point out the footprints left by the doll on the sand, the experimenter

pointed them out ("Now look at the sand. What do you see here?"). After children

acknowledged the presence of the footprints, the experimenter said, "That's right! You

can see Sue/Mark's footprints. So (other doll's name) will know where you've been

walking to hide the sticker. Hmm. We don't want that!" The experimenter then erased

the footprints by patting and smoothing the sand as children watched.

Children were then given a turn to hide the sticker: "Okay, now it's your turn.

Pick which cup you would like to hide the sticker under. Then take Sue/Mark and make

her/him walk the sand to the cup you have chosen like I just showed you." After children

hid the sticker, children were asked if there was anything they could do to make the other

doll look under the wrong cup for the sticker.

If children erased the footprints and made a new set of tracks leading to one of the

wrong cups, the other doll was brought out. If not, the experimenter prompted "Can you

do anything else to make Mark/Sue look under the wrong cup so he/she will not find the

sticker?" If children still have difficulty generating a new response, they were prompted

one last time: "Can you do anything to the sand or can you do something with your doll

(Sue/Mark) to make the other doll (Mark/Sue) look under the wrong cup?" After this last

prompt, the other doll was brought out. The doll asked the child where the sticker was.

This gave children another chance to deceive the doll. The doll was then made to

playfully search for the sticker.

The scores on this task ranged from 0-4 points: Children who did not display any

deceptive behaviors (i.e., did not erase the footprints, and did not lie about the location of

the sticker) got 0 points; children whose only deceptive behavior was to lie about the

location of the sticker got 1 points; children who erased the footprints leading to the

correct cup received 2 points; children who made multiple footprints leading to 2 or more

cups received a score of 3 points; and finally children who displayed the optimum set of

deceptive behaviors (i.e., lied about the location, erased the footprints, and made one set of prints leading to a false location) received 4 points.

Total first order theory of mind score was computed through adding up the scores children received from the first-order tasks (i.e., unexpected location, unexpected contents, and deception). Since the range of possible scores for the deception task was 4 times that of the others, deception scores were equalized by dividing these scores by 4.

Second-order theory of mind battery

This battery consists of two ambiguous action tasks and two second-order theory of mind tasks. Second-order theory of mind tasks were administered to all 5- and 6-year-olds as well as those 4-year-olds who passed the unexpected location and unexpected contents tasks. Four-year-olds who could not pass these first-order theory of mind tasks were not administered the second-order tasks in order to avoid unnecessary frustration and fatigue.

Ambiguous action task. This task assesses children's understanding of how two people may hold equally plausible yet different beliefs about the same situation (Comay, 2008). First, children were introduced to two dolls (Kate and Mike). Children were told that Mike and Kate loved looking at pictures. Then, children were shown a picture of a child engaging in a familiar action (i.e., running). Children were told "Kate says the boy is running to get to school on time (pointing at the female doll). Mike says the boy is running to get some exercise (pointing at the male doll)." It was then pointed out to the children that Kate and Mike were saying different things. Two control questions that tapped into what Kate and Mike were thinking about the picture were asked. If children

could not remember, they were prompted once. Children were then asked the target question: "Does it makes sense that Mike and Kate are saying different things about why this boy is running?" Children's answers were followed by a justification question "Why does (doesn't) it make sense for Kate and Mike to say different things? This task was repeated with a new picture of a girl turning on the water.

Children received a 0 to1 points for each of the pictures, for a maximum score of 2. A correct answer in which children stated it made sense for Kate and Mike to say different things which was followed by an appropriate explanation received 1 point (e.g., "It is ok for them to say different things, because they can think different things"). If children's explanations were not appropriate (e.g., "It makes sense because I say so") or if children stated that it did not make sense for Kate and Mike to say different things they received 0 points.

Second-order scenarios. This task assessed children's understanding that one person may hold erroneous beliefs about another person's beliefs. In this task two second-order false-belief scenarios (Astington, Pelletier, & Homer, 2002) were acted out with figurines and replica toys. These scenarios assessed whether children can predict a character's false beliefs about another character's mistaken knowledge. In the first scenario two dolls were introduced (Mike and Kate). Then the experimenter enacted the scenario:

> *One day, Mike and Kate have a new toy train. They are playing it in Mike's room. Kate says, "It's time for dinner. Let's put the train away and we can play it later." She puts the train in the closet and goes to set the table. When Mike sees that Kate has left, he decides to play a trick. He takes the train out of the closet and puts in his bed under the covers. But Kate finishes setting the table and walks*

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by Mike's door. She sees Mike hide the train in the bed. Kate sees Mike do this, but Mike can't see Kate.

Children were then asked some control questions about whether Kate saw Mike hide the train in the bed, and where Kate thinks the train is at the end of the story. These control questions were followed by one first-order theory of mind question "Does Mike think that Kate saw him?" and a second-order theory of mind question "Where does Mike think Kate will look for the train when she comes back?" Children were also asked to explain their answers to the second-order theory of mind question: "Why does he think this?"

The experimenter presented the second scenario either with Kate and her dad, or Mike and his mom (children were given a choice to select the gender of the characters):

This is a story about Kate and her dad. This is Kate, and this is her dad. Her dad is at work. Tomorrow it will be her dad's birthday. Kate wants to surprise Dad with a beautiful painting she made at school. On the painting it says, "To Dad from Kate". Kate hides the painting in the hall closet Dad comes home from work. He says to Kate, "Hi, Kate, did you make anything at school today." Remember, Kate wants to surprise Dad so she says, "Sorry, Dad, I didn't make anything today. I just played." Then she goes upstairs to play in her room. After she's gone, Dad goes to the closet to hang up his coat. When he opens the door, he sees Kate's beautiful painting. Kate doesn't see Dad look in the closet. Dad doesn't tell Kate that he saw the painting.

Children were then asked some control questions about what Kate told her dad about what she did at school, and whether Kate's dad saw the painting. These control questions were followed by one first-order theory of mind question "Does Kate think that Dad saw the painting?" and a second-order theory of mind question "What does Kate think Dad will tell her mom she did at school today?" Children were also asked to explain their answers to the second-order theory of mind question: "Why does she think this?"

Children received a 0 to1 points for each of the scenarios, for a maximum score of 2. Only children who answered the control questions correctly were asked the target questions. A correct answer (i.e., Mike thinks Kate will look in the closet; Kate thinks her dad will tell her mom that she only played at school) which was followed by an appropriate explanation (e.g., Mike doesn't know that Kate saw him; Kate didn't see her mom find the painting) received 1 point. If children's explanations were not appropriate (e.g., "Because Kate wants the train"; "Dad thinks Kate played at school") or if children answered the target question incorrectly they received 0 points.

Total second-order theory of mind score was computed by adding up children's scores from the ambiguous action task and second-order scenarios task. The total score ranged from 0 to 4.

Language Assessment:

Clinical Evaluation of Language Fundamentals Preschool (CELF) is a standardized language task that taps important components of language ability such as semantics (expressive vocabulary), syntax (sentence structure, recalling sentences), and morphological forms (word structure). This test has high test-retest reliability ranging between .78 and .94 for all the subtests across age groups (Wiig, Secord, & Semel, 2004). Three subtests of CELF (Sentence Structure, Word Structure, and Expressive Vocabulary) were administered to provide a standardized language competence score. In addition the Sentence Recall subtest was administered to assess for working memory.

Sentence Structure. This subtest assessed children's ability to understand sentences of increasing complexity. There were 22 items that included one or more different sentence

structures (e.g., passive voice, indirect requests, compound sentence). In this subtest, children were read an item and were asked to point to the picture that best represented this item out of 4 pictures.

Some examples of this subtest are:

Example 1: Point to "*She is climbing and he is swinging*" (Compound Sentence)
Example 2: Show me *"Mom asked: 'Shouldn't you wear you jacket?'"* (Indirect Request)

Children received 1 point for pointing at the correct picture and 0 points for pointing at one of the incorrect pictures. The scores for each item were summed up to provide the total sentence structure raw score which ranged from 0 to 22.

Word Structure. This subtest evaluated children's ability to (1) apply word structure rules to mark inflections, derivations, and comparison; and (2) select and use appropriate pronouns to refer to people, objects, and possessive relationships. There were 24 items in this subtest, and a stimulus booklet with 2 pictures for each item. Each item was an incomplete sentence that the experimenter started while pointing at one of the pictures for the item and asked the child to complete the sentence through using the second picture that depicted the rest of the sentence.

Example 1: "The cat is his" (Pointing to a picture with a boy and a cat). *"The dog is _____."* (Pointing to a picture of a girl with a dog)
Example 2: "He is feeding himself" (Pointing to a picture of a boy in a highchair eating with a spoon). *"She is dressing herself"* (Pointing to a picture of a girl putting her socks on).

Children received 1 point if they completed the sentence correctly and 0 points if they couldn't. The scores for each item were summed up to provide the total word structure raw score which ranged from 0 to 24.

Expressive Vocabulary. This subtest assessed children's referential naming ability for objects, people and actions. There were a total of 20 items in this subscale and a stimulus booklet with a picture for each item. Children were first shown the picture of the item and asked for the appropriate word to label the object (e.g., carrot), person (e.g., firefighter) or action (e.g., wrapping a present) in the picture. Children received 2 points for correct answers, 1 point for semantically correct answers that were not fully appropriate and 0 points for incorrect answers. The scores were summed up to yield an Expressive Vocabulary score that ranged between 0-40.

Verbal Working Memory (Sentence Recall). This subtest assessed children's ability to repeat sentences of increasing complexity without changing word meanings, inflections, derivations, comparisons or sentence structure. This subtest was included in the study as it taps into children's verbal working memory which may contribute to their ability to understand and tell stories. This subtest consisted of 13 items. The first two items were relatively short and simple (e.g., *They play with blocks)*. Children received 2 points for repeating the sentence verbatim, 1 point if they made one alteration, and 0 points if they made more than one alterations. The remaining items were more complex and were scored over 3 points, allowing for more than one error (e.g., *The toy was not returned to the shelf by the girl*). The scores children attained for each of the 13 items were tallied up to constitute a Sentence Recall score.

Narrative Assessments

Two narrative comprehension tasks and 2 narrative production (narrative retelling, narrative reenactment) tasks were used to measure narrative competence across different story contexts.

The Stories

Two fables ('*The Fox and the Stork'*, '*The Fox and the Crow'*) were used to assess children's narrative competence (see Appendix A for full texts). These fables have been adapted by Pelletier, Morgan, and Lasenby, (2003; cited in Comay, 2008) and have also been used by Comay (2008). They are typical trickster tales in which two characters are in conflict over their motivations or interests.

In the '*The Fox and the Stork',* a fox wants to play a trick on the stork and make her look foolish. He invites the stork over for dinner, but serves the soup in a bowl out of which the stork cannot eat. The fox ends up eating all the soup. In return for being fooled, the stork decides to play a trick on the fox and invites him over for dinner. When the fox arrives, stork serves soup in a tall jar from which the fox cannot eat. The fox gets angry at the stork.

In *The Fox and the Crow* story, a fox is angry at a crow for stealing his corn. He decides to catch the bird and teach her a lesson. One morning he wakes up very early and hides behind a bush. When the crow comes, she does not see the fox and thinks that he is still sleeping. When the crow grabs the corn, the fox jumps out of the bushes and catches her. The crow decides to play a trick on the fox and escape. She begs the fox not to throw her into the bushes. The fox decides to do what the crow asks him not to do as a punishment. When the fox throws the crow into the bushes, the crow flies instead to a tree and gets away.

These stories were chosen since both characters are psychologically developed as evidenced by their complex psychological states (e.g., devising plans to trick one

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another). These complex psychological states are further coordinated with reality and/or with the other character. In other words both characters are "persons" in the sense Nicolopoulou and Richner (2007) define psychologically rich story characters.

Although these stories are similar in terms of the psychological fullness of their characters, we expected that *the Fox and the Crow* story would be more challenging for young children to understand than *the Fox and the Stork* story. While the tricks in *the Fox and the Stork* story could be understood from one character's point of view without reference to the other character's point of view (e.g., Fox could not drink the soup because his mouth did not fit in the jar), the Crow's trick in the latter story could only be understood in reference to both characters' points of view (e.g., Crow misleads the fox into believing that she fears being thrown into the bushes, where in reality that is exactly what she wants the Fox to do). We expected that children may find *the Fox and the Crow* story to be more challenging and thus perform differently across these two stories. Because of this, we named *the Fox and the Stork* story 'the easy story' and *the Fox and the Crow* story, 'the hard story'

Narrative Contexts

One of the main goals of this study was to investigate whether story presentation and storytelling context had an effect on children's ability to understand, represent and shift between character perspectives. In order to investigate the effect of story context, the stories were presented to children in two contexts: (1) storytelling with pictures and (2) story enactment with toys. In the storytelling context, the experimenter told the story with the aid of 4 pictures that depicted the key events in the story (See Appendix B for

the pictures). In the enactment context, the experimenter enacted the stories while simultaneously narrating it with the aid of two puppets and two props. In *the Fox and the Stork* story a fox puppet, a stork puppet, a flat plate and a long jar were used. In *the Fox and the Crow* story a fox puppet, a crow puppet, small bag, and a bush were used.

Narrative Comprehension Storytelling Context.

The experimenter told one of the stories (either the easy or the hard story) with the aid of pictures, and then asked the child some comprehension questions. Some of these were easy control questions to check if the child was following the story. The target comprehension (*Is anyone playing a trick in this story?*) followed the control questions. If the child answered in the affirmative, the experimenter asked the child to name the character who played a trick and asked the child to explain the trick (e.g., *How did the Fox trick the Stork?*). Some children answered the target question with both characters' names. This was the optimum answer since both characters played tricks in both stories. If the child only stated one character as playing a trick, the experimenter prompted once ("*Is there anyone else that plays a trick in this story?)*. If children stated the other character whose trick they had not yet explained, the follow up question was posed for this character as well (e.g., *How did the Stork trick the Fox?*).

Narrative Comprehension Enactment Context. The experimenter enacted one of the stories (either the easy or the hard story) with the aid of puppets and props. As was the case for the storytelling context, the enactment was followed by control questions and the target question regarding whether anyone played a trick in the story.

Narrative Production in the Storytelling Context. After children listened to the experimenter tell the story with the aid of pictures and answered comprehension questions, they were asked to retell the story. The pictures were left in front of the child to assist them. Children's narrative productions in the storytelling context are going to be referred to as *'retellings'* from here on. Children's retellings of the stories were audio recorded for transcription and coding purposes.

Narrative Production in the Enactment Context. Similarly, after children watched the experimenter enact the story and answered comprehension questions, they were asked to reenact the narrative. The experimenter gave the puppets and props to the child and asked: "*Can you tell the same story just like I told you with these toys?*" Children's narrative productions in the enactment context are going to be referred to as '*reenactments*' from here on. Children's reenactments of the stories were video recorded for transcription and coding purposes.

All children were read both stories. However which story was presented in the retelling or the reenactment context was counterbalanced. That is, half of the children in each age group listened to the experimenter tell *The Fox and the Stork with* pictures and watched the experimenter enact *The Fox and the Crow* story whereas the other half listened to *The Fox and the Crow* story and watch the experimenter enact *The Fox and the Stork* story. The context in which children told a specific story matched the context in which the experimenter presented that story. For example if children watched the experimenter enact *The Fox and the Stork,* they were asked to reenact this story.

Coding of the Narratives

Comprehension-Understanding of Trick Content

We developed a coding scheme through a careful examination of the answers

children gave to the trick question. Our first impression was that some children,

especially the younger children, only expressed the end results of the tricks. We also

observed that the older children were more likely to express both the means and the ends.

In order to differentiate between the performance of younger and older children we gave

separate scores for the means and ends of the tricks. Children's answers in response to the

trick question were coded for whether they acknowledged that a trick was played (1

point), the means through which the trick was played (*2 points*) and the end results

through of the trick (*2 points)*. Children could get up to 5 points (sum of

acknowledgement of trick, means and ends) for each character in the story for a total

score ranging from 0-10 for both characters.

Examples of coding for each story are provided below:

The Easy Story (*The Fox and the Stork)*

> 0 points: "No one plays a trick", "I don't know"
>
> 1 point for Acknowledgment of trick: "Fox plays a trick" "Stork plays a trick"
>
> 2 points for Means through which the trick is played: "Fox gives her a plate that she can't drink from"; "Stork gives him a long jar that he can't eat out of"
>
> 2 points for End Result or Goal of the trick: "Fox drank all the soup" or "The stork couldn't have any soup"; "Stork drank all the soup" or "The fox couldn't have any soup."

The Hard Story (*The Fox and the Crow)*

0 points: "No one plays a trick", "I don't know"

1 point for Acknowledgment of trick: "Fox plays a trick" "Crow plays a trick"

2 points for Means through which the trick is played: "Fox hides behind the bushes", "Crow said 'Please don't throw me into the bushes'

2 points for End Result or Goal of the trick: "Fox caught the Crow between his paws"; "Crow got away"

Narrative Production Coding: Retelling and Reenactment

Enactments were transcribed from videotapes and retellings were transcribed from audiotapes. In each narrative context only children's verbal expressions were coded. So if children enacted parts of the story without verbalizing it, these actions were not transcribed for coding. If children's verbalizations were incomplete or not clear, the experimenter prompted children to "*tell everything that happens in the story so that I* (experimenter) *understand what's going on)*.

Children's retellings and reenactments were also coded for (a) Expression of Trick Content, (b) Character Representation, (c) Perspective-Shift, and (d) General Perspectival Content (use of evaluative devices)

Production-Expression of Trick Content.

The same coding scheme that was used to analyze children's responses to the trick question was also used to see if children spontaneously talked about the trick content of the story in their subsequent retellings and reenactments. Specifically, if children mentioned that one of the characters played a trick they were given 1 point for acknowledgement; if they mentioned the means through which the trick was played they were given 2 points; and if they mentioned the end results through which the trick was

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played, they were given 2 points. Children could get up to 5 points (sum of acknowledgement of trick, means, and ends) for each character in the story for a total score ranging from 0-10 for both characters.

Character Representation in Story Production

Character representation coding was adapted from Nicolopoulou and Richner's (2007) 'Levels of Character Representation Scale'. This scheme evaluates character development on a continuum comprised of three broad hierarchical levels.

At the simplest level, children represent a character solely through actions. ***Actors*** are characters who do not have psychological depth and are conveyed solely through their actions. Their existence is on a physical level and they are defined by what they do. These actions lack intentionality even at the implicit level.

> Example: *"It taked it's corn. And then he threw him in the bushes. And then he get the birdie from his paws. And then he flewed-ed down"* (4-year-old)

At the intermediate level, children represent characters as ***agents***. Agents have the beginnings of psychological depth. At the agent level, characters have simple psychological states such as simple perception, sensation, or emotion. Furthermore their actions harbors implicit intentionality. For instance, their actions may be directed to another character.

> **Example:** *"The fox woke up early in the morning. And then the bird came and flew and got the corn and then he flew and then he <u>saw</u> the fox and then the fox was behind the bush and the birdie came flying down into his nest and he sat on the corn and then he <u>saw</u> the fox when he was flying away, he <u>looks</u> and the fox snuck out of the bush and then the bird flew away so much and he <u>attacked</u> the birdie"* (5-year old)

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At the most sophisticated level, children represent characters as **persons**. Persons have psychological depth that is either implicitly or explicitly coordinated with their or other characters' actions. Furthermore, persons have intentions that are also fully coordinated with their actions. In addition, characters' mental states may be contrasted with reality and with their previous mental states.

> **Example:** *The fox was <u>really mad at the crow because she stole his corn</u>. Then, she <u>stole</u> his corn again. But <u>the crow thought the fox was still sleeping behind that bush and he was not</u>. And <u>surprised her</u>, caught her with his front paws. She said something -I don't remember-. "Let me go". She said something and she <u>tricked</u> him. <u>She said something so she could get in the branches</u>.* (6-year-old).

Character Representation Scores ranged from 0 to 3. Children's representation of each character in their retellings and reenactments were coded. Children who told a different story or did not represent a character received 0 points. Children who represented a character as actor received 1point, an agent received 2 points, and person received 3 points. The highest score children got for the two characters were taken as children's character representation score.

Perspective-Shift in Story Production.

Informed by Nicolopoulou's (e.g., 2004, 2007) work on story characters, we construed perspective shift as relying on two abilities: (1) the ability to differentiate between characters and (2) the ability to coordinate characters. Full differentiation of characters requires that children talk clearly about the characters in a way that allows the listener to track which character the actions belong to. In order to assist with operationalizing character coordination we adapted the perspective-shift coding scheme

that was developed by O'Neill, Pearce and Pick (2004). This measure provides an evaluation of children's ability to capture key sequences of events in the story in which the perspective alternates between the two characters, and hence provides a good measure of coordination.

The key elements of the story that were selected to determine relation and alternation are provided below for each story.

The Easy Story (*The Fox and the Stork)*

    1st episode

Relation:	"The fox invited the stork over for dinner" or "the fox wanted to trick the stork"
Alternation:	"The stork could not eat from the plate" or "the stork's beak was too long" and "the fox ate all the soup" or "the fox could eat the soup"

    2nd episode

Relation:	"The stork invited the fox over for dinner" or "the stork wanted to trick the fox"
Alternation:	"The fox could not eat from the plate" or "the fox's mouth did not fit the jar" and "the stork ate all the soup" or "the stork could eat the soup"

The Hard Story (*The Fox and the Crow)*

    1st episode

Relation:	"The fox was mad at the crow for stealing his corn" or "the fox had a plan to catch the crow" or "the crow stole the fox's corn"
Alternation:	"The fox hid behind the bushes" and "the crow did not see the fox" or "the crow thought the fox was still sleeping"

    2nd episode

Relation:	"The crow wanted to trick the fox and get away"

Alternation: "The crow said, 'Don't throw me into the bushes'" and "the fox said 'I will throw you into the bushes'" or "The fox threw the crow into the bushes"

It is important to note the elements listed above provided general guidelines when coding the retelling and reenactments for perspective-shift. Children's verbalizations were not expected to match exactly how the story elements are worded above, but to express the gist of each element in their own words.

Both stories were thematically comprised of two episodes (e.g., Character A tricks Character B; and Character B tricks Character A). In order for full differentiation and coordination, to occur children were required to relate the characters (e.g., use one of the characters as the subject and the other as the object of the sentence) and follow it by an alternation of their perspectives in both episodes (3 points). If children could only differentiate the characters and coordinate them in one episode, their narratives were coded as partially differentiated and coordinated (2 points). If children related the characters without alternating between their perspectives or conversely alternated between the perspectives without relating the characters in either of the episodes, their narratives were categorized as minimally differentiated and coordinated (1 point). If children had difficulty differentiating the characters, in other words if it was not possible for the reader to track the actions of the characters they got a score of 0. In addition, children who told a different story than the one they were asked to tell also received a score of 0.

No Differentiation (0 points): Child does not differentiate characters.

Examples:

Easy Story: *He get mad. He can't eat his soup. He drank the soup. He get mad.* (4-year-old)

Hard Story: *It taked his corn and then he throw him into the bushes, and then he get that birdie from his paws, and then he flew-ded down.* (4-year-old)

Minimal Differentiation & Coordination (1 point): Child may alternate between the perspectives of the characters without relating them or relate the characters without alternating between their perspectives.

Examples:

Easy Story: *The fox walked and then the bird said do you want to go to dinner today. And the fox went to dinner. And then him ate all the soup. And then the bird ate all the soup and then him parted. And the he walked away.* (5-year-old)

Hard Story: *The fox caught the bird. He was hiding behind the tree. He jumped and get the bird. Uhm… then the bird flied away.* (5-year-old)

Partial Differentiation & Coordination (2 points): Child relates the characters and alternates perspective in one of the episodes.

Example:

Easy Story: *Once upon a time there was a fox and the fox saw a stork next door and the fox <wanted him to come over to…> invited the stork to dinner and then the stork came over and said: "thank you for the invitations" and then the stork came to his house and then the stork <tried to…>said "I can't eat that! My beak is too long!" and then the stork invited the fox over to his house and then the stork drinked all that soup up and then the fox couldn't get the soup and then the fox said "no, thank you for the dinner, I don't want to come over any more" because the fox couldn't do it and he expected to do it.* (5-year-old)

Hard Story: *The fox was really mad at the crow because she stole his corn. Then, she stole his corn again. But the crow thought the fox was still sleeping behind that bush and he was not. And surprised her, caught her with his front paws. She said something, I don't remember. <Let me go.> She said something and she tricked him. She said something so she could get in the branches.* (5-year-old)

Full Differentiation & Coordination (3 points): Child relates the characters and alternates perspective in both episodes.

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<u>Easy Story</u>: *The squirrel lived next door to a stork. And then the stork think he invited the stork over for dinner. The stork was so happy. And then he fly to him to dinner. And he say: "The soup smells good!" And then the squirrel ate it, but the stork couldn't fit in… The squirrel eat it all. And the stork found out a plan."Can you come to my house to get dinner?" "Yes, I am so happy!" It couldn't fit the fox's nose, but it could fit the stork's nose. And then the fox was a little sad.* (6-year-old)

<u>Hard Story</u>: *Once upon a time there was a fox. And then a crow came by and got his corn. And one day he got up really early. Then the crow flew by. And then she thought he was still sleeping, so she grabbed it with her beak. Then he popped out of the bushes and got her. She was scared. Then when she said: "Don't throw me in the bushes". Then he said: "But I'm going to throw him in the bush". Then when he let her go. She flied away and then she got up to the tree. She flied away to the tree. Then she said "I tricked you" and she flew away.* (6-year-old)

General Perspectival Language (Evaluatives) in Story Production

The coding for the overall perspectival content of stories is informed by research that investigates the relationship between narrative and theory of mind competence (e.g., Tager-Flusberg, 1995; Losh & Capps, 2003; Comay, 2008). Children's use of evaluatives has been widely recognized as either expressing their take on the events in the story as the narrator or expressing the characters' perspectives. We looked at 5 evaluative categories. These categories are: (a) Internalizers (commonly termed Mental State Terms in the literature), (b) Character Speech, (c) Contrastives, and (d) Modifiers (e) Enrichment devices.

Internalizers are words that express internal (physiological, perceptual or mental) states of the characters. These could be simple states like sensations (e.g., *The fox was hungry*), perceptions (e.g., *the crow looked around but did not see the fox*), or more complex psychological states such as intentions (e.g., *the fox wanted to cook the bird*),

emotions (e.g., *the fox was mad*), and cognitions (e.g., *the crow thought the fox was still sleeping*).

Character speech was assessed as direct or indirect speech of the characters. The unit of analysis for character speech was taken as the number of utterances (e.g., *"Would you like to come over to my house for dinner?"*).

Contrastives were words that expressed possibilities in the story that were not realized. They served to compare what happened with what did not, expanding on the possibilities that the story offers. These could be negatives (*e.g., Please! Don't throw me into the bushes),* modals (e.g., *The fox's mouth couldn't fit in the jar*), or adversative connectives (e.g., *The fox tried to throw the bird into the bushes but he couldn't*).

Modifiers are words or phrases that the child uses to communicate how they imagine the objects or events in the story as vividly as possible. These could be adjectives (e.g., *long jar*), adjectival phrases (e.g., *The bird's big long beak didn't fit in the bowl*) or adverbs (e.g., *The fox quickly drank the soup*).

Enrichment devices could be intensifiers (e.g., *the bird's beak was too long and too thin to eat from the plate, the fox got up super early*) or repetitions.

Each instance of every evaluative use was tallied up to yield a Total Evaluative Score. Previous research has taken children's use of mental state words as indicator of their ability to represent character perspectives. In line with this line of research, internalizers were summed up as a subcategory to yield a *Total Internalizer Score*.

CHAPTER 3: RESULTS

Two main questions were investigated in the current study. The first question regarding the effects of age, narrative context, and story complexity on children's ability to understand and represent character perspectives was addressed through four hypotheses:

For narrative comprehension as affected by the mode in which the experimenter presented the story (telling vs. enactment), age, and story complexity:

(1) Younger children will understand story characters' tricks better when they watch the story enacted with puppets as compared to when the story is told with pictures. The effect of story presentation context will be especially prevalent for the hard story as compared to the easy story. Mode of story presentation will not affect older children's understanding of the trick content.

For children's narrative productions as affected by mode of narrative production (retelling vs. reenactment), age, and story complexity:

(2) Younger children will be better able to represent characters in the reenactment context as compared to the retelling context. This effect will be especially prevalent for the hard story. Narrative context and story complexity will not affect older children's understanding of the trick context.

(3) Children will be better able to shift perspectives between characters when telling the story in the reenactment context as compared to the retelling context. This effect will be more prevalent for the hard story in the younger age group (4-year-olds).

(4) Children will tell perspectively richer stories in the reenactment context in which they enact the story with puppets, as compared to the retelling condition in which they tell the story with pictures. The effect of narrative context (e.g., retelling, reenactment) will be especially prevalent for the hard story as compared to the easy story, especially for the younger children.

The second question regarded the relationship between children's ability to represent perspectives in narratives and their theory of mind abilities.

(5) We expected children's ability to express perspectival information in narratives (i.e., character representation, perspective-shift, general perspectival language) to predict children's theory of mind competence. In addition, based on past research that indicates a simultaneous bidirectional relationship between narrative and theory of mind, we also tested whether theory of mind abilities contributed to children's perspectival expression.

Half of the children told the easy story in the retelling condition and the hard story in the enactment condition, while the remaining children told the easy story in the retelling condition and the hard story in the reenactment condition. Before testing the main hypotheses of the study, preliminary analyses were conducted to investigate if there were any differences between these two groups of children in terms of language, working memory, 1st order and 2nd order theory of mind measures. This analysis was done because the main hypothesis requires that we compare these groups in planned contrasts; in case of significant differences between them we would have to control for these differences in subsequent analysis. There were no significant differences between the two groups of

children on any of these measures (language $t(72) = 1.26$, $p = .21$, *ns*; working memory $t(72) = .07$, $p = .95$, *ns;* first-order theory of mind $t(72) = .61$, $p = .54$, *ns;* second-order theory of mind $t(72) = 1.29$, $p = .20$, *ns*). Descriptive statistics for theory of mind and control tasks (i.e., language, working memory) are summarized in Table 3. In addition, the order in which children told stories (i.e., storytelling, role play) and gender were not a significant contributor in any of the following analyses, and were taken out to increase statistical power.

Effects of mode of narrative context, age and story complexity on children's understanding of characters' tricks

Several mixed-model analyses were conducted, in order to address the first hypothesis that narrative context (mode of story presentation & mode of story production) and story complexity would interact at different age levels to affect children's understanding of the characters' tricks. These analyses were run separately for children's understanding of characters tricks that were assessed in response to *comprehension* questions and children's understanding of characters tricks that were extracted from children's *production* of stories. In each analysis the between-subjects variable of age group and within-subjects variables of story complexity (easy vs. hard) and narrative context (enactment with puppets vs. storytelling with pictures) were entered to predict children's understanding of characters' tricks. These analyses were repeated for children's understanding of the means through which the characters carried out the trick and the end results of the trick for both comprehension and production.

Understanding of the tricks: Comprehension.

Total Understanding of the Tricks. After the experimenter told the story (either with pictures or toys), children's comprehension of the story was assessed. As previously explained, the last question inquired whether "someone played a trick in the story". The answers were coded for acknowledgment of a trick (1 point), stating the means through which the trick was played (2 points), and stating the end results of the trick (2 points) for each character in the story (for a maximum of 10 points for the 2 tricks). The descriptive statistics for this and subsequent analyses are presented in Table 4.

The results of the linear mixed analysis revealed a main effect of age, (F (2, 68) = 11.55, $p < .001$). Linear contrasts revealed that older children understood the trick better than younger children since all age groups were significantly different than one another. Four-year-olds ($M = 3.27$) understood less of the trick content as compared to 5-year-olds ($M = 4.45$), $p < .05$, who understood less of the trick content as compared to the 6-year-olds ($M = 6.19$), $p < .01$. As expected, there was also a main effect of story complexity (F (1, 68) = 10.75, $p < .01$). Children understood the trick content of the easy story ($M = 5.28$) better than the trick content of the hard story ($M = 3.99$). There was no main effect of narrative context (mode of story presentation) on children's comprehension of the trick content of the stories (F (1, 68) = 1.05, $p = .31$, *ns*). There was neither a 2-way interaction between narrative context and story complexity (F (1, 68) = .47, $p = .50$, *ns*) nor a 3-way interaction between age, narrative context and story complexity (F (2, 68) = 1.48, $p = .27$, *ns*). A closer look at the means (see Table 4) showed that only 6-year-olds displayed a trend in better understanding of the trick content for the hard story when they watched it

being enacted ($M = 6.42$) as compared to when they listened to the story told with the aid of pictures ($M = 4.33$), $p = .06$.

These findings suggest that although children's understanding of the trick content of the stories improved with age, and that children found "the Fox and the Crow" story to be harder than "the Fox and the Stork story", their performance on the comprehension questions were not differentially affected by a combination of age, story complexity and mode of story presentation. In fact, watching the story enacted with puppets only facilitated understanding of trick content for the oldest age group and especially for the hard story.

Understanding the Means of the Tricks. This analysis focuses on children's understanding of the means through which the tricks were played. The results of the linear mixed analysis revealed a main effect of age, ($F (2, 68) = 11.55$, $p < .001$). Contrasts revealed that 4-year-olds ($M = .58$) were less likely to state the means of the trick as compared to 5-year-olds ($M = 1.24$), $p<.05$, who in turn were less likely to state the means of the trick as compared to the 6-year-olds ($M = 2.38$), $p<.001$. As expected, there was also a main effect of story complexity ($F (1, 68) = 13.60$, $p < .001$). Children were better able to state the means of the tricks for the easy story ($M = 1.79$) as compared to means of the hard story ($M = 1.01$). There was no main effect of mode of narrative presentation ($F (1, 68) = 1.14$, $p > .05$). In line with our predictions, there was a trend in the expected direction for an interaction between narrative context and story complexity ($F (1, 68) = 2.95$, $p = .09$). Linear contrasts suggested that while children were similarly able to state the means of the tricks in the easy story in either story presentation context

($p = .54$, ns), they were significantly better able to state the means of the tricks of the hard story when the experimenter enacted the story with puppets ($M = 1.69$), as compared to when the experimenter told the story with the aid of pictures ($M = 1.33$), $p < .05$. However, contrary to our predictions, there was no interaction of age, narrative context and story complexity on children's understanding of the means of the tricks ($F (2, 68) = .98$, $p = .38$, ns). A closer look at the means revealed that, in line with the results of the total trick content understanding analysis just presented, 6-year-old children seemed to show better understanding of the means of the tricks for the hard story when they watched it being enacted ($M = 2.67$) as compared to when they listened to the story told with the aid of pictures ($M = 1.33$).

   Understanding the End Results of the Tricks. This analysis focuses on children's understanding of the end results of the tricks. Linear mixed analysis revealed a main effect of age, ($F (2, 68) = 3.51$, $p < .04$). Contrasts revealed that 4-year-olds ($M = 1.17$) were significantly less able to state the end results of the tricks as compared to the 6-year-olds ($M = 2.08$), $p < .01$. There was no significant difference between 5-year-olds ($M = 1.45$) and the other age groups, although the means were in the expected direction. Contrary to predictions, there was no main effect of story complexity ($F (1, 68) = 2.18$, p $= .15$, ns) indicating that children were equally able to state the end results of the trick across the easy and hard story. As expected, there was no main effect of mode of narrative presentation ($F (1, 68) = .03$, $p = .87$, ns) and there was no interaction between narrative context and story complexity ($F (1, 68) = 01$, $p = .95$, ns) as well as no

interaction of age, narrative context and story complexity on children's understanding of the end results of the tricks (F (2, 68) = .87, p = .42, *ns*).

Expression of trick content in Different Modes of Narrative Production (Retelling vs. Reenactment)

After children answered comprehension questions, the experimenter asked children to retell or reenact the story depending on the mode of narrative presentation they observed. That is, children were always asked to tell the story in the narrative context they heard the story the first time. Specifically, if the experimenter enacted the story children were asked to reenact the story with puppets, if the experimenter told the story with the aid of pictures the children were asked to retell the story with pictures. As previously mentioned, children's narrative productions of the story in the storytelling context are named 'retelling' and their narrative productions in the role play context through toys and props are named 'reenactment'. Descriptive statistics of children's narrative productions are summarized in Table 5.

Children's retellings and reenactments were coded for their portrayal of the trick content of the stories. In line with the comprehension coding, the stories were coded for the acknowledgment of a trick (1 point), stating the means through which the trick was played (2 points) and stating the end results of the trick (2 points) for each character in the story (for a maximum of 10 points).

Total Understanding of the Tricks in Production. The results of the linear mixed analysis revealed a main effect of age, (F (2, 67) = 16.76 p < .001). Contrasts revealed that older children expressed more of the trick content as compared to younger children

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since all age groups were significantly different from one another. Four-year-olds ($M =$ 3.90) understood less of the trick content as compared to 5-year-olds ($M = 5.44$), $p < .01$, who understood less of the trick content as compared to the 6-year-olds ($M = 6.96$), $p <$ .01. Contrary to expectations, there was no main effect of story complexity ($F (1, 67) =$ .34, $p = .56$, ns). There was also no main effect of mode of narrative production ($F (1, 67)$ $= 1.59$, $p = .21$, ns), and no interaction between mode of narrative production and story complexity ($F (1, 67) = .72$, $p = .40$, ns). It was expected that younger children would be more likely to express trick content of the stories in the reenactment context, especially for the hard story. There was no significant interaction of age, story complexity, and mode of narrative production ($F (1, 67) = 1.93$, $p = .15$, ns) on children's expression of trick content. The means indicated that, contrary to our expectations, younger children were better able to express the trick content of the hard story in the retelling condition ($M_{4\text{-}year\text{-}olds} = 4.92$) as compared to the reenactment condition ($M_{4\text{-}year\text{-}olds} = 2.75$). It was hypothesized that availability of props and action would facilitate children's expression of the trick content. However especially when the story is difficult, it may be that reenactment proves to be a more challenging context for these younger children because they need to coordinate what they remember of the story with their actions which may have proved especially challenging for younger children as compared to telling the story without the distraction of the props and the need to dovetail their using of the props with their verbalizations.

Expressing the Means of the Tricks in Production. The results of the linear mixed analysis revealed a main effect of age, ($F (2, 67) = 6.37$, $p < .01$). Contrasts revealed that

4-year-olds ($M = 1.5$), $p <.001$ and 5-year-olds ($M = 2.04$), p $<.06$, were less likely to state the means of the trick in their story productions as compared to 6-year-olds ($M = 2.67$). Contrary to expected, there was no main effect of story complexity (F (1, 67) = .39, $p = .54$, ns). As expected there was no main effect of mode of narrative production (F (1, 67) = 2.76, $p = .10$, ns). It was predicted that children would be better able to express the means content in the reenactment context as compare to the retelling context. Contrary to our expectations there was no significant interaction of story complexity and narrative context (F (1, 67) = .13, $p = .91$, ns). As was expected for the total trick understanding, it was predicted that younger children would find it easier to state the means of the tricks in the reenactment context especially for the hard story. A closer look at the means showed that, contrary to expectations, but in line with the results of the total trick content expression analysis, younger children found it harder to express the means of the trick in the reenactment context for the hard story. 4-year-olds seemed to be better able to state the means of the tricks in the retelling context ($M = 2.00$) as compared to reenactment context ($M = .83$).

Expressing the End Results of the Tricks in Production. Results of the analysis showed a main effect of age, (F (2, 67) = 14.94, $p < .001$). Contrasts revealed that 4-year-olds ($M = 2.08$) included less of the end results of the tricks in their story productions as compared to 5-year-olds ($M = 2.91$), $p <.01$, who in turn were less likely to state the end results of the trick as compared to 6-year-olds ($M = 3.58$), $p < .001$. Contrary to expectations, there was no main effect of story complexity (F (1, 67) = .44, $p = .52$, ns). As expected there was no main effect of mode of narrative production (F (1, 67) = .03, p

= .86, *ns*). Contrary to expectations, there was no interaction of mode of narrative production with story complexity (*F* (1, 67) = 1.48, *p* = .23, *ns*), and no interactions of age, mode of narrative production and story complexity (*F* (1, 67) = 1.87, *p* = .16, *ns*). A closer look at the means did not display a pattern with which younger or older children included the end results of the tricks in their story productions that varied by narrative context and story complexity.

Summary. The analysis of children's understanding of trick content from comprehension questions and expression of trick content in story productions (i.e., retellings, reenactments) showed different patterns. In comprehension, children showed a better understanding of the easy story for means of the trick, end result of the trick and total trick content. It was predicted that listening to the story in the enactment context would facilitate children's understanding of the hard story. This prediction was partially supported through a trend in the expected direction, and only for children's ability to state the means by which the tricks were played. However, a closer look at the data showed that it was the oldest age group that seemed to benefit from enactment.

In story production we looked at children's inclusion of trick content in story retelling and reenactment. Although there was a developmental difference between younger and older children's inclusion of trick content, the differences observed for story complexity in comprehension were not present for production. In fact contrary to our expectations, a closer look at children's performance displayed that 4-year-olds were better able to talk about overall trick content and specifically the means through which the trick was played in the retelling context for the hard story.

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Character Representation in Story Production (Retelling vs. Reenactment)

Children's ability to represent characters was assessed through character representation typology adapted from Nicolopoulou and Richner (2007). Children's retellings and reenactments of the stories were coded for the psychological complexity with which they represented the characters based on a coding scheme that was adapted from the Character Representation Typology (Nicolopoulou and Richner, 2007). Each character was evaluated on a scheme ranging from 'actor' (1 point), 'agent' (2 points) and 'person' (3 points). For each story the highest level at which children represented the characters were taken as an expression of children's ability to represent characters. Descriptive statistics for character representation is summarized in Table 6.

Linear mixed model analysis was carried out in which the between subjects variable of age group and within subjects variables of story complexity (easy vs. hard) and narrative context (enactment with puppets vs. storytelling with pictures) were used to predict children's ability to represent characters in their retellings and reenactments. The analysis revealed a significant effect of age suggesting that children were better able to represent psychologically rich characters with age. Contrasts revealed that 6-year-olds (M = 2.67) represented more psychologically rich characters in their story productions as compared to 5-year-olds (M = 2.246), $p < .05$, who in turn were better able to represent more psychologically rich characters as compared to 4-year-olds (M = 1.71), $p < .01$. However, there was no significant effect of story complexity ($F(2, 67) = .003$, $p = .96$, *ns*) or narrative context ($F(2, 67) = .42$, $p = .51$, *ns*) suggesting that children represented

characters of similar character complexity across the different stories, and storytelling contexts. Contrary to expected, there also was no significant interaction of story complexity and narrative context (F (2, 67) = .34, p = .56, ns) and no significant interaction of age, story complexity and narrative context (F (2, 67) = .80, p = .56, ns). Contrasts did not reveal story complexity by narrative context interactions for any of the age groups. These results suggest that children's ability to represent psychologically rich characters develops steadily from 4 to 6 years of age, and is not affected by the story complexity or storytelling context.

Perspective-Shift in Story Production (Retelling vs. Reenactment)

It was hypothesized that children would find it easier to shift between the perspectives of the characters in the reenactment context due to the availability of props and actions. A perspective-shift coding scheme was developed based on how well children could differentiate and coordinate the two characters in each story. If children could not differentiate the two characters they got 0 points, if children could minimally differentiate and coordinate characters they earned 1 point, if children could partially differentiate and coordinate the characters they earned 2 points, and full differentiation and coordination was given 3 points (for details of coding see Method). Descriptive statistics for perspective-shift is summarized in Table 6.

Linear mixed analysis with age as the between subjects variable and narrative context and story complexity as the within subjects variables predicting children's perspective-shift scores showed a main effect of age (F (2, 67) = 8.91, p <.001). Contrasts revealed that 5-year-olds (M = 1.25), and 6-year-olds (M = 1.58) were better able to shift

perspectives in storytelling as compared to 4-year-olds (M = .85), p=.02 and p=.001

respectively. There was no difference in the ability to shift perspectives between 5- and

6-year-olds, p = .17, *ns.* As expected children were better able to shift between the

perspectives of the characters in the easy story (M = 1.43) as compared to the hard story

(M = 1.04), (F (1, 67) = 12.73, p <.001). Also in line with expectations there was no main

effect of narrative context (F (2, 67) = 1.67, p = .20, *ns*). There was a significant narrative

context by story complexity interaction (F (1, 67) = 9.59, p <.01). Interestingly, planned

contrasts showed that children were better able to shift perspectives in the reenactment

context as compared to the retelling context only for the easy story, p = .002 . This

interaction was not qualified by an overall age by story complexity by narrative context

interaction. A closer look at the means suggested that especially 4-year-olds were better

able to shift perspectives in the reenactment context (M = 1.42) for the easy story as

compared to the retelling context (M = .5).

General Perspectival Language in Story Production (Retelling vs. Reenactment)

Children's ability to tell stories that are rich in perspective content was assessed

through investigating children's use of evaluatives. Evaluatives are linguistic devices that

express either the narrator's or the story characters' perspectives. The stories were coded

for 5 evaluative categories: Internalizers (i.e., sensation, perception, intention, affective,

cognitive words), Character Speech, Contrastives (i.e., negatives, modals, adversative

connectives), Modifiers (i.e., adjectives, adjectival phrases, adverbs), Enhancement

Devices (Intensifiers, Repetitions). The frequency of children's use of each of these

categories was aggregated to provide the total evaluative score. Descriptive statistics for general perspectival language is summarized in Table 6.

Linear mixed model analysis was conducted on children's retellings and reenactments, the between subjects variable of age group and within subjects variables of story complexity (easy vs. hard) and narrative context (enactment with puppets vs. storytelling with pictures) were entered to predict total use of evaluatives. The analysis revealed a main effect of age (F (2, 67) = 6.20, p <.01). Contrasts revealed that 6-year-olds (M = 8.08) used more evaluatives as compared to 4-year-olds (M = 4.69), p=.001, and 5-year-olds (M = 5.45), p = .01. There was no difference in the amount of evaluative use between 4- and 5-year-olds, p = .45, *ns.* As expected, there was a main effect of story complexity (F (1, 67) = 37.93, p < .001). Children used more evaluatives when telling the easy story (M = 7.65) as compared to the hard story (M = 4.49). There was no main effect of narrative context, meaning children used similar numbers of evaluatives in their retellings (M = 5.89) as compared to reenactments (M = 6.25). Contrary to expectation, there was no interaction between narrative context and story complexity (F (1, 67) = 1.66, p = .20, *ns*). It was predicted that younger children would be more likely to use evaluatives in the reenactment context especially for the hard story. However, no significant interaction of age, story complexity and narrative context (F (1, 67) = .12, p = .89, *ns*) was found on children's use of evaluatives.

Children's use of 'Internalizers' to express the inner world of characters.
Previous research has treated children's use of words that express perceptual, intentional, affective or cognitive states as an expression of children's ability to think about

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characters as psychological beings. We also investigated whether children's use of

internalizers was affected by narrative context and story complexity. Children's use of

sensation, perception, intention, affective and cognitive words were tallied in children's

retellings and reenactments to yield an aggregate internalizer score which was entered

into a mixed model analysis.

It was expected children's use of internalizers would increase with age. Contrary

to expected, analysis revealed no main effect of age (F (2, 67) = 1.75, p = .18, ns),

although the means per age group were in the expected direction ($M_{\text{4-year-olds}}$ = 1.56, $M_{\text{5-year-olds}}$ = 1.81, and $M_{\text{6-year-olds}}$ = 2.33). There also was no significant main effect of story

complexity (F (1, 67) = .63, p = .43, ns) or narrative context (F (2, 67) = 2.32, p = .13,

ns). It was predicted that children would find it easier to talk about characters' internal

states in the reenactment condition, and that this difference would especially be prevalent

for the hard story. Although it was found that there was a marginally significant story

complexity by narrative context interaction (F (1, 67) = 3.50, p = .07), this effect was not

in the expected direction. Contrasts revealed that children used more internalizers when

reenacting the easy story (M = 2.49) as compared to when they were retelling it (M =

1.5), p =.02. There was no significant difference between children's use of internalizers

for the hard story between the retelling (M = 1.96) and the reenactment narrative contexts

(M = 1.67). Contrary to predictions, there was no 3-way interaction among age, story

complexity, and narrative context (F (2, 67) = .15, p = .89). Planned contrasts showed

that this 3-way interaction was wiped out by contrastive patterns in different age groups.

It was found that 5- and 6-year olds used more internalizers when they reenacted the easy

story ($M_{\text{5-year-olds}}$ = 2.46, $M_{\text{6-year-olds}}$ =3.23) as compared to when they retold it ($M_{\text{5-year-olds}}$ =

1.25, $M_{\text{6-year-olds}}$ =1.67). However the opposite pattern was observed for 4-year-olds

retellings (M = 2.17) and reenactments (M = .75) of the hard story.

To summarize, the hypothesis that reenactment would facilitate children's use of

evaluatives in their story productions as compared to retelling was not supported.

Children's used similar amounts of evaluatives at all ages, levels of story complexity and

across different storytelling contexts. A closer inspection of children's use of internalizers

lent partial support to our hypothesis with a caveat. Five and 6-year-olds used more

internalizers in their reenactments as compared to their retellings. However, this was only

true for the easy story. This finding may suggest that only when children have a certain

level of understanding of the story can they use the reenactment condition to their

advantage to explore the internal states of the characters. When the story is too complex,

children may actually perform better without the demand of coordinating verbalizations

with actions.

Is There a Predictive Relationship between Perspectival Aspects of Children's Narratives and their First- and Second-Order Theory of Mind Abilities?

Our second question focused on whether there was a relationship between

children's expression of perspectives in their narrative productions and their first and

second theory of mind abilities. Specifically, we hypothesized that children's ability to

represent characters, shift between perspectives (especially in the reenactment context),

and their use of general perspectival language (i.e., use of evaluatives) would predict their

first and second-order theory of mind abilities even after the effects of language and

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working memory were accounted for. The contributions of children's expression of the perspectival aspects of the story (i.e., character representation, perspective-shift, and general perspectival language) were analyzed separately for story context (retelling and reenactment) for each of the theory of mind abilities (first- and second-order theory of mind abilities). In what follows, analyses regarding these hypotheses will be presented separately for first- and second-order theory of mind, starting with the presentation of correlations that establish the relationship between perspectival aspects of narrative expressions in both narrative contexts and theory of mind followed by regression analyses.

Regarding first-order theory of mind, partial correlations analyses that controlled for the effects of general language abilities and working memory indicated a significant correlation between first-order theory of mind scores and character representation (pr (69) = .29, p < .05) and a marginally significant correlation for perspective-shift (pr (69) = .27, p = .07), but not for general perspectival language (pr (69) = .01, p >.05) in the reenactment (role play) context. In the retelling (storytelling) context, children's ability to represent characters, shift perspectives and use general perspectival language did not significantly correlate with their first-order theory of mind abilities (see, table 7 for a summary of partial correlations).

Regarding second-order theory of mind, partial correlations indicated a significant relationship between children's ability to shift perspectives in the retelling (storytelling) context was found to be significantly correlated with theory of mind (pr (69) = .26, p <.05).

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Next we conducted regression analyses that helped to evaluate whether there is a predictive relationship between abilities to represent perspectives in each storytelling context (i.e., retelling and reenactment) for each theory of mind ability (i.e., first and second-order). This model tested whether children's ability to represent perspective (i.e., represent characters, shift between perspectives, and use of general perspectival language) predicted their theory of mind abilities above and beyond the effects of language and working memory. This model was run separately for: (1) children's abilities to represent perspectives in the retelling (storytelling) context predicted first-order theory of mind abilities; (2) children's abilities to represent perspectives in the reenactment (role play) context predicted first-order theory of mind abilities; (3) children's abilities to represent perspectives in the retelling (storytelling) context predicted second-order theory of mind abilities; (4) children's abilities to represent perspectives in the reenactment (role play) predicted second-order theory of mind abilities. (see Tables 6 and 7)

Before discussing the results of these analyses, it is important to note that collinearity statistics were found to be within acceptable limits for all the regression analyses that is reported (i.e., for all predictor variables, tolerance (TOL) was > .30, whereas the variance of inflation factor (VIF) was < 3.00). The Summary of Regression Statistics for the retelling context is provided in table 8, and for the reenactment context in table 9.

Perspectival aspects of children's stories in the storytelling context predicting first-order theory of mind. In this regression model, we first entered the control variables (language, verbal working memory) in the first block. This model was significant (F (2,

70) = 43.59, p <.001, adjusted R^2 = .54). Both language abilities and verbal working memory contributed to this model (p <.001 and p < .02, respectively). But, contrary to our expectations, entering character representation, perspective-shift and general perspectival language did not improve the fit of the initial model (p=.36).

Perspectival aspects of children's stories in the reenactment (role play) context predicting first-order theory of mind. When language abilities and verbal working memory were entered in the first block, the model was significant (F (2, 70) = 43.59, p <.001, adjusted R^2 = .56). Both language and verbal working memory were significant contributors of the variance in first-order theory of mind scores (p < .001 and p <.05, respectively). Entering character representation, perspective-shift and general perspectival language in the next block, improved the fit of the model (p < .05). The revised model was still significant (F (5, 67) = 21.19, p <.001, R^2 change = .24). The full model explained 58% of the variance in children's first-order theory of mind scores. In line with predictions, character representation was a significant contributor to the variance in first-order theory of mind scores (p = .04) and perspective shift was a marginally significant contributor (p = .07), after effects of language (p = .001) and working memory (p = .14, *ns*) were controlled for. However, general perspectival language did not significantly contribute to the revised model (p = .69).

Perspectival aspects of children's stories in the retelling (storytelling) context predicting second-order theory of mind. The hierarchical regression model was run to investigate if children's ability to represent perspectives in the retelling context predicted children's second-order theory of mind scores. When language and verbal working

memory were entered in the first block, this initial model was significant. (F (2, 70) = 17.03 p <.001, adjusted R^2 = .31). While language significantly contributed to the variance in second-order theory of mind ($p < .05$), working memory made a marginal contribution ($p = .07$). When character representation, perspective-shift and general perspectival language were entered in the next block, these variables marginally improved the fit of the model ($p= .06$). The revised model was significant (F (5, 67) = 69, p <.001, R^2 change = .07) and explained 35% of the variance in children's second-order theory of mind scores. In line with predictions, perspective shift was a significant contributor ($p < .03$) after effects of language ($p < .05$) and working memory ($p = .11$, ns) were controlled for. However, contrary to our expectations character representation ($p =$ .56) and general perspectival language did not significantly contribute to the revised model ($p = .56$, ns).

Perspectival aspects of children's stories in the reenactment (role play) context predicting second-order theory of mind. The hierarchical regression model was run to investigate if children's ability to represent perspectives in reenactment context predicted the variance in children's second-order theory of mind scores. When control variables were entered in the first block, this initial model was significant. (F (2, 70) = 17.03 p <.001, adjusted R^2 = .31). While language significantly contributed significantly to the variance in second-order theory of mind ($p < .05$), working memory made a marginal contribution ($p = .07$). Contrary to our expectations character representation, perspective-shift and general perspectival language did not make a significantly improve the fit of the first model ($p = .94$, ns).

Does theory of mind predict children's perspectival expression in narratives?

We tested whether theory of mind abilities predicted children's expressions of perspective in narratives through several separate regression analyses. In each analysis the control variables of language and working memory were entered in the first block, followed by first- and second-order theory of mind abilities in the second block. These analyses were run separately for children's character representation in retelling, children's character representation in reenactment, perspective-shifts in retelling, perspective shifts in reenactment, general perspectival language in retelling, and general perspectival language in reenactment. Only in two of these analyses (character representation in reenactment and perspective shift in reenactment) did the addition of theory of mind abilities significantly improve the model with the control variables, and make a unique contribution to the target variable. In what follows these two analyses are explained in more detail. (see Table 10)

Theory of mind predicting character representation in reenactment. The initial model with the control variables (language, verbal working memory) was significant (F $(2, 71) = 12.64$, $p < .001$, adjusted $R^2 = .24$). Language abilities contributed significantly to this model ($p < .01$) whereas working memory ($p = .55$, ns) did not. When first-order theory of mind and second-order theory of mind were entered in the second block, the revised model was still significant ($F (4, 69) = 8.66$, $p < .05$, R^2 change $= .07$). The full model explained 30% of the variance in children's representation of characters in reenactment. The variance was mostly explained by first-order theory of mind abilities

($p=.01$), and not by second-order theory of mind ($p = .97$), language ($p = .18$), or working memory abilities ($p = .92$).

Theory of mind predicting perspective shift in reenactment. The initial model with the control variables (language, verbal working memory) was significant ($F (2, 71) = 5.29$, $p < .01$, adjusted $R^2 = .14$). Working memory abilities contributed significantly to this model ($p < .05$) whereas language ($p = .93$, ns) did not. When first-order theory of mind and second-order theory of mind were entered in the second block, the revised model was still significant ($F (4, 69) = 5.19$, $p < .05$, R^2 change $= .07$). The full model explained 19 % of the variance in children's representation of characters in reenactment. The variance was mostly explained by first-order theory of mind abilities ($p=.01$), marginally by working memory ($p=.06$) and not by second-order theory of mind ($p = .58$) or language abilities ($p = .26$).

Summary. The hypothesis, that children's ability to represent and coordinate characters would be related to and contribute to their theory of mind competence was partially supported. We predicted that children's ability to convey perspectives in reenactment would relate more strongly to their first-order theory of mind abilities. This prediction was supported in that while children's ability to represent characters and shift between their perspectives significantly contributed to first-order theory of mind competence above and beyond the contribution of language and working memory only in the reenactment context and not in the retelling context. We had also predicted that children's ability to shift between characters' perspectives would be more predictive of their second-order theory of mind competence especially in the reenactment context.

Contrary to our prediction, while children's ability to shift between character perspectives in retelling was a significant contributor to their second-order theory of mind competence, this relationship did not hold in the reenactment context.

CHAPTER 4: CONCLUSION

This study aimed to take a closer look at children's understanding and expression of the perspectival aspects of narratives across two different narrative contexts (storytelling and role play) and sought to examine the possible relationship between children's competence in taking perspectives in these two narrative contexts and children's theory of mind competence. Specifically, this study addressed two main questions: (a) Does children's ability to represent characters and take perspectives in narratives vary by age (4 vs. 5 vs. 6 years of age), context (storytelling vs. role play), and story complexity (easy vs. hard)?; (b) Do children's abilities to represent characters and take perspectives in narratives contribute to their first- and second-order theory of mind understanding?

In relation to the first question, the results revealed a complex yet meaningful picture. As expected, children found the hard story to be more challenging than the easy story for most perspectival aspects that were investigated. While the interactive effects of story complexity and story context was not found to vary significantly by age, certain trends were found noteworthy. Specifically, watching the story enacted in the role play context seemed to improve older children's understanding of the total trick content and the means through which the trick was played, but it did not provide the expected support for younger children in either their ability to respond to comprehension questions after watching the story enacted or their expression of trick content in their own reenactments. Interestingly, there was also a trend indicating that younger children found it easier to talk about the total trick content of the stories and the means by which the characters

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played their tricks, especially for the hard story, in the storytelling context. Children's ability to represent characters increased steadily with age, and was not affected by the narrative context that the story was produced in or story complexity. The same pattern was also true for children's use of general perspectival language as expressed in their retellings and reenactments. Children's ability to shift between the perspectives of the characters was affected by the context in which they told the story and story complexity. Children found it easier to shift between the perspectives of the characters when narrating the easy story in the role play context as compared to the storytelling context. A trend indicated that this was especially true for the youngest age group.

The second question addressed was whether children's ability to represent characters and take perspectives in the narratives they produced in the storytelling or role play context contributed to their first- and second-order theory of mind. In line with our predictions, children's ability to represent characters the role play context predicted their first-order theory of mind competence above and beyond the effects of language and working memory. Children's ability to shift between characters perspectives also contributed to first-order theory of mind abilities, albeit in a marginally significant way. However, only children's ability to shift between characters' perspectives in the storytelling context was a significant contributor of second-order theory of mind competence. The investigation of the reverse relationship, where theory of mind predicts perspectival aspects of children's stories, showed a unique contribution of first-order theory of mind to character representation only in the role play context.

In what follows the results will be discussed in further detail, before going onto a general discussion aimed to situate these findings within the larger theoretical and empirical context, consider the limitations as well as ideas for future directions.

The effect of mode of story presentation and story complexity on children's comprehension of the mentalistic contents of the story

Children's experience in narrative contexts in which they share either personal (Fivush & Nelson, 2006) or fictional stories (Nicolopoulou & Richner, 2007) have been shown to provide fertile grounds in which they practice and develop their understanding of self and others. Previous research has focused on social narrative contexts in the form of mother-child bookreading practices (e.g., Adrián et al., 2007; Symons et al., 2005) and small group bookreading interventions (e.g., Brockmeyer, 2009). These lines of work have shown that sharing fictional stories is a rich context in which mothers' talk emphasizes the mental landscape of the story (Sabbagh & Callanan, 1998), and that children benefit from participation in narrative practices in furthering their theory of mind understanding (Adrián et al., 2005).

In this study, we investigated a related question: children's understanding of mental content of the narratives. We further aimed to tap into the processes whereby children make meaning of mental context through manipulating narrative context. We compared children's understanding and expression of the mental content of the stories across storytelling and role play (i.e., reenactment) contexts. Based on literature that views role play as a privileged context in which children think about others' mental worlds and take perspectives with ease, we hypothesized that children would show better

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understanding of the story when they watched it being enacted as compared to when they listened to the story told with pictures. We further hypothesized that the pattern we expected to observe in story comprehension would generalize to story production as well as facilitate more talk about the deception in the stories in the role play context (i.e., reenactment) as compared to the storytelling context. These predictions were further qualified by expected age differences. Based on views that conceptualize the context of play as providing scaffolding to children to identify with or simulate character perspectives (Harris; 2000; Hobson, 1993, 2004; Nelson, 1996), we expected that younger children would find it easier to understand and express the trick content of the story in the role play context as compared to the storytelling context. The results painted a nuanced picture of children's understanding and expression of the trick content of the stories as affected by age, story complexity and narrative context.

When we analyzed the answers children gave in response to comprehension question about the tricks, we saw that children seemed to talk about different components of the trick. While children of all ages found it easier to talk about the end result of the trick, they had a harder time generating responses about how the trick was carried out. This observation led us to carry out separate analysis for the means, ends and total trick scores. The findings showed that, while there was no significant effect of narrative context and narrative complexity on total comprehension scores, or the inclusion of the end result of the trick in their explanations, there was a trend for an interaction of story context and story complexity for children's inclusion of the means through which the trick is played in the reenactment context as compared to the retelling context especially

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for the hard story. However the age group that benefitted significantly from role play context for the hard story was found to be the older children.

The finding that older children benefited from role play when answering questions about the hard story is at first glance contrary to our hypothesis. After all, the expectation was that younger children would benefit most from watching the story enacted with toys. This finding may have to do more with the complexity of our stories than with the rationale that lies behind this argument. In this study, we chose two fables that were rich in psychological content. These stories were based on the psychological interaction between two characters that successfully tricked one another. In what we termed the easy story, the tricks were physically explained such that the soup containers did not fit the stork's beak, or the fox's mouth. In the hard story, the crow tricked the fox through verbally manipulating his thoughts, making him believe that she did not want to be thrown into the bushes, where in reality she wanted the opposite. Both of these stories differ markedly from the narratives that have been used in narrative research with preschool children with regard to the number and complexity of characters (for an example see, Ukrainetz & Gillam, 2009). Considering that children start developing an understanding of the psychological interaction between two characters starting at 6 years of age, the hard story may have exceeded young children's socio-cognitive abilities to the extent that the scaffolding effect of the role play context could not be observed. It is noteworthy that older children who have started developing second-order theory of mind abilities could still make use of the role play context in understanding the hard story. This

finding implies that including role play in kindergarten and grade school classrooms to aid in the comprehension of narratives could prove useful.

The Effect of Mode of Story Production & Story Complexity on Children's Expression of the Mentalistic Content of the Story

We also looked at whether children spontaneously acknowledged that the characters played tricks, the means with which they carried out their tricks, and the end results of the tricks in their story productions in storytelling (i.e., retelling) and role play (i.e., reenactment). Contrary to our hypothesis, the results did not reveal differences due to story complexity, story context or their interaction. Interestingly the means indicated that younger children were better able to include the means of the trick and to talk about the tricks in general for the hard story in the retelling context.

This trend is contrary to our expectations, and displays a different pattern from the one we observed in children's understanding of the trick content of the stories as assessed by their responses to comprehension questions. The premise behind our hypothesis was theoretical (e.g., Hobson, 2002) that conceptualizes role play as a privileged medium in promoting identification with characters and perspective-taking. Based on this view, we hypothesized that the role play context would especially scaffold young children's narratives complementing their developing linguistic abilities. Several aspects of how we defined role play narratives are have implications for the nature of the findings.

First, in order to match and compare the narrative contexts of storytelling and role play, we chose a specific type of role play, story enactment with replica toys. In the current study, children were asked to reproduce a complicated story they heard once, by

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coordinating their verbalizations and actions. Reenactment of complex, unfamiliar stories seems to have been especially challenging for young children, who found it easier to include trick content in retelling without the distraction of toys and actions.

Second, we chose to look solely at children's verbalizations. Some researchers who have compared children's abilities to tell fictional narratives with toys have included children's actions as part of their narrative expression (e.g., Eckler & Weininger, 1989; Ilgaz & Aksu-Koc, 2005). These researchers have argued that children's competence in play narrative relies on action as well as linguistic expression. While this is a useful method to investigate narrative structure, we chose a more stringent view of narrative expression through an exclusive focus on children's verbalizations. This decision was made to equalize the two contexts for the sake of comparability, and it also allowed us to investigate children's representational construction of narrative perspectives. It may have been possible that especially younger children expressed the means or end results of the tricks solely through actions in the role play context. This type of analysis could be fruitful to better understand the scaffolding of action in role play contexts.

Another important point to note is that children's talk about the trick content of the story was coded through their inclusion of aspects of the trick (i.e., acknowledgement, means, or ends) without regard for whether children expressed a complete understanding of the trick. In other words, children could gain points through mentioning means or ends of the trick without having to explicitly mention that a trick was played. The production coding for the tricks than cannot be taken as a true reflection of children's understanding of the trick elements; rather children's responses to the comprehension questions provide

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a more accurate and stringent understanding in this respects. To put it in other words, while 4-yer-olds included more trick elements in their retellings of the hard story, this most probably reflects their ability to reproduce elements of the story rather than trick understanding.

Character Representation in Storytelling and Role-play Narratives

As discussed, theory of mind research investigates the development of children's abilities to understand persons as psychologically rich characters whose behaviors are governed by their mental states (e.g., see Carpendale & Lewis, 2006 for a useful review). This line of research has relied almost exclusively on comprehension tasks that use short scenarios and ask questions about how characters will behave given a particular situation. While this line of research has provided a preliminary understanding of how children make meaning of others' actions, there are still important avenues of research that need to be pursued before we can have a complete understanding of this aspect of social development in young children.

Those theorists who emphasize the importance of participation in perspectivally rich social and/or symbolic contexts and also question whether theory of mind tasks inform us fully about how children construe others' and function in a complex social world (e.g., Hutto, 2008; Nelson, 2009) highlight the importance of narrative contexts -in which they include play narratives- for developing an understanding of psychologically rich persons and the relations between them. There is surprisingly little work done on the psychological complexity of the characters children create in these two symbolic contexts. Nicolopoulou (2008a), points out that narrative research has maintained almost

an exclusive focus the structure of children's stories, to the neglect of investigating how children identify with characters in the stories they hear, and the developmental trajectories of character construction in childhood.

This study aimed to address the gap in research through looking at the psychological complexity of the characters children create in storytelling and role play contexts via the character representation typology Nicolopoulou & Richner (2007) have developed. Paralleling our knowledge of how children come to understand self and others, this typology construes children's representation of characters in 3 hierarchical categories of actor, agent, and person; and provides a theoretically and empirically informed avenue for looking at children's representation of characters across narrative contexts.

In this research we aimed to build on this new line of research through investigating whether children's representation of characters as assessed through this typology differed across age groups, story complexity, and narrative context. We expected that younger children would be better able to represent characters in the role play context, while older children's performance would be consistent across the two narrative contexts. Our results showed a steady increase in story complexity with age. However, we did not see any effects of story complexity or narrative context on children's representation of character. Furthermore there were no interactions of these variables on character representation. Taken together the results suggest that children's ability to represent characters is an ability that is quite consistent across different contexts and narratives that differ in complexity. It is important to note that we chose to assess

children's representation of characters in the retelling and reenactments of stories that were modeled by an adult. Research has shown that children's narrative productions are sensitive to the specific narrative elicitation method used (e.g., Bamberg, 1997). In this vein, whether children's portrayal of characters differs across narrative contexts for spontaneous stories is a remaining question.

Perspective-Shift in Storytelling and Role Play Narratives

There is growing theoretical (Martin, Sokol, & Elfers, 2008) and empirical interest (García-Pérez, et al., 2008; O'Neill et al, 2004) in children's ability to shift between different perspectives in narrative expression. Understanding self and other as persons with mental worlds is only one component of social understanding. In many social situations such as negotiation about disagreements, children and adults are required to go one step beyond understanding these perspectives, to shift between and coordinate these perspectives. Social situations, narratives (including children's own narratives Nicolopoulou, 2008b) and reminiscing about personal experiences are laden with multiple characters that sometimes are in conflict with one another. As explained earlier, we chose to use 2-character trickster fables in order to tap into children's abilities to coordinate multiple psychologically rich perspectives. We hypothesized that children would be better able to shift between perspectives with age, but importantly we expected that younger children would have an easier time shifting perspectives in the role play (i.e., reenactment) context as compared to the storytelling context, especially for the hard story.

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This hypothesis was partially confirmed. Older children were better able to shift perspectives in narratives as compared to younger children. And children overall seemed to find it easier to shift perspectives when telling the easy story. However, children were better able to shift between the perspectives of the characters for the easy story in the role play context, as compared to the storytelling context. This effect was qualified by an age difference where the youngest age group was better able to shift perspectives in the easy story when telling the story in the role play context as compared to the storytelling context. The results are partially in line with our hypothesis that young children would be better able to think of perspectives in role play, however they also indicate that for this scaffolding effect to take place, children should have a preliminary understanding of the story they are asked to reproduce.

General Perspectival Language in Storytelling and Role Play Narratives

Evaluatives are linguistic devices that convey a general perspective on events. Some evaluative categories may more directly express the subjective mental states and views of the characters (i.e., internalizes, character speech), while other categories can be used to express either the characters' or the narrator's points of view through modifying events, objects and mental states in terms of quality (e.g., modifiers) or severity (i.e., enrichment devices) or compare the actual events in the narrative with possible unrealized events (e.g., contrastives) (e.g., Labov & Waletzky, 1968; Bamberg & Damrad-Frye, 1991). Thus, evaluatives convey a narrators' expression of their own perspective as well as of those of the characters in the story.

Recently, Comay (2008) have parsed these elements into two categories of character perspective and audience perspective (equivalent to narrator's perspective). We found it hard to justify this classification, since it is sometimes challenging or even problematic to classify a particular evaluative as expressing one of these perspectives. For instance the statement "the crow thought the fox was sleeping, but she did not know he was hiding in the bushes" contains two internalizers (i.e., thought, know) and a contrastive (not). While the first of these internalizers seems to directly concern the crow's perspective, the second internalizer can be argued to give us an insight about the crow's state of mind from the narrator's stance. Afterall, the crow's ignorance can only be talked about from an outside perspective. Even more complicated is how we would classify the contrastive 'not', which can likewise be considered as belonging to the narrator's and to the crow's perspective. As illustrated with this example, we found it conceptually difficult to sort these categories as belonging to either the narrator or the characters and grouped all evaluative use under the broad category of general perspectival language.

We expected that children, especially younger children, would use more evaluatives in the role play context as compared to the storytelling context, based on research that suggests children's language use during pretend play is rich especially in expressive language (e.g., Pellegrini, 1985). This hypothesis was not confirmed. Older children used more evaluatives than younger children, and children overall used more evaluatives when telling the easy story. However, we did not find an effect of narrative context on children's stories told in the role play versus the storytelling context. A closer

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look at the means suggested that children seemed to use more evaluatives for the easy story in the role play condition. This finding again implies that children need to achieve a level understanding of the story they are asked to tell before they can use the role play realm as a context for rich expressive language. In this study, children were better able to understand aspects of the easy story which may have led them to use more evaluatives in the reenactment of this story.

One important consideration related to this point concerns the methodology of this study. We asked the children to reproduce stories that were already told to them by their audience (i.e., the experimenter). Children knew then that their audience already knew the story that they were narrating, and possibly many felt that the experimenter understood the story better than themselves. Children's use of expressive language may have been affected by this methodological issue, in that they may have been less compelled to use expressive language as compared to a situation in which they were asked to tell the story to a novice audience.

A relationship between character representation, perspective-taking and theory of mind

The rationale for this study was based on theoretical work that construes children's participation in multi-perspectival narrative contexts such as storytelling and role play as facilitating their theory of mind abilities (Harris, 2000; Hutto, 2008; Nelson, 2007, 2009). Furthermore, based on theoretical work that views role play as a privileged medium through which children can identify with characters (e.g., Hobson, 2004) and simulate their experiences (Harris, 2000) we expected that the effect of narrative on theory of mind would be stronger for the role play (reenactment) context.

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Correlations indicated that the psychological complexity of the characters children created in storytelling and role play contexts were significantly related to children's first-order theory of mind abilities, even after the effects of language and working memory were accounted for. The association between children's abilities to shift between perspectives in narratives and theory of mind was qualified by narrative context and complexity of theory of mind abilities. Shifting perspectives in storytelling was significantly related to children's second-order theory of mind abilities above and beyond language and working memory. A marginally significant relationship was also observed for the relationship between children's abilities to shift perspectives in the role play context and first-order theory of mind abilities. Children's use of general perspectival language in the two narrative contexts was not related to either first- or second-order abilities. These preliminary findings suggest that this new way of looking at the psychologically richness of the characters children create (Character Representation Typology) is not only conceptually but also empirically meaningful.

Second-order theory of mind abilities require that children coordinate different characters' subjective views about one another. The ability to shift among the perspectives of characters, which in this study was coded according to differentiation, coordination, and relation of characters, proved to be related to children's second-order theory of mind abilities especially in the storytelling context. This result seems to provide preliminary support for the view that being able to shift between perspectives and coordinate them is an important component of complex theory of mind abilities.

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Contrary to our expectations, the category of general perspectival language which broadly included both characters' and narrator's perspective was not found to correlate with first- or second-order theory of mind abilities, after controlling for effects of language and working memory. It is possible that the ability to use rich expressive language in narratives to elaborate the characters' and narrator's perspectives may be a psycholinguistic feature of these stories that is not intimately related to children's theory of mind abilities. Yet it is also possible that children's use of general perspectival language may be observed in contexts where they tell stories to novice listeners (e.g., spontaneous storytelling).

To test the directionality of the effect between narrative and theory of mind, we carried out several regression analyses that investigated whether the perspectival aspects of children's narratives produced in the storytelling or role play contexts predicted first- and second-order theory of mind competence above and beyond strong contributors such as language, and working memory abilities. These analyses showed that, while the perspectival aspects of children's narratives in the storytelling context did not uniquely predict first-order theory of mind abilities, children's representation of characters and shift perspectives (but not general perspectival language) in the role play context uniquely predicted their first-order theory of mind abilities. Furthermore, the reverse relationship in which theory of mind abilities predicted perspectival aspects of children's narrative production, was observed to be true only for character representation and perspective-shift in the role play context. This finding seems to provide some evidence

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for a concurrent bidirectional relationship between character representation and perspective shift in the role play context and first-order theory of mind abilities.

This finding provides some partial support for the theory that views role play as an arena in which children practice and develop their understanding of people as psychologically rich characters. We also found support for the alternative argument that children's theory of mind competence affects the psychological richness of the stories they tell. A question to ask is, why were these relationships observed only in the context of role play narratives? A potential limitation of the current study should be addressed here that can potentially explain the absence of this relationship for the storytelling (retelling) context. In this study, we chose to include stories with two psychologically rich characters. While these stories allowed us to investigate first- and second-order theory of mind understanding, they proved to be quite challenging for all children, including our oldest age group. In contrast to the stories used in this study, first-order theory of mind tasks involve stories that contain only one psychologically developed character (such as Maxi) and a secondary character who is represented mostly through his or her actions (Maxi's mother). It is possible that including stories that specifically resemble first-order theory of mind tasks in psychological complexity could allow us to track the nature of the relationship between narrative and theory of mind more fully.

The investigation of the relationship between the perspectival aspects of narratives and second-order theory of mind showed that children's ability to shift perspective in narratives told in the storytelling context made a unique contribution to their second-order theory of mind understanding. Perspective shift, as it was assessed in

this study, required that children differentiate, relate, and alternate between the points of view of the two characters, whereas character representation focused on the psychological complexity of single characters. While we analyzed the complexity of all story characters, children's highest character representation score was included as an expression of their abilities to represent psychologically rich characters. In other words, children's ability to simultaneously represent two psychologically rich characters was not assessed through this analysis. Based on this difference, it is perhaps not surprising that perspective-shift emerged as the only variable that made a unique contribution to second-order theory of mind abilities.

Another question is why we observed this relationship only for narratives told in the storytelling context. Nelson's (2005, 2007, 2009) views on narrative consciousness and third person reasoning provide some potential explanations. Nelson views socio-cognitive development as children's enculturation into a community in which narrative constitutes a mode of thought that allows its member to share as well as understand one another's points of view. According to Nelson, while the beginnings of narrative thought can be found in embodied forms of expression (such as pretend play), in its fully developed form narrative becomes a decontextualized mode of thought and expression that among other functions allows us to think and talk the psychological relationships between people other than the self (third persons). In other words, Nelson views embodied forms of narrative such as play narratives as contributing to children's understanding of others through identifying with them. She calls this first person perspective, since one understands another person's point of view through making that

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point of view his or her own (as in identification or simulation). According to Nelson, understanding the relationships among two or more people requires one to take a third-person point of view, which she argues is possible through decontextualized narratives. The fact that we observed the ability to shift perspectives between characters to be related to second-theory of mind, only in the storytelling context provides some preliminary support for this position.

Limitations and Future Directions

Several limitations of this study are worth noting. First, the sample size was relatively small to pick up some of the trends we observed especially looking at the interaction of these three variables and supply enough statistical power for the regression analyses. Secondly, age range included in the study is another limitation. The oldest children who participated in this study were young 6-year-olds. Most of these children had a preliminary understanding of second-order theory of mind tasks which may not have allowed us to investigate second-order theory of mind development in all its developmental complexity. A third limitation is the design of this study. The cross-sectional design allowed us to compare different age groups, as well as the relationship between perspectival aspects of narratives and theory of mind concurrently. However, without longitudinal designs or intervention studies in which the perspectival aspects of stories are carefully manipulated, it is not possible to discuss directionality of effect between narrative perspective-taking and theory of mind with confidence. This shortcoming was apparent to us in the preparation stages of the study, however the scarcity of empirical studies that show relationships between narrative perspective-taking

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and theory of mind led us to believe that a cross-sectional study that establishes the presence of the hypothesized relationship is necessary before committing to time- and resource-expansive designs.

This study is a first-step in comparing different components of children's perspective-taking abilities across contexts and further investigating whether narrative perspective-taking is uniquely related to theory of mind. In the course of this study, it became clear that both the easy and hard story were extremely difficult for young children which may have limited the scaffolding power of role play for these children. Further studies, should expand the set of stories used in this study to include simpler ones that resemble first-order theory of mind texts in psychological complexity.

In this study, we investigated the effects of narrative context through storytelling and role play (replica play with toys). For the sake comparability, we chose to structure children's narratives through having them reproduce two psychologically rich narratives. This method allowed us to compare perspective in these two different narrative contexts. Adding on to this study children's spontaneous narratives and their spontaneous play (whether solitary or social) should provide richer contexts in which these effects could be observed.

Some concluding remarks

This study aimed to contribute to the growing body of theoretical arguments that propose relationships between children's abilities to take perspectives in storytelling, role play, and their theory of mind abilities (Harris, 2000; Hobson, 2004, Hutto, 2009; Nelson,

2009). The lack of empirical studies that focus on perspective-taking in these contexts is possibly due to the difficulty of assessing narrative perspective-taking in ways that can provide useful clues in how children develop social understanding (theory of mind). Past research has looked at the use of mental state words and other types of evaluatives as an indication of children's perspectively relevant talk. We used this method, but more importantly also incorporated newly developed measures that target central components of theory of mind understanding. Nicolopoulou and Richner's (2007) character representation typology allowed us to investigate whether children's ability to represent psychologically rich characters whose mental states were coordinated with their behavior or reality, provided an especially relevant measure to look at children's first-order theory of mind abilities. We also adopted O'Neill and colleagues' (2004) perspective shift measure which focused on the ability to shift between different perspectives of the story characters at critical points in the narrative, which conceptually mirror one of the fundamental components of second- order theory of mind understanding that is the ability to coordinate the perspectives of multiple others.

Two important conclusions can be drawn from this study. Children's abilities to understand perspectival content, and shift between the perspectives of characters seem to vary with the amount of support narrative context provided. Specifically results suggested that, the context of storytelling and role play (in the form of reenactment) scaffolded children's perspectival abilities differently. An interesting trend was observed for older children benefitting from watching the enactment of a challenging narrative with implicit deception content in terms of understanding the mental content of the story. Younger

children could shift between characters perspectives more effectively when they reenacted the story with puppets (role play). This finding implies that the scaffolding that role play provides is a function of narrative complexity and age. Even 6-year-olds can benefit from the role play context in developing socio-cognitive abilities.

The second conclusion regards the perspectival aspects of children's narratives and their theory of mind abilities. This study showed that there was a simultaneous bidirectional relationship between the psychological richness of the story characters children created in role play and their ability to shift between the perspectives of characters and first-order theory of mind abilities even after the effects of strong mediators (language, working memory) were controlled for. Interestingly, second-order theory of mind abilities were uniquely predicted by children's ability to shift perspective in the storytelling context. This finding provides some preliminary support for the positions that view narrative as a mode of thought that enables children and adults to understand other persons' mental worlds.

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Table 1.

Distribution of tasks by testing sessions

Session 1	Session 2	Session 3
Narrative Retelling & Comprehension	**Narrative Re-enactment & Comprehension**	**First-order Theory of Mind** Unexpected Location Unexpected Contents Deception Task
Language CELF	**Working Memory** CELF-Sentence Recall	**Second-order Theory of Mind** Ambiguous Action Second-order theory of mind

Table 2.

Percentages (and number of cases) of Sample Demographic Characteristics by Age Group

Age Group	*4-year-olds (N=24)*	*5-year-olds (N=26)*	*6-year olds (N=24)*
Mean Age	4;1	4;11	6;0
SD	0;2	0;2	0;3
Range	[3;9-4;3]	[4;9-5;3]	[5;9-6;3]
Gender			
Boys	46% (N=11)	46% (N=12)	50% (N=12)
Girls	54% (N=13)	54% (N=14)	50% (N=12)
Race/Ethnicity			
White	37% (N= 9)	36% (N=12)	45% (N=11)
Black	13% (N=3)	4% (N=1)	13% (N=3)
Hispanic	29% (N=7)	19% (N=5)	21% (N=5)
Other or Mixed	21% (N=5)	31% (N=8)	21% (N=5)
Household Structure			
Single	38% (N=9)	27% (N=7)	42% (N=10)
2 Parents	50% (N=12)	65% (N=17)	33% (N=8)
Other	8% (N=2)	8% (N=2)	4% (N=1)
Missing	4% (N=1)	0	21% (N=5)
# Siblings			
0	50% (N=12)	23% (N=6)	29% (N=7)
1-2	42% (N=10)	73% (N=19)	46% (N=11)
3	8% (N=2)	4% (N=1)	4% (N=1)
Missing	0	0	21% (N=5)
Mother's Education			
≤ High school	38% (N=9)	31% (N=8)	25% (N=6)
Some collage	54% (N=13)	50%(N=13)	46% (N=11)
Graduate School	8% (N=2)	19% (N=5)	8% (N=2)
Missing	0	0	21% (N=5)
Family Income			
21,000 – 40,000	50% (N=12)	31% (N=8)	42% (N=10)
41,000 – 60,000	0	19% (N=5)	8% (N=2)
61,000 – 80,000	8% (N=2)	19% (N=5)	8% (N=2)
81,000 or more	29% (N=7)	15% (N=4)	21% (N=5)
Missing	13% (N=3)	15% (N=4)	21% (N=5)

Table 3

Descriptive Statistics for First- and Second-order Theory of Mind, and Control Variables

	4-year-olds (N=24)			5-year-olds (N=26)			6-year olds (N=24)		
	Mean	*SD*	*Range*	*Mean*	*SD*	*Range*	*Mean*	*SD*	*Range*
First-order ToM	.78	1	0-.2.75	1.85	1.01	0-3	2.74	.47	1.5-3
Second-Order ToM	.08	.41	0-2	.46	.86	0-3	1.75	1.48	0-4
Core Language Score	101.5	13.64	67-121	103.85	11.78	79-125	101.96	11.60	84-127
Working Memory	16.38	5.96	16-70	24.69	5.65	33-73	26.67	5.39	54-84

Table 4

Mean Comprehension Scores for Understanding Trick Content by Age, Story Complexity and Story Context

Story Presented in Storytelling Context

	Easy				Hard		
	Means	**Ends**	**Total**		**Means**	**Ends**	**Total**
4-year-olds	1.00	1.33	3.58		0	1.17	2.67
	(1.81)	(1.97)	(3.83)			(1.59)	(2.02)
5-year-olds	1.67	1.17	4.67		.71	1.43	3.86
	(1.67)	(1.59)	(2.02)		(.99)	(1.65)	(2.54)
6-year-olds	3.00	1.72	7.5		1.33	1.37	4.33
	(1.59)	(1.86)	(3.08)		(1.03)	(1.55)	(2.99)

Story Presented in Role Play Context

	Easy				Hard		
	Means	**Ends**	**Total**		**Means**	**Ends**	**Total**
4-year-olds	1.00	1.33	4.17		.33	.83	2.67
	(1.60)	(1.56)	(2.98)		(.78)	(1.03)	(1.4)
5-year-olds	1.57	1.86	5.29		1.00	1.33	4.00
	(1.79)	(1.99)	(2.58)		(1.04)	(1.30)	(2.00)
6-year-olds	2.50	1.79	6.50		2.67	1.39	6.42
	(1.93)	(1.79)	(3.42)		(.98)	(1.42)	(2.71)

Table 5

Mean Production Scores for Understanding Trick Content by Age, Story Complexity and Story Context

Retelling

	Easy				Hard		
	Means	**Ends**	**Total**		**Means**	**Ends**	**Total**
4-year-olds	1.67	1.83	4.08		2.00	2.67	4.92
	(1.87)	(1.80)	(2.68)		(1.71)	(1.30)	(2.87)
5-year-olds	2.33	2.67	5.25		2.00	2.77	5.23
	(1.67)	(1.78)	(2.05)		(1.15)	(1.54)	(2.31)
6-year-olds	3.00	3.50	7.25		2.50	3.83	7.00
	(1.35)	(.90)	(2.00)		(.90)	(.58)	(1.21)

Reenactment

	Easy				Hard		
	Means	**Ends**	**Total**		**Means**	**Ends**	**Total**
4-year-olds	1.50	2.00	3.83		.83	1.83	2.75
	(.83)	(1.91)	(3.13)		(1.03)	(1.91)	(2.60)
5-year-olds	2.15	3.69	6.61		1.67	2.50	4.67
	(1.72)	(.75)	(1.71)		(1.15)	(1.51)	(2.31)
6-year-olds	2.17	3.00	6.08		3.00	4.00	7.50
	(1.59)	(1.35)	(1.98)		(1.04)	(0)	(1.09)

Table 6

Mean Character Representation Scores by Age, Story Complexity and Story Context

Narrative Production in the Storytelling Context (Retelling)

	Character Representation		Perspective-Shift		General Perspectival Language	
	Easy Story	*Hard Story*	*Easy Story*	*Hard Story*	*Easy Story*	*Hard Story*
4 year olds	1.92 (1)	1.83 (1.01)	.5 (.5)	1 (.85)	5.42 (3.96)	4.67 (4.79)
5 year olds	2.33 (.49)	2.08 (.49)	1.25 (.62)	1.15 (.69)	6 (4.77)	3.69 (3.47)
6 year olds	2.58 (.71)	2.75 (.45)	1.67 (.65)	1.42 (.67)	9.42 (3.99)	6.17 (5.15)

Narrative Production in the Role Play Context (Reenactment)

	Easy Story	*Hard Story*	*Easy Story*	*Hard Story*	*Easy Story*	*Hard Story*
4 year olds	1.67 (1.07)	1.42 (1)	1.42 (.90)	.5 (.67)	6.33 (4.25)	2.33 (2.53)
5 year olds	2.14 (.86)	2.5 (.52)	1.64 (1.22)	1 (.6)	7.92 (3.4)	4.17 (1.99)
6 year olds	2.58 (.51)	2.75 (.45)	2.08 (.9)	1.17 (.39)	10.83 (6.35)	5.92 (3.23)

Table 7.

Partial Correlations between Perspectival Aspects of Children's Narrative Productions

and Theory of Mind Abilities Controlling for Language and Working Memory

	First-order theory of mind	**Second-order theory of mind**
	pr	*pr*
Storytelling Context		
Character Representation	.25*	-.06
Perspective-Shift	.17	.26*
General Persp. Language	.06	.12
Role Play Context		
Character Representation	.37**	.14
Perspective-Shift	.22^{t}	-.01
General Persp. Language	.18	.04

*p <.05, **p <.01, ***p <.001, ^{t}p <.10*

Table 8.

Summary of Regression Statistics Perspectival Aspects of Children's Narrative

*Productions in the **Storytelling (Retelling) Context** Predicting Children's Theory of Mind*

Abilities

Predictors	First-order theory of mind β	Second-order theory of mind β
Model 1:		
Language	.50***	.33*
Working Memory	.29**	.28^t
Model 2:		
Language	.45**	.35*
Working Memory	.25^t	.23
Character Representation	.15	.25
Perspective-Shift	.09	.27*
General Perspectival Language	-.10	.07

*p <.05, **p <.01, ***p <.001, ^{t}p <.10

Table 9.

Summary of Regression Statistics Perspectival Aspects of Children's Narrative

Productions in the **Role Play (Reenactment) Context** *Predicting Children's Theory of*

Mind Abilities

Predictors	First-order theory of mind β	Second-order theory of mind β
Model 1:		
Language	.50***	.33*
Working Memory	.29**	.28^t
Model 2:		
Language	.45**	.30^t
Working Memory	.19	.27
Character Representation	.21*	.07
Perspective-Shift	.18^t	-.01
General Perspectival Language	-.04	.00

*p <.05, **p <.01, ***p <.001, $^t p$ <.10*

Table 10

Summary of Regression Statistics First and Second-order Theory of Mind Predicting

*Character Representation and Perspective Shift in the **Role Play (Reenactment) Context***

Predictors	Character Representation In Reenactment β	Perspective-Shift In Reenactment β
Model 1:		
Language	.44**	-.02
Working Memory	.09	.41*
Model 2:		
Language	.23	-.21
Working Memory	-.02	.32^t
First-order Theory of Mind	.40*	.41*
Second-order Theory of Mind	.01	-.08

*p <.05, **p <.01, ***p <.001, $^t p$ <.10*

APPENDIX A

The Fox and the Stork (Easy Story)

Once upon a time there was a fox that lived next door to a stork. He wanted to play a trick on the Stork and make her look foolish. One day he invited the stork for dinner. The stork was very happy "Thanks for the invitation" she said. "I am very hungry". When the Stork went to the Fox's house she saw a flat dish full of soup. The soup smelled great. The Fox started to eat, but the stork couldn't have any soup. Her beak was too long and too thin to eat from this plate. The fox ate all the soup. The fox was happy since he had fooled the stork, and eaten the whole soup himself. The stork pretended to be happy, because she had a plan to make the fox look foolish. She invited the fox over for dinner for the next day. When the fox arrived at the Stork's house the next day, he was happy to smell delicious soup. The soup was in a tall jar with a narrow neck. It was easy for the Stork to drink the soup with her long beak. But the fox could not have any soup, because his mouth did not fit in the jar. The fox was very angry, "I couldn't eat any soup!" he said. The Stork was happy that she had taught the fox a lesson.
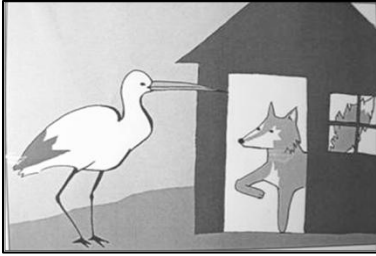
The Fox and the Crow (Hard Story)

Once upon a time there was a fox that lived on a farm. The Fox was angry at a Crow, because he discovered that the Crow was stealing his corn. The Fox wanted to catch the Crow and punish her. So he made a plan. Next morning, the Fox got up very early and hid behind a bush. He waited for the crow to come. Soon the crow came. The Crow looked around but did not see the Fox. The Crow thought that the fox was still sleeping, but did not know that he was hiding behind the bushes. When the Crow grabbed the corn, the Fox jumped out of the bushes and caught the Crow between his paws. The crow was scared. But she pretended to be happy since she wanted to trick the fox and get away. The Crow said to the Fox "I am a thief and you should punish me. There is only one thing I don't want. Please don't throw me into the bushes." The fox was planning to cook the Crow for lunch and eat her. But when he heard the crow's words he thought "Now I know what the crow hates most of all, and I will do just that to teach her a lesson". And so he said, "I <u>will</u> throw you into the bushes". And he angrily flung the crow right into the bushes. As soon as the Fox let the crow out from between his paws the crow spread her wings and quickly flew away. The crow was happy "I tricked you!" she yelled at the Fox, "Now, I'm free!"
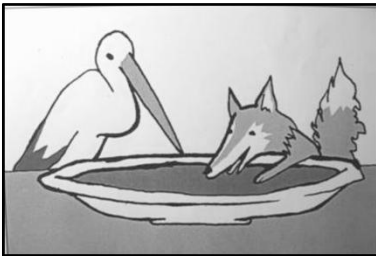
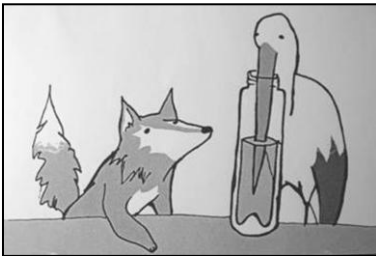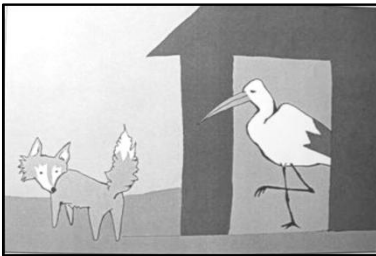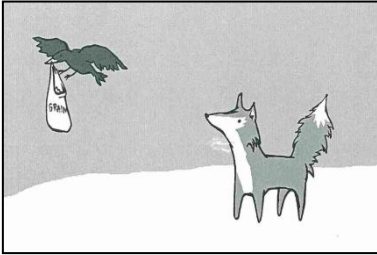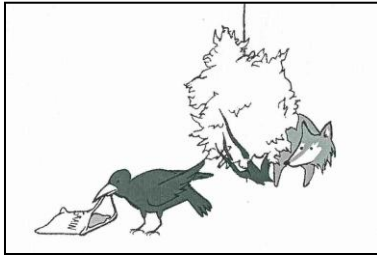**Pictures for 'The Fox and the Stork' (Easy Story)**

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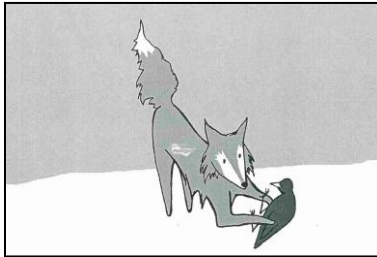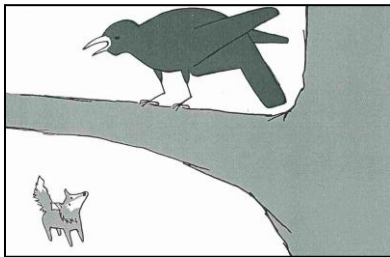
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Pictures for 'The Fox and the Crow (Hard Story)

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EDUCATION

2005- 2011   *PhD, Psychology, Lehigh University*
                    Thesis title: **Children's Representation of Narrative**
                    Perspectives in Storytelling and Pretense in Relation to Theory
                    of Mind

May 2004   *MA Psychology, Bogazici University (Turkey)*
                    Thesis title: **Episodic analysis of preschool children's prompt-**
                    elicited and direct-elicited narratives.

June 2000   *BA Guidance & Psychological Counseling   Bogazici University-*
                    Turkey

HONORS AND AWARDS

2005-2006   *Dean's Fellowship*
2005   *Conference Award- International Association for the Study of Child*
             Language (IASCL)
2008   *Dean's Summer Fellowship*

PUBLICATIONS

Ilgaz, H. & Aksu-Koc, A. (2005). *Episodic development in preschool children's play-*
        prompted and direct-elicited narratives. Cognitive Development, 20, 526-544.

Nicolopoulou, A., de Sá, A., Ilgaz, H., & Brockmeyer, C. (2009). Using the
        transformative power of play to educate hearts and minds. *Mind, Culture, and*
        Activity (for a Special Issue on "Playworlds of Children and Adults: Cross
        Cultural Perspectives on Play Pedagogy").

CONFERENCE PRESENTATIONS

Nicolopoulou, A., Ilgaz, H., de Sá, A., Brockmeyer, C. & Cortina, K. S. Using play and
        narrative to promote oral language and social competence in low-income
        preschoolers: A case study. Paper presented at American Psychological
        Association Annual Convention (Denver, CO, April 31-May 4, 2010).

Nicolopoulou, A., Ilgaz, H., Brockmeyer, C., Sa, A. B., & Cortina, K. S., (2009)
        Promoting Oral Language Skills of Low-Income Preschoolers Using a Narrative
        Activity. Poster presented at the Society for Research in Child Development

Biennial Meeting (Denver, Colorado: April 2-4, 2009)

Brockmeyer, C., Nicolopoulou, A., Sa, A. B., & Ilgaz, H. (2009) Finding the Best
Narrative Assessment Techniques for Preschoolers: Elicitation Methods
Compared Across Ages and Over Time. Poster presented at the Society for
Research in Child Development Biennial Meeting (Denver, Colorado: April 2-4,
2009)

Ilgaz, H., Nicolopoulou, A., De Sa, A., Brockmeyer, C., & Schnabel C. K., (2008).
Improving Emergent Literacy and Symbolic Play through a Storytelling and
Story-acting Activity. Paper presented at the Achieving Educational Goals
through Imagination Conference (Vancouver, Canada: July 9-11, 2008)

Nicolopoulou, A., Ilgaz, H, de Sá, A., Brockmeyer, C. & Schnabel-Cortina, K. Promoting
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the International Association of the Study of Child Language (Edinburgh,
Scotland: July 28-August 1, 2008).

Brockmeyer, C., Nicolopoulou, A., de Sá, A. & Ilgaz, A. Multitasking: The best way to
assess preschoolers narrative competence? Paper presented at the International
Association of the Study of Child Language (Edinburgh, Scotland: July 28-
August 1, 2008).

Nicolopoulou, A., Ilgaz, H., Sa, A., Brockmeyer, C, & Schnabel-Cortina, K. (2008).
Promoting narrative competence among low-income preschool children. Poster
presented at IASCL 2008 (Edinburg, Scotland: July 28- August 1, 2008)

Nicolopoulou, A., Brockmeyer, C., Schnabel-Cortina, K, Ilgaz, H. & de Sá, A. Using
play and narrative to promote low-income preschoolers' language, literacy, and
social competence. Paper presented at the American Educational Research
Association (New York, NY: March 24-28, 2008).

Nicolopoulou, A., de Sá, A., Ilgaz, H., Schnabel-Cortina, K., & Brockmeyer, C. Can
storytelling and story-acting by low-income preschoolers promote school
readiness. Poster presented at Ninth National Head Start's conference
(Washington, D.C., June 23-25, 2008).

Ilgaz, H. & Nicolopoulou, A. (2007). Effects of a Play- & Narrative-Based Intervention
Program
on the Pretend Play Abilities of Low-Income Preschool Children. Poster
presented at the Jean Piaget Conference (Amsterdam, the Netherlands: May 31-
June 2, 2007)

Ilgaz, H. (April, 2007). Effects of a Play & Narrative Intervention Program on Pretend Play Abilities of Preschool Children. 7th Annual Cross-University Collaborative Mentoring Conference.

Nicolopoulou, A & Ilgaz, H. (2006). The effect of genres on young children's development of main character (Baltimore, Maryland: 1- 3 June, 2006)

Ilgaz, H. & Aksu-Koc, A (2005). *Episodic development in preschool children's play-prompted and direct-elicited narratives.* Poster presented at the X. International Congress for the Study of Child Language (Berlin, Germany: July 25-29, 2005)