THE RELATION BETWEEN THEORY OF MIND
AND EMPATHY IN PRESCHOOL: THE CASE
OF FANTASY ORIENTATION

by

MELISSA ALYSE MCINNIS

ANSLEY TULLOS GILPIN, COMMITTEE CHAIR
FRANCES A. CONNERS
MATTHEW A. JARRETT
KRISTINA L. MCDONALD
JASON M. SCOFIELD

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ABSTRACT

The purpose of the present study was to explore the relations between theory of mind, empathy, and fantasy orientation in a typically developing preschool population. Preschool children between the ages of 3 and 5 ($N = 82$) completed a battery of theory of mind, empathy, and fantasy orientation measures. Teacher reports were also collected. As hypothesized, results indicated that 3-year-olds were likely to have neither theory of mind nor affective empathy, 4-year-olds were likely to have theory of mind only, and 5-year-olds were likely to have both, supporting the notion that theory mind precedes affective empathy. Additionally, results indicated that fantasy orientation predicted affective empathy above and beyond theory of mind ability. Corroboration was found for past research showing that fantasy orientation is comprised of different components. No support was found for the hypothesis that fantasy orientation moderates the relationship between theory of mind and empathy, nor for the hypothesis that it fosters faster and/or better development of the two constructs. Results are discussed in terms of their contribution to the present debate on determining whether pretend play plays a crucial, equifinal, or epiphenomenal role in child development.

*Keywords*: theory of mind, empathy, fantasy orientation, cognitive development
DEDICATION

This dissertation is dedicated to those who participated in the project and to those who offered advice, support, and encouragement along the way.
### LIST OF ABBREVIATIONS AND SYMBOLS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ANOVA</td>
<td>Analysis of variance</td>
</tr>
<tr>
<td>ANCOVA</td>
<td>Analysis of covariance</td>
</tr>
<tr>
<td>B</td>
<td>Unstandardized regression coefficient</td>
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<tr>
<td>EMP</td>
<td>Empathy Measure for Preschoolers</td>
</tr>
<tr>
<td>ERS</td>
<td>Empathic Responsiveness Scale</td>
</tr>
<tr>
<td>F</td>
<td>Fisher’s $F$ ratio: a ratio of two variances</td>
</tr>
<tr>
<td>$\Delta F$</td>
<td>$F$ change</td>
</tr>
<tr>
<td>GEM</td>
<td>Griffith Empathy Measure</td>
</tr>
<tr>
<td>$\kappa$</td>
<td>Cohen’s Kappa: a measure of interrater reliability</td>
</tr>
<tr>
<td>$M$</td>
<td>Mean: the sum of a set of measurements divided by the number of measurements in the set; arithmetic average</td>
</tr>
<tr>
<td>$N$</td>
<td>Sample size</td>
</tr>
<tr>
<td>$\eta^2_p$</td>
<td>Partial eta-squared: measure of the strength of a relationship</td>
</tr>
<tr>
<td>$p$</td>
<td>Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value</td>
</tr>
<tr>
<td>PPVT</td>
<td>Peabody Picture Vocabulary Test</td>
</tr>
<tr>
<td>$r$</td>
<td>Pearson product-moment correlation coefficient</td>
</tr>
<tr>
<td>$R^2$</td>
<td>Coefficient of determination: the proportion of variability in the data accounted by the statistical model</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>$R^2$ change</td>
</tr>
<tr>
<td>$SD$</td>
<td>Standard deviation</td>
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</table>
$SE$ Standard Error

t Computed value of $t$ test

< Less than

> Greater than

$\geq$ Greater than or equal to

= Equal to
ACKNOWLEDGMENTS

I would like to thank my advisor and committee chair, Ansley Gilpin, for providing me with incredible support, advice, and guidance throughout this dissertation project as well as throughout my undergraduate and graduate school careers. I first met Ansley in January 2007 and made one of the smartest decisions of my life when I chose to pursue her mentorship for my PhD in August 2010. She is an exceptional teacher, a caring advisor, and a wonderful friend. I would also like to thank the members of my dissertation committee—Fran Conners, Matt Jarrett, Kristina McDonald, and Jason Scofield—for their wonderful support and sage research advice.

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CONTENTS

ABSTRACT .................................................................................................................. ii
DEDICATION ............................................................................................................. iii
LIST OF ABBREVIATIONS AND SYMBOLS ...................................................... iv
ACKNOWLEDGMENTS .......................................................................................... vi
LIST OF TABLES .................................................................................................... ix
LIST OF FIGURES .................................................................................................. x
1. INTRODUCTION ................................................................................................. 1
   a. Distinguishing Between Theory of Mind and Empathy .............................. 1
   b. The Case of Fantasy Orientation ............................................................... 17
   c. Solving the Theory of Mind and Empathy Puzzle ................................. 25
   d. Purpose of the Present Study .................................................................... 26
2. METHODOLOGY .................................................................................................. 28
   a. Participants .................................................................................................. 28
   b. Child Measures ............................................................................................ 28
   c. Teacher Questionnaire ............................................................................... 38
   d. Procedure ...................................................................................................... 40
3. RESULTS ............................................................................................................... 43
   a. Control Variables ........................................................................................ 43
   b. Coding of Fantasy Orientation .................................................................. 44
c. Interrater Reliability .................................................................45

d. Descriptive Statistics ...............................................................46

e. Primary Aims ...........................................................................49

f. Teacher Reports ........................................................................56

4. DISCUSSION ............................................................................70

a. Primary Aim 1: Does theory of mind precede affective empathy? ....70

b. Primary Aim 2: Does fantasy orientation moderate the relationship between theory of mind and affective empathy? ..........72

c. Primary Aim 3: Does fantasy orientation foster faster and/or better development of theory of mind or affective empathy? ....74

d. Teacher Reports .......................................................................75

e. Limitations and Directions for Future Research .......................76

f. General Conclusions .................................................................77

REFERENCES ................................................................................79

APPENDICES ...............................................................................94
LIST OF TABLES

1. Order of Child Measures .................................................................41
2. Summary of Coding Scheme for Child Measures ..............................42
3. Numbers of High versus Low Fantasy Children by Age Group ..........44
4. Interrater Reliability Statistics ..........................................................45
5. Descriptive Statistics for Child Measures ........................................47
6. Correlations between Variables of Interest .......................................48
7. Theory of Mind Scale Performance by Age Group ............................49
8. Hierarchical Linear Regression Analysis Details ..............................55
9. Descriptive Statistics for Teacher Reports ........................................57
10. Correlations between Teacher Reports and Child Variables of Interest
    ........................................................................................................58
11. Correlations between Teacher Reports ............................................59
12. Mode Statistics for GEM and ERS Subscales ....................................63
LIST OF FIGURES

1. Histogram of Theory of Mind Scale Performance..........................51
2. Histogram of Average Affective Empathy Scores from the Empathy Measure for Preschoolers ...................................51
3. ANCOVA Results on Possible Combinations of Theory of Mind Ability and Affective Empathy.......................................53
4. Histogram of Average Cognitive Empathy Subscale Scores from the Griffith Empathy Measure for Teachers .........................61
5. Histogram of Average Perspective Taking Subscale Scores from the Empathic Responsiveness Scale for Teachers .....................61
6. Histogram of Average Affective Empathy Subscale Scores from the Griffith Empathy Measure for Teachers .............................62
7. Histogram of Average Empathic Concern Subscale Scores from the Empathic Responsiveness Scale for Teachers .....................62
8. Histogram of Teacher Reports of Fantasy Orientation.......................67
CHAPTER 1
INTRODUCTION

Two abilities that are critically important for social understanding (Bosacki & Astington, 1999; Chandler, 1987; Liddle & Nettle, 2006) and social competence (Bartsch & Estes, 1996; Davis, 1980, 1983; O’Connor & Hirsch, 1999) are the abilities to understand others’ mental states (i.e., theory of mind) and to share others’ emotions (i.e., empathy). Given that children must first be able to engage in some level of perspective taking in order to feel or share another’s emotion, it makes sense that children who have developed a theory of mind will demonstrate more empathic responses than their peers who have not yet developed a theory of mind. Despite this intuitive connection, very few studies explore this relation. Fantasy orientation, such as creating an imaginary companion or believing in fantastical beings, has been positively correlated with theory of mind understanding (Taylor & Carlson, 1997), sociability (Bouldin & Pratt, 1999; Gleason, 2004), and social competence (Mauro, 1991). Similarly, research has demonstrated a significant effect of thematic-fantasy play on empathy understanding (Saltz, Dixon, & Johnson, 1977; Saltz & Johnson, 1974). Thus, children who have high fantasy orientation might serve as an excellent population and lens through which to investigate the relation between theory of mind and empathy.

Distinguishing Between Theory of Mind and Empathy

Social cognition is a core element of children’s ability to get along with others and to see the world from different perspectives. Two important components of social cognition are the development of empathy—understanding and sharing another’s feelings—and the development
of a theory of mind—the ability to attribute mental states (e.g., knowledge, beliefs, desires) to oneself and others. The terms “theory of mind” and “empathy” are often conflated, and sometimes even assumed to be the same skill. At least two reasons exist for their conflation. First, researchers have generally assumed that a correlation exists between levels of these skills, suggesting that as theory of mind understanding increases, the likelihood of children empathizing with others increases (Batson et al., 2003; Eisenberg, Fabes, & Spinrad, 2006; Eisenberg et al., 1991; Feshbach, 1978). Second, research has argued similar prerequisites for the development of the two skills, including that both require an ability to distinguish between self-agency and other agency (Decety & Grezes, 2006). Regardless of these overlapping qualities, it is important to delineate the differences between the two terms. Recent research has endeavored to begin this process (Goldstein, 2010; Singer, 2009). Theory of mind simply refers to understanding what another is thinking or feeling, which, confusingly, is related to cognitive empathy. Empathy refers to both the identifying of the emotions of others (i.e., cognitive empathy), at least to some degree, and the sharing or matching of one’s emotions to another’s (i.e., affective empathy). Theory of mind includes cognitive empathy, but not affective empathy. Thus, theory of mind is a necessary, but not sufficient, component of empathy as a whole. Additionally, it has been documented that theory of mind can exist without affective empathy, specifically in the case of psychopaths (Mealey, 1995) and bullies (Bosacki & Astington, 1999). These individuals exhibit clear knowledge of victims’ thoughts and feelings, yet do not feel their suffering.

**Theory of Mind**

*Defining theory of mind.* Theory of mind has been extensively studied over the past several decades. In one of the seminal papers on the topic, Premack and Woodruff (1978) defined theory of mind as when the “individual imputes mental states to himself and others
(either to conspecifics or to other species as well). A system of inferences of this kind is properly viewed as a theory, first, because such states are not directly observable, and second, because the system can be used to make predictions, specifically about the behavior of other organisms” (p. 515). This definition implies that theory of mind is a single cognitive process or accomplishment. However, since this first publication, discussions of theory of mind have expanded its definition to include multiple concepts acquired over an extended series of developmental achievements (Wellman & Liu, 2004). As such, many researchers have also explored children’s understanding of intentions, emotions, desires, knowledge, and other mental states (e.g., Harris, Donnelly, Guz, & Pitt-Watson, 1986).

Theory of mind has also been more generally defined as “the ability to understand and reason about [one’s] own and others’ mental states (such as understanding that the mind can misrepresent reality)” (Birch & Bernstein, 2007, p. 99). Misrepresentation of reality can come in many forms, including hindsight bias and confusing appearance with reality, both of which have roots in theory of mind understanding. Birch and Bernstein (2007) proposed a link between hindsight bias in adults and limited theory of mind capacity in young children. Specifically, they argued that the two share a core cognitive restraint in that they both lead to biased perspective taking. Therefore, it is possible that some limitations in young children’s theory of mind capabilities originate from the same core cognitive component as hindsight bias. Other researchers have examined the various predecessors to theory of mind development, such as appearance-reality understanding (Banerjee, 1997). Early appearance-reality understanding (i.e., the concept that something can look different from what it actually is) has been linked to an understanding of emotion and the social rules directing emotional expression (Banerjee, 1997).
Theory of mind is often used as synonymous with cognitive empathy (Baron-Cohen & Wheelwright, 2004; Blair, 2005; Farrant, Devine, Maybery, & Fletcher, 2012; Roeyers, Buysse, Ponnet, & Pichal, 2001; Rogers, Dziobek, Hassenstab, Wolf, & Convit, 2007). Research has indicated a correlation between theory of mind (specifically representational change tasks) and emotion understanding (Taylor et al., 2004). It is also often used as synonymous with perspective taking (Maurage et al., 2011) and is often measured by perspective taking tasks (Flavell, 2004; Flavell, Green, & Flavell, 1986). Some researchers (Farrant, Devine, Maybery, & Fletcher, 2012) argue that theory of mind is simply a form of perspective taking, and that more research is needed on the expansion of theory of mind tasks to include a broader range of mental states, including emotional perspective taking. Emotional perspective taking tasks often involve prospective emotion (e.g., child judges how they as well as a friend would feel after various situations), belief emotion (e.g., child judges how a person will feel, given a belief that is mistaken), and real-apparent emotion (e.g., child judges that a person can feel one thing but display a different emotion). Research has found a significant relation between theory of mind and emotional perspective taking abilities (Denham, 1986), even when controlling for age and vocabulary (Harwood & Farrar, 2006). However, the theory of mind tasks included in such studies did not involve emotion. The present study addresses this concern by including a range of theory of mind measures (Wellman & Liu, 2004) that include emotional perspective taking (i.e., belief emotion, real-apparent emotion tasks).

Measuring theory of mind. One of the classic theory of mind tasks is the “Smarties” task (Perner, Leekam, & Wimmer, 1987). In this task, each participant is shown a box of Smarties candy that has pictures of Smarties on it. Variants of this task are often used in the literature, with researchers substituting other highly recognizable packages (e.g., Band-Aid box, crayon...
box, raisin box) for Smarties (Taylor & Carlson, 1997). After asking the child what he or she thinks is inside the box, the child is allowed to open the box and discover that it did not have the expected contents (i.e., pencils instead of Smarties). Children are then asked about their own former belief (e.g., “When you first saw this box, before we opened it, what did you think was inside it? Did you think there were pencils inside it or did you think there were Smarties inside it?”) (representational change question) and about the belief of someone else not present (e.g., “Your teacher has not looked inside this box. If she sees the box all close up like this, what will she think is inside it? Will she think there are pencils inside it or will she think there are Smarties inside it?”) (false belief question). Gopnik and Astington (1988) found that most 3-year-olds answered the representational change question incorrectly, but most 5-year-olds did not make this error. They argued that this indicates that children are unable to appreciate that past representations of an object can be different from their present representation of it. Overall, they found that children’s performance on the representational change question was poorer than their performance on the false belief question. After examining children’s performance across several various false belief tasks, they found that children consistently understand the false belief question before they understand the representational change question. Gopnik and Astington argued that this demonstrates unwillingness on the part of 3-year-old children to attribute errors to themselves rather than to other people and a motivation to conceal their own ignorance.

Another frequently used measure of theory of mind involves measuring whether children can distinguish between appearance and reality. Flavell et al. (1983) proposed that young children could express trouble with the appearance-reality distinction in two ways. They can either report only appearances (termed phenomenism) or only reality (termed intellectual realism). For example, children in their study were presented with a realistic-looking imitation egg. If the child answered
the appearance question (e.g., "How does this look to your eyes right now?") by saying "a stone that somebody painted white," this would be an example of intellectual realism—the child provided reality when asked for appearance. If the child answered the reality question (e.g., "What is this really, really?") by saying "egg," this would be an example of phenomenism—the child provided appearance when asked for reality. Results of their study showed that even 3-year-olds possessed some command of the appearance-reality distinction. Interestingly, children did not make consistently similar errors; that is, they made both phenomenism and intellectual realism errors equally frequently. This provides further evidence that the view of children as prone to accept surface level appearances is false. While it is evident that young children are still struggling with the appearance-reality distinction, their errors show that they can clearly go beyond the surface.

One of the more difficult theory of mind tasks involves real versus apparent emotion. Emotion is a unique mental state: not only does it have an invisible mental component, but also a visible physical component as well: facial expression. Further complicating comprehension of emotion is that a person can express an emotion that does not correspond to the emotion that they actually feel. Harris et al. (1986) conducted two experiments in which they examined children's understanding of this distinction between real and apparent emotion. In the first experiment, Harris et al. presented 6- and 10-year-olds with eight stories. Each story described a situation likely to elicit an emotion (positive or negative) and also a reason for the main character to conceal his or her emotion from the other characters. Results revealed that 6- and 10-year-olds successfully distinguished between real and apparent emotion. The second experiment examined whether 4-year-olds as well as 6-year-olds are able to grasp this distinction. Results showed that while 4-year-olds may not be as sophisticated as 6-year-olds, they recognize that emotions can involve the use of appearances to deceive others about one's actual feelings. For example, 6-year-olds correctly judged
that a character would feel intensely but appear more neutral for both positive and negative vignettes. Four-year-olds, however, only judged correctly the real and apparent feelings of characters in negative stories. In summary, results indicated that children as young as four can acknowledge that even though a person looks one way, they can feel another way and that this ability becomes more sophisticated with age.

**Theory of mind development.** Wellman and Liu (2004) proposed that, for typically developing children, the concepts underlying theory of mind develop in a predictable sequence. They provided evidence for this proposal in the form of a meta-analysis comparing different types of mental understandings that included 10 contrasts of belief versus false belief, 13 comparisons of desire versus belief, and 22 comparisons of knowledge versus false belief. They then used this analysis to inform their selection of scale tasks for a second study. Seventy-five children between the ages of 3 and 5 were presented seven, counterbalanced theory of mind tasks that varied in level of difficulty. Results revealed that the older children passed more tasks than the younger children and the tasks in a typical progression. The tasks, in order of difficulty, involved diverse desires, diverse beliefs, knowledge access, contents false belief, explicit false belief, belief emotion, and real-apparent emotion. In this developmental progression, most children, if they passed a later item, passed all earlier items as well. Ninety-five percent of children passed the diverse desires task, 84% passed the diverse beliefs tasks, 73% passed the knowledge access task, 59% passed the contents false belief task, 57% passed the explicit false belief task, 52% passed the belief emotion task, and 32% passed the real-apparent emotion task. Guttman (1944, 1950) and Rasch (1960) measurement model analyses, which are used to examine the validity of the ordering of items in a scale, confirmed this progression statistically.
Empathy

**Defining empathy.** Edward Titchener first coined the term *empathy* in 1909, as a translation of the German word *Einfühlung*, loosely meaning “to feel one’s way into” (Titchener, 1909; Wispe, 1987). Researchers have argued that empathy has a cognitive component (i.e., cognitive empathy) as well as an affective component (i.e., affective empathy) (Belacchi & Farina, 2012; Davis, 1980, 1983; Strayer, 1987a; Zahn-Waxler & Radke Yarrow, 1990).

Cognitive empathy involves interpreting the physical and psychological states of others (i.e., theory of mind), whereas affective empathy involves experiencing the state of others. A lot of empathy’s conflation with theory of mind stems from the overlap of definitions of cognitive empathy with definitions of theory of mind. In fact, some researchers have defined empathy as almost identical to theory of mind. For example, some have defined empathy as the ability to read and understand others’ emotions (Borke, 1971; Hogan, 1969). Definitions such as these, however, fail to encompass the important affective component of empathy. Similarly, definitions that only incorporate affective components (e.g., Bryant, 1982) fail to encompass the equally important cognitive component of empathy.

More appropriate definitions of empathy define it as the understanding and sharing and/or matching of others’ emotions (Baron-Cohen, et al., 2002; Decety, 2012; Eisenberg, 1986; Feshbach, 1978; Jolliffe & Farrington, 2006; Roeyers, Buysse, Ponnet, & Pichal, 2001). Eisenberg and Fabes (1998) provide a representative definition of empathy: “an affective response that stems from the apprehension or comprehension of another’s emotional state or condition, and that is identical or very similar to what the other person is feeling or would be expected to feel” (p. 702). Researchers seem to vary on the emphasis afforded to the cognitive and affective components. However, among those who focus predominately on the affective
component, there is a general agreement that some cognition must take place in order to truly be
considered empathy. To experience empathy, children must first identify and understand the
emotions of others—to some degree—and come to feel an emotion that is very similar. Thus, if a
child witnesses her friend feeling sad, understands at some level why her friend is feeling sad,
and consequently feels sad, she is experiencing empathy.

In approaching a clearer definition of empathy, it is also important to outline what it is
not. Although researchers have used these terms interchangeably (e.g., Batson, 1987), empathy is
not sympathy. Sympathy is a feeling of concern for another as a reaction to their emotional state
or condition (Eisenberg et al., 1990). Although sympathy is frequently an outcome of
empathizing with another’s condition or situation, the important distinguishing element between
sympathy and empathy is that of concern. That is, people who experience sympathy for another
person are experiencing concern for their well-being, they are not feeling the same emotion as
the other person.

**Measuring empathy.** Although a considerable amount of research has examined the
development of empathy, solid measures are still lacking, particularly for assessing empathy in
preschool children. This is likely a reflection of the extensive debate over several decades of how
to best define empathy. Miller and Eisenberg (1988) identified four methods typically used to
assess empathy in children: (1) picture/story methods, (2) experimental inductions, (3) self-report
questionnaires, and (4) facial/gestural reactions (also termed “somatic methods”) to others’
emotions seen via video or pictures/stories. Physiological methods (Eisenberg, Fabes, Schaller,
Carlo, & Miller, 1991) and parent/teacher questionnaires have also been used (Belacchi &
Farina, 2012; Dadds et al., 2008; Rieffe, Ketelaar, & Wiefferink, 2010). Of these methods,
picture/story methods are by far the most commonly used in studies of preschool children.
Experimental inductions, physiological methods, and facial/gestural indices are commonly used to measure empathy in relation to prosocial behavior (Eisenberg & Fabes, 1990; Eisenberg, Fabes, Miller, Shell, Shea, & May-Plumlee, 1990). Many of these tasks use videos, which due to copyright law and other various reasons, often cannot be shared among researchers. This is problematic in terms of replication. Common self-report measures include the Litvack-Miller et al. (1997) adaptation of the Interpersonal Reactivity Index (Davis, 1980, 1983) for children and Bryant’s (1982) Index of Empathy for Children and Adolescents. Although these questionnaires have been used extensively, their use in preschool populations has been criticized due to the developing verbal abilities of the children (Dadds et al., 2008). Two common picture/story measures of empathy in preschool children are discussed below, as well as a newer measure that aims to redress many of their shortcomings.

Feshbach and Roe (1968) developed a highly influential picture/story method, the Feshbach and Roe Affective Situations Test for Empathy (FASTE), designed to measure cognitive and affective empathy in young children (ages 4 through 8). This measure uses eight stories, accompanied by pictures of real children between the ages of 6 and 7 on projection slides, depicting two each of the following emotions: happiness, sadness, anger, and fear. After each story, the child is asked to tell the experimenter how they feel. The FASTE has fallen out of use in recent years. It has been criticized for its scoring procedure (Hoffman, 1982), construct validity (Chandler & Greenspan, 1978; Iannotti, 1975), and confound with experimenter gender (Eisenberg & Lennon, 1983; Lennon, Eisenberg, & Carroll, 1983; Strayer, 1987b). Additionally, the pictures used in the FASTE slides are now quite outdated (e.g., hair styles, clothing of children).
The Young Children’s Empathy Measure (YCEM; Poresky, 1990) is a very brief, picture/story measure of cognitive and affective empathy in children as young as 3 years old. Children are presented with one vignette (i.e., one short sentence) per emotion (i.e., happiness, sadness, anger, fear). For example, the vignette for sadness is, “A child has just lost its best friend” (Poresky, 1990, p. 933). For cognitive empathy, children are asked, “How does the child feel?” For affective empathy, children are asked, “How do you feel about this?” The vignettes can also be administered with a dog as the protagonist. The YCEM has been criticized for its extreme brevity and lack of pictures, with some researchers arguing that it is more of a measure of children’s ability to use their imagination (Sezov, 2002). Additionally, given that the short vignettes may not induce affect, children might be likely to respond according to how the experimenter expects them to (i.e., say that they felt an emotion), instead of simply saying they do not feel anything.

A newer measure, the Empathy Measure for Preschoolers (Sezov, 2002), is a storybook measure of cognitive and affective empathy that contains eight short three-part vignettes. Four vignettes involve a child as the protagonist, and four vignettes involve a dog as the protagonist. By including vignettes with a dog as the protagonist, this allows for the assessment of the generalizability of the empathy measure (Poresky, 1990). Similarly, its use of multiple emotion cues (i.e., facial expressions, story, situation) makes it more likely to arouse affect, unlike past measures that only used one cue (e.g., YCEM, Poresky, 1990). Demand characteristics (e.g., experimenter gender) that were problematic in previous measures (e.g., FASTE, Feshbach & Roe, 1968) are reduced by its storybook nature. That is, if children feel as if they are being read to—something that occurs frequently in the preschool classroom—they may become less aware of being measured.
Empathy development. Empathy begins to develop in infancy (Johnson, 2000) and has been argued to include the following behaviors (Baron-Cohen, Wheelwright, Lawson, Griffin, & Hill, 2002): judging whether something is an agent (Premack, 1990), judging whether another agent is looking at you (Baron-Cohen, 1994), judging whether an agent is expressing a basic emotion (Ekman, 1992), engaging in shared attention (e.g., gaze following, gestures) (Mundy & Crowson, 1997; Scaife & Bruner, 1975, Tomasello, 1988), expressing concern or basic empathy for another's distress or responding appropriately to another's emotions (Yirmiya, Sigman, Kasari, & Mundy, 1992), and judging an agent's goal or intention (Premack, 1990). Many empathic behaviors have also been documented throughout the childhood years (Baron-Cohen et al., 2002), including: attributing a range of mental states to oneself and others (e.g., pretense, deception) (Leslie & Keeble, 1987), recognizing and responding to complex (i.e., beyond basic) emotions (Harris, Johnson, Hutton, Andrews, & Cooke, 1989), connecting mental states to action (Tager-Flusberg, 1993), understanding, predicting, and manipulating others' behavior (Whiten, 1991), judging what behaviors are appropriate in different social contexts (Baron-Cohen et al., 2002), and "communicating an empathic understanding of another mind" (Baron-Cohen et al., 2002, p. 494).

In his discussion of the contribution of empathy to justice and moral judgment, Hoffman (1987) outlines four developmental levels of empathy:

1. Global Empathy (roughly 0 to 12 months): In this stage, Hoffman suggests empathy is more of an affective contagion that is largely involuntary on the part of the infant. It involves primary circular reactions and mimicry, such as an infant automatically crying in response to another infant’s cries. Because distress cues from others are sometimes confounded with the infant’s own feelings of displeasure, Hoffman argues
that infants sometimes act as though the troubling thing that happened to someone else also happened to themselves. He provides the following example to further illustrate global empathy: “An 11-month-old girl, on seeing a child fall and cry, looked as though she was about to cry herself, then put her thumb in her mouth and buried her head in her mother’s lap, as she does when she herself is hurt” (p. 51).

2. “Egocentric” Empathy (roughly 1 to 2½ years): Children at this level of empathy have now definitively achieved object permanence and have a gradually emerging sense of others as separate from the self. They may now realize that the other person, and not themselves, is in distress, but they still may not grasp the reasons behind the other child’s distress, and they may still confuse the other’s distress with their own.

Hoffman labels this stage as “egocentric” because children’s attempts to help often indicate confusion between what comforts the self and what comforts the other.

Hoffman’s example for this level is also useful to consider: “An 18-month-old boy fetched his own mother to comfort a crying friend although the friend’s mother was also present—a behavior that, although confused, is not entirely egocentric because it indicates that the child is responding with appropriate empathic affect” (p. 51).

3. Empathy For Another’s Feelings (roughly 2½ to 6 years): With the emergence of role-taking capability, children begin to possess the awareness that other people’s feelings can differ from their own feelings and that this difference is based on different needs and event interpretations (i.e., theory of mind). Additionally, as language develops and becomes more sophisticated, children are able to empathize with an increasingly wide
range of complex emotions. Importantly, Hoffman notes that as these developments occur, children become more responsive to cues about what other people are actually feeling. Support for this level can be found in studies documenting children’s ability by 3 to 4 years of age to recognize and respond empathically to happiness or sadness in others in various simple situations (Feshbach & Roe, 1968; Strayer, 1980).

4. Empathy For Another’s Life Condition (late childhood): In this level, children realize the difference between temporary and chronic experiences of pleasure and pain. For example, children’s empathic responses may intensify when they realize that another’s distress is chronic and not temporary. Hoffman relates this level to the development of moral and political beliefs concerning less fortunate others around the world, especially in adolescence.

Although there are many hypothesized precursors to empathy and empathy-like behaviors that emerge during infancy and toddlerhood (Baron-Cohen, Wheelwright, Lawson, Griffin, & Hill, 2002; Hoffman, 2000), Thompson (1987) argues that the capacity for empathy develops sometime toward the middle to end of the second year of life. Especially considering the developmental progression of empathy by Hoffman (1987), it seems reasonable to suggest that although children younger than age 3 can feel and display various emotions in response to others’ emotions, instances such as these do not reflect true affective empathy, because these children lack the cognitive insight into the perspective of others (i.e., theory of mind, cognitive empathy). This ability, as described above, typically does not fully develop until somewhere in the fourth year of life.
The relationship between cognitive and affective empathy. The relationship between cognitive and affective empathy is neither well understood nor well researched. Given that children arguably must first be able to engage in some level of perspective taking in order to feel or share another’s emotion, it could be that cognitive empathy (which is a component of theory of mind) developmentally precedes affective empathy. Despite this intuitive linkage, however, few studies explore this relation in preschool. Complicating the issue further, knowledge of this relationship is confounded by the conflation between theory of mind and empathy in past literature and by researchers who do not operationally define how they are using the terms.

Many researchers posit that cognitive empathy is a prerequisite for affective empathy (Batson, Fultz, & Schoenrade, 1987; Feshbach, 1987) and that the two constructs are directly related (Eisenberg & Strayer, 1987) or at least work together to produce the resulting empathic response (Hoffman, 2000). These researchers suggest that being able to recognize and understand others’ emotions (i.e., cognitive empathy) is a necessary, but not sufficient, component of affective empathy. For example, a child might have attained a theory of mind, but is not yet able to participate appropriately and share in others’ emotions. Similarly, some researchers suggest that as cognitive empathy skills increase, so do affective empathy skills (Eisenberg & Strayer, 1987). Others suggest they are separate but related (Davis, 1980; 1983). A recent neurocognitive report suggests that although theory of mind, motor empathy, and emotional empathy share a common region in the superior temporal cortex, their organization is at least partially dissociable (Blair, 2005). Still others suggest they are entirely distinct. Research in some atypical populations (e.g., euthymic bipolar disorder, borderline personality disorder) has found a specific deficit for cognitive empathy, but preserved affective empathy (Harari et al., 2010; Shamay-Tsoory et al., 2009), whereas research in other atypical populations (e.g.,
alcoholic individuals, children high in callous-unemotional traits and antisocial behavior) has found the inverse (Dadds et al., 2009; Maurage et al., 2011). This has led some researchers to argue that this pattern of double dissociation supports the argument that cognitive and affective empathy are distinct constructs (Maurage et al., 2011).

Research assessing this relationship in preschool children has found generally mixed results. Astington and Jenkins (1995) did not find a correlation in a typically developing preschool sample (age range = 3:1−5:5) between false belief scores and empathic concern, as measured by peer nominations. They argue that, especially given Dunn’s (1995) finding that children’s understandings of beliefs and their understandings of emotions were also not correlated (age range = 3:4−6:3), that perhaps researchers should not be expecting a relationship between cognitive and affective measures after all. Similarly, Hughes et al. (2000) and Massoff (2007) found no relation between theory of mind scores and children’s empathy scores (Hughes et al.: range = 3:6−4:6; Massoff: age range = 2:10−3:10). However, Harris et al. (1989) found that preschool children understand the relationship between beliefs and emotional reactions. Across three experiments, they found that children (age range = 3:4−7:4) increasingly recognized that emotional reactions are based upon a person’s beliefs about the state of the world, rather than the actual state of the world. In a more recent study, a significant interaction was found between cognitive and affective perspective taking in 5-year-old children, suggesting that children who were able to take the cognitive and emotional perspective of another demonstrated more empathic responses (Hinnant & O’Brien, 2007). Although these contradictory findings are likely based in part on the measures chosen and the relationships assessed, they are still concerning and warrant further research.
Research findings in adult populations are also rather mixed. Rogers et al. (2007) found moderate, but not significant, correlations between the cognitive and affective subscales of the Interpersonal Reactivity Index (Davis, 1983), a 28-item self-report measure of empathy in adults. They argued that this finding supports Davis’ (1980, 1983) initial claim that cognitive and affective empathy are separate, but related constructs. Other researchers have also failed to find significant correlations between cognitive and affective empathy measures (Smither, 1977), leading other researchers to surmise that they are not related at all (Gladstein, 1983). However, research from social psychology suggests that a person’s affect can alter their cognitive activities (Bower, 1983; Forgas & Bower, 1987; Snyder & White, 1982), or vice versa (Davis, Hull, Young, & Warren, 1987; Stotland, 1969). Moreover, in some research with adolescents and adults, a positive correlation has been found between cognitive perspective taking and empathy (Eisenberg et al., 1989; Eisenberg et al., 2001). Given these findings, it makes it hard to definitively conclude that there exists no relationship between cognitive and affective empathy. Taken together, the research on cognitive and affective empathy suggests a complicated and possibly conditional relationship, and unquestionably warrants further investigation and likely also better, agreed upon operational definitions.

**The Case of Fantasy Orientation**

Around the same time that children begin to develop theory of mind and empathy skills, they also begin to display preferences for certain types of play and cognitions that may directly or indirectly affect this development. People have often wondered whether it is acceptable or even normal for children to engage in different forms of pretense, like pretending to be a superhero or creating imaginary companions. Historically, highly fantastical children were mistakenly thought to be at risk for developing various mental illnesses. Some religious cultures today, such as the Mennonites, actively discourage pretend play (Woolley & Tullos, 2008).
Recent research has found, however, that discouraging pretend play does not stop it in its tracks. In fact, this discouragement often forces children to engage in pretend play in secret (Carlson, Taylor, & Levin, 1998; Woolley & Tullos, 2008). This has lead many researchers to believe that engaging in pretend play is not only fairly common, it might actually be an integral component of development (Lillard, Pinkham, & Smith, 2011; Woolley & Tullos, 2008).

**Pretend play and its development.** The ability to pretend is one of the most fascinating universal developments in childhood. Researchers have observed pretend play in a wide range of cultures and it seems to emerge like clockwork around 18-24 months of age, even when it is not modeled and even where it is discouraged (Friedman & Leslie, 2007; Lillard, Pinkham, & Smith, 2011; Onishi, Baillargeon, & Leslie, 2007; Walker-Andrews & Kahana-Kalman, 1999; Woolley & Tullos, 2008). Pretending involves an extraordinary cognitive feat. When children engage in pretense, they purposely thwart reality and make things other than what they truly are—even though they are just beginning to grasp reality itself. Unlike other innate behaviors, however, pretend play does not provide any clear survival function. Although the developing child needs to adapt to the world as it presently is, in pretend play he or she contrives the world to be as it is not.

Pretense is broadly defined as mental activities involving imagination, in which alternative identities are projected onto some external reality (Woolley & Tullos, 2008). Accordingly, pretend play is the behavioral manifestation of pretense and is usually for fun rather than for survival (Lillard, 1993). Lillard (1993, 2002) outlined six defining features of pretense that are to be considered necessary and sufficient for pretend play: (1) a pretender, (2) a reality that is clearly omnipresent, (3) a mental representation that is different from reality, (4) a projection of the mental representation onto reality, (5) awareness on the part of the pretend of
the previous components, and (6) the projection of the mental representation must be done intentionally.

Researchers have also classified a wide range of behaviors as pretend play. Five criteria for pretend play include (1) familiar activities may be performed in the absence of necessary material or a social context (e.g., pretending to pour milk into a glass from an empty carton), (2) activities may not be carried out to their logical outcome (e.g., pretending to leave for “work,” but child does not leave house and drive to the office), (3) inanimate objects may be treated as animate (e.g., offer tea to a doll), (4) a child may substitute an object or a gesture for another (e.g., a brush becomes a microphone), and (5) a child may carry out an activity usually performed by someone else (e.g., pretending to be an astronaut) (Fein, 1981; Singer & Singer, 1990; Woolley & Tullos, 2008). Finally, children have been shown to engage in the following forms of pretense: (1) self-pretense (e.g., pretending to be asleep), (2) object substitution (e.g., using a shoe as a telephone), (3) animation of objects (e.g., feeding a doll), (4) pretending about imaginary objects, supported by real objects or not (e.g., pretending to ride an invisible rollercoaster), (5) pretending to be or act like someone else (e.g., impersonating a superhero), and (6) pretending to have imaginary companions (Mitchell, 2002; Woolley & Tullos, 2008).

The earliest instances of pretending are typically found in the second year (Fein, 1981; Lillard, Pinkham, & Smith, 2011). A classic example can be seen in Piaget’s oldest daughter, Jacqueline, when she was 15 months old. Piaget (1962) described how Jacqueline put a cloth under her head, and “lay down on her side, laughing hard. She kept her eyes open, but blinked from time to time as if she were alluding to closed eyes. Finally, laughing more and more, she cried ‘Néné’ (Nono)” (p. 96; Obs. 64A). Here, it is clear that Jacqueline is pretending to sleep, with the cloth symbolizing her pillow. Researchers have found a considerable increase in
symbolic play between 15 and 18 months, with pretend play completely online by 24 months (Harris & Kavanaugh, 1993; Lillard, Pinkham, & Smith, 2011; Walker-Andrews & Kahana-Kalman, 1999). Two-year-olds are estimated to spend 5 to 20 percent of their playtime engaged in pretense activities and studies have indicated that they can even interpret and respond to others’ pretend acts in some circumstances (Lillard, Pinkham, & Smith, 2011).

**Defining fantasy orientation.** Research has found that some children are much more likely than others to engage in pretend/fantastical play and activities (e.g., pretending, having an imaginary friend) (Sharon & Woolley, 2004; Singer & Singer, 1990; Taylor, 1999). This tendency to think and play in a fantastical realm has been termed fantasy orientation (Pierucci, O’Brien, McInnis, Gilpin, & Barber, 2014; Sharon & Woolley, 2004; Singer & Singer, 1990; Taylor, 1999; Taylor, Cartwright, & Carlson, 1993). Fantasy orientation is viewed as a spectrum, with some people exhibiting greater preference for fantasy-based play/thoughts, and others exhibiting greater preference for more reality-based play/thoughts. Fantasy orientation seems to be a stable individual difference, measured as part of the openness personality trait (McCrae, 1987, 1993). Researchers have documented that adults with creative careers, such as fiction writers, were more likely than average to be fantasy-oriented children (Taylor, Hodges, & Kohányi, 2002). Research indicates that children who are fantasy-oriented are not confused about where to draw the boundary between what is real and what is not; rather, these children are more highly attuned to the reality/fantasy distinction precisely because of his or her play (Sharon & Woolley, 2004). This is most likely because these children have more practice in switching back and forth between fantasy and reality (Golomb & Kuersten, 1996; Sharon & Woolley, 2004; Singer & Singer, 1981).
Individual differences emerge when examining the level of fantasy orientation involved in children’s play (Taylor & Carlson, 1997). Field et al. (1982) defined reality play as the “use of objects for their intended function, such as using blocks to construct a tower or combing hair with a comb, or as involvement in a realistic activity, such as reading a book” (p. 504). Reality-oriented children have been shown to be more likely to engage in physical play activities (e.g., tag, baseball), tend to use real items in their play (e.g., blocks, racecars), and are more likely to choose to play games with stated rules (e.g., board games) (Taylor & Carlson, 1997). Field et al. (1982) defined fantasy play as “play that involves the attribution of an entirely new identity to an object or the portrayal of the qualities of a character by active representation” (p. 504). Fantasy-oriented children often create imaginary companions, have highly imaginative play (e.g., role-playing as a fairy or super hero), believe in many fantastical beings (e.g., Tooth Fairy, Santa Claus), create fantastical story items, and use symbolic or imaginary items in their pretend games (Singer & Singer, 1990; Taylor, 1999; Taylor & Carlson, 1997; Taylor, Cartwright, & Carlson, 1993).

**Measuring fantasy orientation.** Fantasy orientation measures for children are generally comprised of interviews assessing their willingness, interest, and proclivity to engage in pretend play and/or create imaginary companions, as well as their play preferences and activities, fantastical cognitions, and fantastical beliefs (Boerger, Tullos, & Woolley, 2009; Gilpin, 2013; Sharon & Woolley, 2004; Singer & Singer, 1990; Taylor, 1999; Taylor & Carlson, 1997; Woolley, Boerger, & Markman, 2004). It is common to receive reports of fantasy orientation from multiple informants. For example, children can report on their imaginary companions, as well as their play preferences and activities. Based on their observations of the child’s play and their interactions together, parents and teachers can provide information on children’s beliefs in
fantastical entities and provide a rating of their overall fantasy orientation. Researchers typically categorize children into low and high fantasy groups (Taylor & Carlson, 1997; Woolley, Boerger, & Markman, 2004) or create composite fantasy orientation scores across the various measures (Boerger, Tullos, & Woolley, 2009). More recent research has shown how different measures map onto distinct components of fantasy orientation, including impersonation and thoughts, parent/teacher ratings of overall fantasy orientation, imaginary companions, and toys and games (Pierucci, O’Brien, McInnis, Gilpin, & Barber, 2014).

**Fantasy orientation and theory of mind development.** Theories have emerged that attempt to explain how children are able to engage in pretense, and how they are able to recognize pretense in others. One important and widely accepted theory, the meta-representational theory, incorporates theory of mind into its explanation. This theory claims that children’s dual abilities to engage in solitary pretense and to recognize pretense in other people both depend upon the same innately given mental state concept, pretend. This mental state concept is derived from Leslie’s (1987, 1994) proposal that humans have an innate domain-specific processing stream that is adapted for understanding agency. In this system, a major component is the theory of mind mechanism (ToMM) that computes the metarepresentation, an agent-centered description of a situation. These agent-centered descriptions are what mentally connect agents to relevant information. One product of the ToMM is the ability to pretend. In understanding pretense, Leslie (1994) argues the ToMM utilizes the metarepresentation to identify four kinds of information: (1) an agent, (2) an informational relation (the attitude), (3) an aspect of the real situation, and (4) an “imaginary” situation (the description). Metarepresentations are organized around a basic set of mental state concepts (e.g., pretend, believe, desire), allow children to attend to these hidden states, and thus learn about them.
(Friedman & Leslie, 2007). Leslie (1994) argued that in order for a child to truly engage in and recognize pretense, the content of a pretense representation must be “decoupled” (e.g., a process of generating a metarepresentation from a primary, real world representation or context) and quarantined from real world representations.

Empirical research has further documented the connection between pretend play and theory of mind understanding. Cutting and Dunn (1999) found theory of mind scores to be correlated with cooperative pretend play turn taking. Some researchers have even used pretense tasks as a measure of early theory of mind understanding (Carlson, Mandell, & Williams, 2004). Taylor and Carlson (1997) presented strong evidence that there exists a relation between theory of mind development and pretend play in 4-year-old children. In their study, they examined the relationship between fantasy orientation and mental state knowledge in 152 3- and 4-year-old children. Children were interviewed about their pretend play (e.g., imaginary companions, pretending to be an animal, another person, or a machine or plane) and were also given a series of theory of mind tasks (e.g., appearance-reality, false belief, representational change, perspective taking). Children were categorized based on levels of fantasy into two groups: High and Low Fantasy. The High Fantasy group was composed of children who created an imaginary companion and children who impersonated a character. The Low Fantasy group was composed of children who neither had an imaginary companion nor impersonated a character. In the overall sample, results indicated significantly better theory of mind scores in the High Fantasy group than in the Low Fantasy group, even when controlling for age and verbal intelligence. Among the 4-year-olds, the High Fantasy group also had significantly better theory of mind scores than in the Low Fantasy group. Taylor and Carlson argued that these results substantiate the view that fantasy orientation is related to theory of mind development. Although with correlational data...
there are the issues of directionality and plausible third variables, they speculated that the theory that fantasy orientation encourages theory of mind development is the most parsimonious.

One potential explanation for these results is that fantasy-oriented children receive extra practice taking perspectives due to the frequent switching back and forth between the real and fantastical realms that is involved in pretend play (Golomb & Kuersten, 1996; Sharon & Woolley, 2004; Singer & Singer, 1981). Additionally, the more children engage in pretend play the more opportunities they have to discover that other people possess different mental states and perspectives than they themselves do. Singer and Singer (1981) found that fantasy-oriented children were more likely to get along well with others. Another possibility is that engaging in pretense promotes an earlier understanding that mental representations do not necessarily reflect reality. For example, fantasy often does not have a real life counterpart (e.g., a story about children who board a magical school bus that takes them on field trips to impossible locations) and children must learn to be conscious of this potential mismatch between fantasy and reality.

**Fantasy orientation and empathy development.** Very little research has been conducted on the relationship between fantasy orientation and empathy. What little research that has been conducted either explores the relationship between openness to experience (i.e., the personality trait that fantasy orientation maps onto) and empathy, or pretend play and empathy. Unfortunately, this research is rather mixed and often with older or special populations. For example, researchers have found positive correlations between openness to experience and empathy in students in helping professions (e.g., medical, social work, pedagogy students) (Magalhães, Costa, & Costa, 2012; Mlčák & Záškodná, 2008). One study designed to evaluate the effect of a thematic-play intervention on low socioeconomic status preschoolers found an increase in empathy scores associated with the intervention (Saltz & Johnson, 1974). This result
was replicated over three years (Saltz, Dixon, & Johnson, 1977). Cutting and Dunn (1999) found a correlation between affective perspective taking and cooperative pretend play turn taking. However, another study examining the effect of role-taking (i.e., assuming the perspective of one character in a story) and role-switching (i.e., switching between to a new character every 5 minutes) experiences on empathy, altruism, and aggression with 6- and 9-year-old boys found no relationship with empathy (Iannotti, 1978).

A great deal of research, however, has been conducted on the relationship between pretend play and emotion regulation. Emotion regulation refers to the ability to inhibit, enhance, maintain, and modulate emotional arousal to accomplish a goal (Eisenberg, Fabes, & Spinrad, 2006; Shields & Cicchetti, 1997). It has been documented to be a crucial component in the development of positive peer relationships and social competence (Eisenberg et al., 1993; Fabes et al., 1999). Many empirical studies indicate a positive relationship between pretend play and emotion regulation (Elias & Berk, 2002; Fantuzzo, Sekino, & Cohen, 2004; Galyer & Evans, 2001; Hoffman & Russ, 2012; Lemche et al., 2003; Lindsey & Colwell, 2003). As a potential explanation for this relationship, researchers have generally argued that pretend play (particularly sociodramatic play) affords children the opportunity to practice highly arousing emotional experiences and garner emotion regulation skills in a safe environment that permits (and often encourages) creative affect expressions (Bretherton, 1989; Fein, 1989; Hoffman & Russ, 2012; Howes & Matheson, 1992).

**Solving the Theory of Mind and Empathy Puzzle**

Theory of mind and empathy are clearly separate, but related constructs. However, research has not clearly defined the distinctions between them. Furthermore, although it has been theoretically described, whether cognitive empathy (i.e., a component of theory of mind) is
necessarily correlated with or precedes affective empathy (as measured by emotion sharing) has not been empirically documented in a typically developing preschool population—the time period during which these constructs develop. Perhaps a key to further differentiating these two overlapping constructs is examining their relationship with fantasy orientation. Children with high fantasy orientation have advanced theory of mind skills (Harris, 2000; Taylor & Carlson, 1997). Inherent in these skills is an ability to take the perspective of others, which has been speculated to be a precursor to empathy (Ames, Jenkins, Banaji, & Mitchell, 2008; Jackson, Brunet, Meltzoff, & Decety, 2006). If children with high fantasy orientation are better at perspective taking (i.e., theory of mind) than their low fantasy-oriented peers, then it makes intuitive sense that they might also be better at responding empathically. This would also support fantasy orientation as a facilitator for the development of both empathy and theory of mind. Additionally, this would contribute to the knowledge of the overlapping qualities of theory of mind and empathy and help establish their specific developmental progression in relation to one another.

**Purpose of the Present Study**

The purpose of the present study was to explore the relations between theory of mind, empathy, and fantasy orientation in a typically developing preschool population. There were three primary aims. The first aim was to examine the general relationship (i.e., correlation, developmental timeline) between theory of mind and affective empathy. Theory of mind ability might be related to the development of affective empathy skills. Alternatively, there could be no correlation between them, indicating that they are separate constructs that can exist without the other, as in atypical populations (Dadds et al., 2009; Harari et al., 2010; Maurage et al., 2011; Shamary-Tsoory et al., 2009; Smith, 2009). Additionally, given that children must first be able to
engage in some level of perspective taking in order to feel or share another’s emotion, it could be that theory of mind developmentally precedes affective empathy. The second aim was to examine the specific relationship between theory of mind and affective empathy along the fantasy orientation continuum. It was hypothesized that fantasy orientation moderates the relationship between theory of mind and affective empathy. Specifically, it was expected that a linear regression analysis of affective empathy scores would reveal an interaction between fantasy orientation and theory of mind, such that there would be less of a difference in empathy scores between children with low/high fantasy orientation who had low theory of mind ability, whereas there would be a greater difference in empathy scores for children with low/high fantasy orientation who had high theory of mind ability. The third aim was to examine the hypothesis that fantasy orientation fosters faster and/or better development of affective empathy. Specifically, it was expected that developmental trajectory analyses of affective empathy scores would reveal an interaction of fantasy orientation and age and that high fantasy-oriented children would perform better on measures of affective empathy than low fantasy oriented children.
CHAPTER 2

METHODOLOGY

Participants

Eighty-two typically developing children between the ages of 3 and 5 participated in this study, including 41 girls and 41 boys. This included 26 3-year-olds ($M = 43.2$ months; range: 36.0 – 47.9 months; 14 girls and 12 boys), 30 4-year-olds ($M = 54.8$ months; range: 49.0 – 59.8 months; 13 girls and 17 boys), and 26 5-year-olds ($M = 64.3$ months; range: 60.0 – 68.5; 14 girls and 12 boys). Eighty-five percent of the children were Caucasian, 7% were African American, 2% Hispanic, 6% were not specified. Children scoring below the $20^{th}$ percentile on the Peabody Picture Vocabulary Test were excluded from the analyses. This included three 3-year-olds, one 4-year-old, and three 5-year-olds. Children were recruited from local preschools and elementary schools in Tuscaloosa, Alabama, including the Child Development Research Center, the University Church of Christ Preschool, Imagination Station Child Development Center, and First Presbyterian Church Preschool. Study approval was obtained from the University of Alabama Institutional Review Board (Appendix A). The school director’s consent was obtained before entering a school (Appendix B). Parental consent, teacher consent, and child assent was also obtained (Appendices C, D, E). Only one teacher questionnaire was not returned (return rate of 98.8%).

Child Measures

**Fantasy orientation.** Children were administered 4 measures used to assess fantasy orientation based on their use in past research and their reliability and validity (Sharon &
These measures assess (1) the presence of imaginary companions, (2) impersonation activities the child engages in, (3) imaginative play predisposition, and (4) ability to engage in a pretend conversation with an imaginary partner.

**Imaginary companions.** The Imaginary Companion Interview (Taylor & Carlson, 1997; Taylor, Cartwright, & Carlson, 1993) consists of questions about pretend friend(s) and descriptions of these friends if they exist (i.e., name, toy versus totally pretend, gender, age, physical appearance, qualities the child likes, qualities the child does not like, where the companion lives, where the companion sleeps). Children who described an imaginary companion were briefly queried again about one week later, by the same experimenter, about the existence of any imaginary companions. The researcher said, “Remember we talked about pretend friends. Can you tell me more about that?” If the child did not respond or did not understand, the researcher rephrased more directly: “Could you tell me again—do you have a pretend friend?” If a third prompting is necessary, the researcher said, “You told me about your pretend X. Can you tell me more about him/her/it?”

If they indicated agreement on the consent form, parents were contacted by phone, e-mail, or message home via child’s school cubby for corroboration of children’s reports of having an imaginary companion. Additionally, teachers were asked about imaginary companions in the Fantasy Questionnaire (Gilpin, 2013) described below. Following similar conventions used by past researchers (Taylor, Cartwright, & Carlson, 1993; Taylor & Carlson, 1997; Gleason, 2004), children were coded as having an imaginary companion if: (1) they provided a name and description of the companion, named it again one week later, and a parent or teacher indicated that the description did not correspond to a real friend, (2) they provided a name and a
description of the companion and this companion was described independently or corroborated by a parent or teacher, or (3) they described different companions at each time and the parent indicated that they child has a lot of imaginary companions, or described a third imaginary companion. Children were coded as not having an imaginary companion if: (1) they indicated that they did not have an imaginary companion during the original interview, (2) their parent indicated that they did not play regularly with a stuffed animal or toy named as an imaginary companion, or (3) they indicated having an imaginary companion, but were unable to describe it (e.g., name, what it looks like). Children who were determined to have an imaginary companion received a score of 1. Children who were determined not to have an imaginary companion received a score of 0.

**Impersonation activities.** The Impersonation Interview (Taylor & Carlson, 1997) assesses children’s engagement in impersonation, a common pretend activity that is thought to be related to the creation of imaginary companions (Ames & Learned, 1946; Partington & Grant, 1984; Taylor & Carlson, 1997). Three questions assess whether the child ever pretends to be an animal, a different person, or something else unrelated to the self (e.g., machine, plane). These questions were scored by tallying the number of “yes” responses. This tally ranged from 0 to 3, with higher scores indicating higher fantasy orientation levels.

**Imaginative play predisposition.** Five questions from Singer’s Imaginative Play and Predisposition Interview (IPP; Singer, 1961; Singer & Singer, 1981, 1990; Singer & Streiner, 1966) that have been used to categorize children into low and high fantasy groups were administered. Children were asked (1) their favorite game, (2) what they like to do when they are by themselves, (3) whether they have a pretend friend (as described above), (4) whether they talk to themselves in bed at night, and (5) what they think about before they go to sleep. Children
were also asked four additional questions that frequently accompany Singer’s IPP in the literature (Taylor & Carlson, 1997). Children were asked (1) their favorite story, (2) their favorite toy, (3) their favorite television show, and (4) what they like to do when they are with other children. For open-ended questions, responses that involved clear fantastical elements (e.g., daydreams, playing house, superheroes) received a score of 2, responses involving representational, but not necessarily fantastical elements (e.g., stuffed animals, toy cars), received a score of 1, and responses involving only realistic toys or games (e.g., physical activities, games with rules) received a score of 0. For question 5, “yes” received a score of 2, “sometimes” received a score of 1, and “no” received a score of 0. Scores on this measure ranged from 0 to 16, with higher scores indicating higher fantasy orientation. Raters referred to a list of standardized responses used to code this task in previous research (Boerger, Tullos, & Woolley, 2009; Woolley, Boerger, & Markman, 2004; Gilpin, 2013). Two independent raters coded each child’s responses and a third rater resolved any disagreements.

Pretend phone conversation. The phone task (Tahiroglu, Mannering, & Taylor, 2011; Taylor, Sachet, Maring, & Mannering, 2013) was designed to test children’s ability to generate a pretend conversation with an imaginary partner. Children were first shown a toy phone and asked if they knew how to use it. No child indicated that they did not know how to use the phone. The experimenter then asked, “Can you pretend to call a friend you like to play with?” The experimenter then completed a coding checklist as the child proceeded with his or her phone call. Each child’s phone call was given a score out of 5, with one point each for (1) dialing a number or pushing buttons on the phone, (2) holding the phone to their ear, (3) talking on the phone, (4) appearing to listen to the other person, and (5) generating a conversation that went beyond stereotyped greetings (e.g., “Hi,” “How are you?”).
**Theory of mind.** Wellman and Liu (2004) gathered a set of theory of mind tasks from the literature that varied in terms of their conceptual difficulty. Their goal in assembling these tasks was to make them sequentially more difficult due to conceptual differences and not because of task-performance differences (e.g., one task requiring pointing, another requiring verbal judgments, yet another requiring written responses). Thus, Wellman and Liu (2004) slightly modified the task demands of the measures they included in their study in order to make them more comparable across formats, materials, and questions. The measures used in the seven-item Theory of Mind Scale by Wellman and Liu (2004) were followed as closely as possible in the present study. A description of each theory of mind task is provided below, ordered from easiest to hardest. These tasks took about 20 minutes to complete. Similar styles of toy figurines and pictures were used across tasks. Children received a score of 1 for passing a task, out of seven possible tasks. All children completed all tasks.

**Diverse desires.** In this task, children judged that two persons (the child versus someone else) had different desires about the same objects. This task is based on those used by Wellman and Woolley (1990) and Repacholi and Gopnik (1997). Children saw a toy figure of an adult and a sheet of paper with a carrot and cookie drawn on it. Children were told, “Here’s Mr. Jones. It’s snack time, so, Mr. Jones wants a snack to eat. Here are two different snacks: a carrot and a cookie.” Then children were asked, “Which snack would you like best? Would you like a carrot or a cookie best?” (Own-Desire Question). If the child chose the carrot, they were told: “Well, that’s a good choice, but Mr. Jones really likes cookies. He doesn’t like carrots. What he likes best are cookies.” If the child chose the cookie, they were told that Mr. Jones preferred carrots instead. Then children were asked, “So now it’s time to eat. Mr. Jones can only choose one snack, just one. Which snack will Mr. Jones choose? A carrot or a cookie?” (Target Question).
To be scored as correct, children had to answer the Own-Desire and Target questions with opposite answers.

*Diverse beliefs.* In this task, children judged that two persons (the child versus someone else) had different beliefs about the same object. This task is based on those used by Wellman and Bartsch (1989) and Wellman, Hollander, and Schult (1996). Children saw a toy figure of a girl and a sheet of paper with bushes and a garage drawn on it. The experimenter said, “Here’s Linda. Linda wants to find her cat. Her cat might be hiding in the bushes or it might be hiding in the garage.” Children were then asked, “Where do you think the cat is? In the bushes or in the garage?” (Own-Belief Question). If the child chose the bushes, they were told, “Well, that’s a good idea but Linda thinks her cat is in the garage. She thinks her cat is in the garage.” If the child chose the garage, they were told that Linda thinks her cat was in the bushes. Then children were asked, “So where will Linda look for her cat? In the bushes or in the garage?” (Target Question). To be scored as correct, children had to answer the Own-Belief and Target questions with opposite answers.

*Knowledge access.* In this task, children saw what was in a box and were asked to judge the knowledge of another person who did not see what was in the box. This task is based on those used by Pratt and Bryant (1990) and Pillow (1989). Children were shown a small box with a drawer that contained a small object (e.g., a plastic toy dog). The experimenter said, “Here’s a drawer. What do you think is inside the drawer?” Children could then provide any answer they chose or simply say that they did not know what is inside. The experimenter then opened the drawer and showed the child what it contained, saying, “Let’s see…it’s really a dog inside!” The experimenter then closed the drawer and asked the child again what it contained. Next, the experimenter brought out a toy figure of a girl and said, “Polly has never seen inside this drawer.
Now here comes Polly.” Then the experimenter asked, “So, does Polly know what is in the
drawer?” (Target Question) and “Did Polly see inside this drawer?” (Memory Question). To be
scored as correct, children had to answer both questions with “no.”

*Contents false belief.* In this task, children judged another person’s false belief about
what was in a distinctive container. This task is based on those used by Perner, Leekam, and
Wimmer (1987) and Wellman, Cross, and Watson (2001). The child was presented with a box
clearly labeled “Band-Aids.” The experimenter said, “Here’s a Band-Aid box. What do you think
is inside the Band-Aid box?” The child was allowed to open the box and discover that it did not
have the expected contents (i.e., stickers). The experimenter said, “Let’s see…it’s really stickers
inside!” The box was then closed and the child was asked again, “Okay, what is in the Band-Aid
box?” Then, the experimenter brought out a toy figure of a boy and said, “Peter has never ever
seen inside this Band-Aid box. Now here comes Peter.” The child was then asked, “So what does
Peter think is in the box? Band-Aids or stickers?” (Target Question) and “Did Peter see inside
this box?” (Memory Question). To be scored as correct, the child had to answer the Target
Question with “band-aids” and the Memory Question with “no.”

*Explicit false belief.* In this task, children judged how someone would search, given that
person’s mistaken belief. This task is based on those used by Wellman and Bartsch (1989) and
Siegal and Beattie (1991). Children were shown a toy figure of a boy and a sheet of paper with a
backpack and closet drawn on it. The experimenter said, “Here’s Scott. Scott wants to find his
mittens. His mittens might be in his backpack or they might be in the closet. *Really,* Scott’s
mittens are in his backpack. But Scott *thinks* his mittens are in the closet.” Children were then
asked, “So, where will Scott look for his mittens? In his backpack or in the closet?” (Target
Question) and “Where are Scott’s mittens really? In his backpack or in the closet?” (Reality
Question). To be scored as correct, children had to answer the Target Question with “closet” and the Reality Question with “backpack.”

**Belief emotion.** In this task, children judged how a person would feel, given a belief that was mistaken. This task is based on that used by Harris et al. (1989). Children were shown a toy figure of a boy and an individual-size Cheerios box with rocks inside. The experimenter said, “Here is a Cheerios box and here is Teddy. What do you think is inside the Cheerios box?” Then, the experimenter spoke for Teddy, saying “Teddy says, ‘Oh good, because I love Cheerios. Cheerios are my favorite snack. Now I’ll go play.’” The experimenter then placed Teddy out of sight. The child was then shown the contents of the Cheerios box, while the experimenter said, “Let’s see…there are really rocks inside and no Cheerios! There’s nothing but rocks.” The Cheerios box was then closed and the experimenter asked the child what was inside it. The experimenter then brought Teddy back and said, “Teddy has never ever seen inside this box. Now here comes Teddy. Teddy’s back and it’s snack time. Let’s give Teddy this box.” The experimenter then asked the child, “So, how does Teddy feel when he gets this box? Happy or sad?” (Target Question). The experimenter then opened the Cheerios box, let Teddy look inside, and asked the child, “How does Teddy feel after he looks inside the box? Happy or sad?” (Emotion-Control Question). To be scored as correct, the child had to answer the Target Question with “happy” and the Emotion-Control Question with “sad.”

**Real-apparent emotion.** In this task, children judged that a person could feel one thing but display a different emotion. This task is based on that used by Harris et al. (1986). Children were shown a sheet of paper with three faces on it (i.e., happy, neutral, sad) and the experimenter checked that the child recognizes these expressions. The child was then shown a cardboard cutout of a figure of the boy drawn from the back so that that boy’s facial expression could not
be seen. The experimenter said, “This story is about a boy. I’m going to ask you about how the boy really feels inside and how he looks on his face. He might really feel one way inside but look a different way on his face. Or, he might really feel the same way inside as he looks on his face. I want you to tell me how he really feels inside and how he looks on his face.” Then, the experimenter began the story: “This story is about Matt. Matt’s friends were playing together and telling jokes. One of the older children, Rosie, told a mean joke about Matt and everyone laughed. Everyone thought it was very funny, but not Matt. But, Matt didn’t want the other children to see how he felt about the joke, because they would call him a baby. So Matt tried to hide how he felt.” Then the experimenter check the child’s memory of the story, asking “What did the other children do when Rosie told a mean joke about Matt?” and “In the story, what would the other children do if they knew how Matt felt?” The experimenter then pointed to the three emotion pictures and asked, “So, how did Matt really feel, when everyone laughed?” Did he feel happy, sad, or okay? (Target-Feel Question) and “How did Matt try to look on his face, when everyone laughed? Did he look happy, sad, or okay?” (Target-Look Question). To be scored as correct, the child’s answer to the Target-Feel Question had to be more negative than his or her answer to the Target-Look Question (i.e., sad for Target-Feel and happy/okay for Target-Look, or okay for Target-Feel and happy for Target-Look).

**Empathy.** The Empathy Measure for Preschoolers (Sezov, 2002) is a storybook measure of cognitive and affective empathy that contains eight short three-part vignettes that can be administered in approximately five minutes. Four vignettes involve a child as the protagonist, and four vignettes involve a dog as the protagonist. The dog and child protagonists are not identifiable as male or female in name or appearance. The vignettes are designed to evoke happiness, sadness, anger, and fear, as done by previous measures of empathy in children.
Borke, 1971; Feschbach & Roe, 1968; Poresky, 1990). Each vignette contains three colored illustrations and is accompanied by short narrations. Cognitive empathy was assessed by asking children, “How does the child/dog feel about this?” Affective empathy was assessed by asking children, “How do you feel after hearing this?” Responses to these questions were coded on a scale of 0-4. A score of 4 was given for a response that exactly matched the emotion portrayed in the vignette. A score of 3 was given for responses that were similar to the emotion portrayed in the vignette, but did not exactly match it (e.g., “upset” instead of “angry”). A score of 2 was given for responses that named an emotion that was related, but not very similar, to the emotion portrayed in the vignette (e.g., “not good” instead of angry). A score of 1 was given if the child verbally responded to the question in some way and their response was not completely inappropriate or unrelated. For example, if the child began talking about the situation described in the vignette or talking about a similar situation that they had experienced themselves this received a score of 1. A score of 0 was given if the child did not respond or if the child responded inappropriately or talked about something entirely unrelated (e.g., talking about what they had during snack time or that it was really hot outside).

Mean empathy (cognitive, affective) scores were computed to represent the empathy of each child. The order of the vignettes and questions were counterbalanced. Internal consistency reliability for this measure is quite high (Spearman-Brown coefficient = .976) (Sezov, 2002). Appendix F provides descriptions of the scenes depicted in the vignettes. Appendix G provides information on the counterbalancing of the vignettes.

**Receptive vocabulary.** The Peabody Picture Vocabulary Test, Fourth Edition Form B (PPVT-4; Dunn & Dunn, 2007), which has a reliability rate of 90%, was administered as a measure of verbal intelligence. Children were presented with a colored book consisting of four
pictures on each page. The experimenter stated a vocabulary word that corresponded to one of the four pictures, and the child was asked to select by pointing the picture that best illustrated the word. Children were first tested on training items (e.g., picture of a baby, candy) and after passing the training items, the experimenter continued with the test items, which became progressively harder. There were a total of 19 sets with 12 items in each set, totaling a maximum of 228 items. Once a participant committed 8 or more errors within one set, the experimenter ended the test. The PPVT-4 scores were converted from raw scores into standardized scores ($M = 100, SD = 15$) based on criteria outlined in the Form B manual.

**Teacher Questionnaire**

**Fantasy orientation.** The Fantasy Orientation Questionnaire (Gilpin, 2013) measures children’s overall fantasy orientation. Questions address beliefs in fantastical figures, favorite books, games, television shows, and videogames, and overall interest in fantasy. Overall ratings of fantasy orientation were of interest to the present study. These ratings were scored on a 5-point scale, with 1 indicating “child is strongly interested in reality (e.g., play sports),” 2 indicating “child is mostly interested in reality, but sometimes interested in fantasy” 3 indicating “child is equally interested in fantastical and reality play/media,” 4 indicating “child is mostly interested in fantasy, but sometimes interested in reality,” and 5 indicating “child is strongly interested in fantasy (e.g., often engages in pretense, enjoys fantastical books, etc.).” See Appendix H.

**Empathy.** Two empathy questionnaires were distributed to teachers. The Empathic Responsiveness Scale (Belacchi & Farina, 2012) was designed for use with preschool teachers. The questionnaire, however, is quite short. In order to account for this, a second questionnaire was included. The Griffith Empathy Measure (Dadds et al., 2008) questionnaire was designed for
use with the parents of preschool children. Items on this questionnaire were not modified beyond substituting “this child” for “my child.”

**Empathic Responsiveness Scale (Belacchi & Farina, 2012).** This measure is a modified version of the Interpersonal Reactivity Index (IRI; Davis, 1980, 1983) for preschool teachers. It includes two subscales from the IRI: Perspective Taking and Empathic Concern. The Perspective Taking subscale evaluates cognitive ability to take others’ points of view (i.e., cognitive empathy) whereas the Empathic Concern subscale evaluates affective reactions to others’ distress (i.e., affective empathy). Teachers were asked to rate each of the eight items (four per subscale) using a 5-point Likert scale (i.e., 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always). Items 2, 5, and 6 were reverse coded. Cronbach’s α indices suggest good reliability for the global scale (.78–.85), and reasonable reliability for both subscales (Perspective Taking = .61–.74; Empathic Concern = .65–.78) (Belacchi & Farina, 2012). See Appendix I.

**Griffith Empathy Measure (Dadds et al., 2008).** This measure is a modified version of Bryant’s Index of Empathy for Children and Adolescents (Bryant, 1982). It includes two subscales: Cognitive Empathy and Affective Empathy. Teachers were asked to rate each of the 23 items using a 9-point Likert scale from strongly disagree (-4) to strongly agree (+4). Cronbach’s α indices suggest good reliability for the global scale (.81) and subscales (Cognitive = .62; Affective = .83) (Dadds et al., 2008). These reliability results are comparable to the original Bryant scale. The measure also has good test-retest reliability over one week ($r > .89$) and six month intervals ($r > .69$) and convergence with child reports ($r = .41$) (Dadds et al., 2008). See Appendix J.
Procedure

Children were interviewed during one session that lasted approximately 30-45 minutes. The PPVT was always administered last. Because the PPVT was being used as a control variable, and not a measure of primary interest, and because children often find the PPVT to be lengthy and rather boring, administering it last seemed to be optimal for the preschool-aged participants. All other child measures were administered in a fixed random order, across measures and within trials where possible. A fixed random order was used because past research suggests that the interpretation of correlations from designs with counterbalanced orders is ill-advised in individual differences research (Carlson & Moses, 2001)\(^1\). The Empathy Measure for Preschoolers was administered first, as a way to help the child become more comfortable with the experimenter during a task that was familiar to them (i.e., reading a story). For the theory of mind tasks, ordering was based on suggestions made by Wellman and Liu (2004). The diverse-desires task was presented first, to help children get acquainted to the process with a relatively easy to understand task. The hardest task—real-apparent emotion—appeared last. Table 1 outlines the order of tasks. Appendix K provides the actual response form used by trained experimenters during the sessions.

\(^{1}\) Carlson and Moses (2001) argued that a fixed order is “standard practice” in individual differences research. Unlike when drawing inferences about means, the correlations within each counterbalanced order do not fully constrain the overall correlation that is obtained once the data are collapsed across orders. This is because the nature of each correlation depends on the within-order scatterplots and their locations with respect to the within-order means. For more information, consult the authors’ footnote on page 1035.
Table 1

Order of Child Measures.

<table>
<thead>
<tr>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Empathy Measure for Preschoolers</td>
</tr>
<tr>
<td>2. Theory of Mind Scale</td>
</tr>
<tr>
<td>a. Diverse desires</td>
</tr>
<tr>
<td>b. Knowledge access</td>
</tr>
<tr>
<td>c. Belief emotion</td>
</tr>
<tr>
<td>d. Explicit false belief</td>
</tr>
<tr>
<td>e. Diverse beliefs</td>
</tr>
<tr>
<td>f. Contents false belief</td>
</tr>
<tr>
<td>g. Real-apparent emotion</td>
</tr>
<tr>
<td>3. Fantasy orientation measures</td>
</tr>
<tr>
<td>a. Imaginary Companion Interview</td>
</tr>
<tr>
<td>b. Impersonation activities</td>
</tr>
<tr>
<td>c. Imaginative play predisposition</td>
</tr>
<tr>
<td>d. Pretend phone conversation</td>
</tr>
<tr>
<td>4. PPVT</td>
</tr>
</tbody>
</table>

Interviews occurred in a private room in the preschool that was designated for testing. All sessions were videotaped for coding and interrater reliability purposes. Participants were seated next to the experimenter at a small table. After completing a session, research assistants accompanied participants back to their respective classrooms and passed out questionnaires to the teacher or an appropriate assistant. Children who described having an imaginary companion were queried again about one week later about the existence of any imaginary companions. This occurred in the classroom or on the playground, as allowed by the teacher during an appropriate time, and took about one minute. Children were provided with a small toy or sticker for participating, dependent upon school administrator or teacher consent. Two trained research assistants coded the interviews. A third coder resolved disagreements. See Table 2 for a coding scheme summary.
Table 2

*Summary of Coding Scheme for Child Measures.*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy Measure for Preschoolers</td>
<td>0 = No response, unrelated response</td>
</tr>
<tr>
<td></td>
<td>1 = Verbal response that is related</td>
</tr>
<tr>
<td></td>
<td>2 = Name related, but not similar, emotion</td>
</tr>
<tr>
<td></td>
<td>3 = Name similar emotion</td>
</tr>
<tr>
<td></td>
<td>4 = Name exact emotion</td>
</tr>
<tr>
<td>Theory of Mind Scale</td>
<td>0 = Fail</td>
</tr>
<tr>
<td></td>
<td>1 = Pass</td>
</tr>
<tr>
<td></td>
<td>Summary Score Range: 0–7</td>
</tr>
<tr>
<td>Imaginary Companion Interview</td>
<td>0 = Does not have an IC</td>
</tr>
<tr>
<td></td>
<td>1 = Does have an IC</td>
</tr>
<tr>
<td>Impersonation Activities</td>
<td>0 = Does not pretend to be an animal, etc.</td>
</tr>
<tr>
<td></td>
<td>1 = Does pretend to be an animal, etc.</td>
</tr>
<tr>
<td></td>
<td>Summary Score Range: 0–3</td>
</tr>
<tr>
<td>Imaginative Play Predisposition</td>
<td>0 = Reality-oriented response</td>
</tr>
<tr>
<td></td>
<td>1 = Representational or low fantasy response</td>
</tr>
<tr>
<td></td>
<td>2 = High fantasy response 0-16</td>
</tr>
<tr>
<td>Pretend Phone Conversation</td>
<td>1 point each for:</td>
</tr>
<tr>
<td></td>
<td>1. Pushes buttons on the phone</td>
</tr>
<tr>
<td></td>
<td>2. Holds receiver to ear</td>
</tr>
<tr>
<td></td>
<td>3. Talks on the phone</td>
</tr>
<tr>
<td></td>
<td>4. Appears to listen to the other person</td>
</tr>
<tr>
<td></td>
<td>5. Generates conversation beyond stereotyped</td>
</tr>
<tr>
<td></td>
<td>greetings</td>
</tr>
</tbody>
</table>
CHAPTER 3

RESULTS

First, a discussion of necessary control variables and their justification is presented. Secondly, a discussion of the two fantasy orientation coding methods is provided for clarification. Descriptive statistics are then presented, followed by the main analyses for the three primary aims. Finally, a discussion of teacher reports concludes the Results section.

Control Variables

Past research has documented that theory of mind develops with age (cf. Wellman & Liu, 2004). Past research has also documented that empathy develops with age (Baron-Cohen, Wheelwright, Lawson, Griffin, & Hill, 2002; Belacchi & Farina, 2012; Dadds et al., 2007; Feshbach, 1978; Hoffman, 1987) and that girls are generally more empathic (Belacchi & Farina, 2012; Dadds et al., 2007; Davis, 1996; Eisenberg & Fabes, 1998; Feshbach, 1978; Hoffman, 1977; Lennon & Eisenberg, 1987) and have better theory of mind skills (Baron-Cohen et al., 2001; Bryant, 1982; Happé, 1995; Joliffe & Farrington, 2006; Nicolopoulou & Richner, 2007) than boys. Additionally, research has indicated that fantasy play in preschoolers is correlated with receptive vocabulary as measured by the PPVT (Perlmutter & Pellegrini, 1987). Research has also indicated a link between language ability and theory of mind (Cutting & Dunn, 1999; Happé, 1995). Thus, in analyses where theory of mind or empathy is analyzed, age, gender, and receptive vocabulary were used as covariates. In analyses where fantasy orientation is analyzed, receptive vocabulary was used as a covariate.
**Coding of Fantasy Orientation**

For the primary analysis using regression, a composite fantasy orientation score was be computed by averaging z-scores from the following measures: (1) reports of imaginary companions, (2) impersonation activities, (3) imaginative play predisposition, (4) pretend phone conversations, (5) teacher reports of beliefs in fantasy figures, and (6) teacher ratings of overall fantasy orientation.

For the primary analysis using ANCOVA, children were categorized into low and high fantasy orientation groups based on criteria similar to that used by Woolley, Boerger, and Markman (2004). The following fantasy orientation measures were used: (1) reports of imaginary companions, (2) impersonation activities, (3) imaginative play predisposition, (4) pretend phone conversations, (5) teacher reports of beliefs in fantasy figures, and (6) teacher ratings of overall fantasy orientation. Based on the coding described in the methods and the distribution of the data, children were coded, for each of the 6 measures, as high or low fantasy. Children who were coded as high fantasy on at least 3 of the 6 measures were considered to be fantasy-oriented. All other children were considered to be reality-oriented (i.e., low fantasy orientation) (cf. Woolley, Boerger, & Markman, 2004). Using this coding scheme, 59 children were found to be low fantasy, and 23 children were found to be high fantasy. Table 3 provides patterns of high versus low fantasy by age.

Table 3

*Numbers of High versus Low Fantasy Children by Age Group.*

<table>
<thead>
<tr>
<th>Age Group</th>
<th>n Low Fantasy</th>
<th>n High Fantasy</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-year-olds</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>4-year-olds</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>5-year-olds</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>23</td>
</tr>
</tbody>
</table>
Interrater Reliability

As discussed in the Procedure section, two trained research assistants coded the interviews. A third coder resolved disagreements. Interrater reliability was calculated between the two coders using Cohen’s Kappa, κ. Cohen’s κ was used because it measures agreement between two coders and is known to be a more conservative test (Siegel & Castellan, 1988). Table 4 provides interrater reliability statistics for measures where coding reliability was of concern.

Table 4

*Interrater Reliability Statistics.*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Cohen’s κ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Empathy</td>
<td>$M = .82$</td>
</tr>
<tr>
<td></td>
<td>range: .73 – .89</td>
</tr>
<tr>
<td>Affective Empathy</td>
<td>$M = .80$</td>
</tr>
<tr>
<td></td>
<td>range: .70 – .98</td>
</tr>
<tr>
<td>Imaginary Companions</td>
<td>.80</td>
</tr>
</tbody>
</table>

*Singer’s Imaginative Play Predisposition Interview*

<table>
<thead>
<tr>
<th>Question</th>
<th>Cohen’s κ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorite Game</td>
<td>.825</td>
</tr>
<tr>
<td>Favorite Toy</td>
<td>.766</td>
</tr>
<tr>
<td>Favorite Story</td>
<td>.87</td>
</tr>
<tr>
<td>Favorite TV Show</td>
<td>.726</td>
</tr>
<tr>
<td>“What do you like to do when you are by yourself?”</td>
<td>.823</td>
</tr>
<tr>
<td>“What do you like to do when you are with other kids?”</td>
<td>.861</td>
</tr>
<tr>
<td>“What do you think about just before you go to sleep?”</td>
<td>.826</td>
</tr>
</tbody>
</table>
Descriptive Statistics

Table 5 provides means, standard deviations, and possible ranges for the child variables. PPVT standard scores were higher than expected, although still within 1 standard deviation of the mean of 100 (Dunn & Dunn, 2007; $M_{\text{expected}} = 100$, $SD_{\text{expected}} = 15$). The higher average score was likely due to the nature of the sample, which was taken largely from a University-associated preschool. Cognitive and Affective Empathy scores from the EMP were slightly higher overall than has been previously reported (Sezov, 2002). The developmental progression among the means on the Theory of Mind Scale was as expected (Wellman & Liu, 2004), though the performance between 4- and 5-year-olds was very similar. The reports of imaginary companions in this sample were much lower than has been reported previously (Taylor, 1999). This discrepancy could possibly be due to the more stringent criteria used for coding children as having an imaginary companion. Performance on the Impersonation Activities and Imaginative Play Predisposition tasks was similar to means reported in the literature (Taylor & Carlson, 1997). The overall mean score on the Pretend Phone Conversation task matched exactly to what has been reported previously (Taylor et al., 2013).
Table 5

*Descriptive Statistics for Child Measures.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age</th>
<th>M</th>
<th>SD</th>
<th>Possible Range</th>
<th>Actual Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPVT Standard Score (Receptive Vocabulary)</td>
<td>3-year-olds</td>
<td>111.19</td>
<td>10.29</td>
<td>20–160</td>
<td>89–138</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>114.80</td>
<td>9.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>106.85</td>
<td>10.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>111.13</td>
<td>10.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Empathy (EMP)</td>
<td>3-year-olds</td>
<td>3.04</td>
<td>.60</td>
<td>0–4</td>
<td>1–4</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>3.30</td>
<td>.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>3.32</td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>3.22</td>
<td>.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective Empathy (EMP)</td>
<td>3-year-olds</td>
<td>1.90</td>
<td>.77</td>
<td>0–4</td>
<td>.75–4</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>2.43</td>
<td>.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>2.82</td>
<td>.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>2.39</td>
<td>.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory of Mind Scale</td>
<td>3-year-olds</td>
<td>2.73</td>
<td>1.80</td>
<td>0–7</td>
<td>0–7</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>4.20</td>
<td>1.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>4.50</td>
<td>1.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>3.83</td>
<td>1.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imaginary Companions</td>
<td>3-year-olds</td>
<td>.04</td>
<td>.20</td>
<td>0–1</td>
<td>0–1</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>.13</td>
<td>.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>.19</td>
<td>.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>.12</td>
<td>.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impersonation Activities</td>
<td>3-year-olds</td>
<td>1.35</td>
<td>1.38</td>
<td>0–3</td>
<td>0–3</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>2.03</td>
<td>.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>2.15</td>
<td>.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>1.85</td>
<td>1.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imaginative Play Predisposition</td>
<td>3-year-olds</td>
<td>7.15</td>
<td>3.12</td>
<td>0–16</td>
<td>2–14</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>7.70</td>
<td>2.45</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>5-year-olds</td>
<td>7.35</td>
<td>2.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>7.42</td>
<td>2.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretend Phone Conversation</td>
<td>3-year-olds</td>
<td>3.15</td>
<td>1.62</td>
<td>0–5</td>
<td>0–5</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>3.17</td>
<td>1.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>2.77</td>
<td>1.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>3.04</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fantasy Orientation (Composite z-scores)</td>
<td>3-year-olds</td>
<td>-.19</td>
<td>.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>.12</td>
<td>.46</td>
<td></td>
<td>-.97–1.11</td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>.06</td>
<td>.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>.00</td>
<td>.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fantasy Orientation (Categorical)</td>
<td>3-year-olds</td>
<td>.15</td>
<td>.37</td>
<td>0–1</td>
<td>0–1</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>.27</td>
<td>.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>.42</td>
<td>.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>.28</td>
<td>.45</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6 provides correlations between age in months, receptive vocabulary, cognitive empathy, affective empathy, theory of mind ability, and fantasy orientation (composite z-scores). As expected, age in months was positively correlated with affective empathy and theory of mind ability. Unexpectedly, age in months was not correlated with cognitive empathy. Additionally, an unexpected marginal positive correlation was found between age in months and composite fantasy orientation scores. Unexpectedly, gender was not correlated with theory of mind ability, cognitive empathy, or affective empathy. As expected, receptive vocabulary was positively correlated with theory of mind ability. Contrary to expectations, however, it was not correlated with composite fantasy orientation scores. Although many of the expected relationships were not found, age, gender, and receptive vocabulary were still employed as covariates to conform to standard practice in the literature.

Table 6

*Correlations between Variables of Interest.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age in Months</td>
<td>-.018</td>
<td>-.110</td>
<td>.166</td>
<td>.384***</td>
<td>.493***</td>
<td>.218†</td>
</tr>
<tr>
<td>2. Gender</td>
<td>.031</td>
<td>-.137</td>
<td>-.134</td>
<td>-.113</td>
<td>.078</td>
<td></td>
</tr>
<tr>
<td>3. PPVT Standard Score (Receptive Vocabulary)</td>
<td></td>
<td></td>
<td>.203</td>
<td>.007</td>
<td>.305**</td>
<td>.147</td>
</tr>
<tr>
<td>4. Mean Cognitive Empathy (EMP)</td>
<td></td>
<td></td>
<td></td>
<td>.333**</td>
<td>.139</td>
<td>.184</td>
</tr>
<tr>
<td>5. Mean Affective Empathy (EMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.325**</td>
<td>.318**</td>
</tr>
<tr>
<td>6. Theory of Mind Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.154</td>
</tr>
<tr>
<td>7. Fantasy Orientation (Composite z-scores)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. † p = .052, ** p < .01, *** p < .001.
Finally, Table 7 provides the patterns of children’s performance on tasks in the Wellman and Liu (2004) Theory of Mind Scale (listed in order from hypothesized easiest to hypothesized most difficult). Generally, children’s performance on this scale was as expected. However, the 4-year-olds’ performance is very similar to the 5-year-olds’ performance. This could be partially due to the fact that the oldest 5-year-old in the sample was 68.5 months. Sixteen (62%) of the 26 5-year-olds sampled were younger than 66 months (i.e., 5 ½ years). It should also be noted that all of the 5-year-olds in this sample were from pre-kindergarten classrooms.

Table 7

*Theory of Mind Scale Performance by Age Group.*

<table>
<thead>
<tr>
<th>Task</th>
<th>Performance</th>
<th>3-year-olds</th>
<th>4-year-olds</th>
<th>5-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverse Desires</td>
<td>n Pass</td>
<td>16 (61.5%)</td>
<td>26 (86.7%)</td>
<td>24 (92.3%)</td>
</tr>
<tr>
<td></td>
<td>n Fail</td>
<td>10 (38.5%)</td>
<td>4 (13.3%)</td>
<td>2 (7.7%)</td>
</tr>
<tr>
<td>Diverse Beliefs</td>
<td>n Pass</td>
<td>16 (61.5%)</td>
<td>20 (66.7%)</td>
<td>20 (76.9%)</td>
</tr>
<tr>
<td></td>
<td>n Fail</td>
<td>10 (38.5%)</td>
<td>10 (33.3%)</td>
<td>6 (23.1%)</td>
</tr>
<tr>
<td>Knowledge Access</td>
<td>n Pass</td>
<td>11 (42.3%)</td>
<td>23 (76.7%)</td>
<td>21 (80.8%)</td>
</tr>
<tr>
<td></td>
<td>n Fail</td>
<td>15 (57.7%)</td>
<td>7 (23.3%)</td>
<td>5 (19.2%)</td>
</tr>
<tr>
<td>Contents False Belief</td>
<td>n Pass</td>
<td>4 (15.4%)</td>
<td>16 (53.3%)</td>
<td>15 (57.7%)</td>
</tr>
<tr>
<td></td>
<td>n Fail</td>
<td>22 (84.6%)</td>
<td>14 (46.7%)</td>
<td>11 (42.3%)</td>
</tr>
<tr>
<td>Explicit False Belief</td>
<td>n Pass</td>
<td>6 (23.1%)</td>
<td>10 (33.3%)</td>
<td>9 (34.6%)</td>
</tr>
<tr>
<td></td>
<td>n Fail</td>
<td>20 (76.9%)</td>
<td>20 (66.7%)</td>
<td>17 (65.4%)</td>
</tr>
<tr>
<td>Belief Emotion</td>
<td>n Pass</td>
<td>12 (46.2%)</td>
<td>19 (63.3%)</td>
<td>14 (53.8%)</td>
</tr>
<tr>
<td></td>
<td>n Fail</td>
<td>14 (53.8%)</td>
<td>11 (36.7%)</td>
<td>12 (46.2%)</td>
</tr>
<tr>
<td>Real-Apparent Emotion</td>
<td>n Pass</td>
<td>6 (23.1%)</td>
<td>12 (40%)</td>
<td>14 (53.8%)</td>
</tr>
<tr>
<td></td>
<td>n Fail</td>
<td>20 (76.9%)</td>
<td>18 (60%)</td>
<td>12 (46.2%)</td>
</tr>
</tbody>
</table>

*Note.* Tasks are listed in order of difficulty.

**Primary Aims**

**Aim 1.** To assess the general relationship between theory of mind and affective empathy, scores on these measures were correlated. As shown in Table 6, analyses revealed a significant positive correlation between children’s theory of mind scores (out of 7 tasks) and affective
empathy scores (Empathy Measure for Preschoolers), $r(82) = .325, p = .003$. As children’s theory of mind ability improved, children’s affective empathy scores also improved.

Additionally, a univariate ANOVA (Age: 3, 4, 5) was conducted on the possible combinations of children’s theory of mind and affective empathy abilities to determine if there was a significant pattern by age group. To create the combination dependent variable, the data was assessed via histograms to determine which children could be categorized as having a theory of mind or not, and which children could be categorized as having affective empathy or not. As shown in Figure 1, the mode theory of mind score was 4 (out of a possible 7). Forty-nine children scored a 4 or higher and 33 children scored below a 4. As shown in Figure 2, the mode affective empathy score was 3 (out of a possible 4). Twenty-nine children scored a 3 or higher, and 53 children scored below a 3. Children were categorized as having a theory of mind if they scored a 4 or higher (out of 7) on the Theory of Mind Scale. Children were categorized as having affective empathy if they scored a 3 or higher on overall affective empathy from the Empathy Measure for Preschoolers. Based on this coding, 20 children were found to have both theory of mind and affective empathy (code of 2), 27 were found to have only theory of mind (code of 1), and 26 were found to have neither (code of 0).
Nine children (five 4-year-olds and four 5-year-olds) had the unexpected pattern of being scored as having affective empathy but not theory of mind. Out of these nine children, six (66%) received a score of 3 out of 7 on the Theory of Mind Scale, a score just below the cut-off for
being coded as having achieved a theory of mind. These children likely could be considered as having a basic theory of mind. However, to be stringent, they were not categorized as having a theory of mind. A new category was not created for these nine children, as the low cell \( n \) would skew the analysis.

A univariate ANOVA (Age: 3, 4, 5) was conducted on the possible combinations of children’s theory of mind and affective empathy abilities, controlling for gender and receptive vocabulary. This revealed a main effect of age, \( F(2, 68) = 12.83, p < .001, \eta_p^2 = .274 \). As shown in Figure 3, pair-wise comparisons using a Bonferroni adjustment revealed significant differences between 3-year-olds (\( M = .49 \)) and 5-year-olds (\( M = 1.47 \)), \( p < .001 \), and between four-year-olds (\( M = .88 \)) and 5-year-olds, \( p = .014 \). Chance tests indicated that both the 3-year-olds’ performance, \( t(25) = 3.95, p = .0006 \), and 5-year-olds’ performance, \( t(21) = 3.26, p = .0038 \), differed significantly from chance. The performance of 4-year-olds did not differ significantly from chance, \( t(24) = 0.87, p = .3952 \). This analysis indicated that 3-year-olds tested as having neither theory of mind nor affective empathy, 4-year-olds tested as having theory of mind only, and 5-year-olds tested as having both.
**Aim 2.** To examine fantasy orientation as a potential moderator of the relationship between theory of mind and affective empathy, analyses were conducted following the guidelines discussed in Baron and Kenny (1986). Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression analysis was used to assess fantasy orientation as a moderator by inputting theory of mind ability and composite fantasy orientation scores on Step 2 and the interaction vector (theory of mind x fantasy orientation) on Step 3. Affective empathy scores (Empathy Measure for Preschoolers) were entered as the dependent variable. Despite a significant model for Step 3, the interaction vector was not significant, $F(6, 73) = 4.04, p = .002, B = .031, p = .798$, indicating that fantasy orientation did not moderate the relationship between theory of mind ability and affective empathy scores.

Hierarchical linear regression was then used to assess whether fantasy orientation predicted affective empathy above and beyond that predicted by theory of mind ability, given the significant correlation found between theory of mind and affective empathy in the previous Aim.

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**Note.** Means are adjusted for covariates (gender, receptive vocabulary).
analyses. Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression was conducted by inputting theory of mind ability on Step 2, composite fantasy orientation scores on Step 3, and affective empathy scores as the dependent variable. Results indicated that although theory of mind ability was not significant, composite fantasy orientation scores significantly predicted affective empathy scores. The model for Step 3 was significant, $F(5, 74) = 4.89, p = .001$, and this was a significant incremental change in the model from Step 2, $\Delta F(1, 74) = 6.11, p = .016$, $\Delta R^2 = .062$. The regression was run again, removing theory of mind from the analysis. Age in months, gender, and receptive vocabulary were entered as covariates on Step 1, and composite fantasy orientation scores were entered on Step 2. Composite fantasy orientation scores accounted for 6.2% of the variance in affective empathy scores, $\Delta F(1, 75) = 6.041, p = .016$, $\Delta R^2 = .062$. Overall, Model 2 explained 23.4% of the variance in affective empathy scores, $F(3, 76) = 6.73, p < .001$, $R^2 = .234$. This analysis indicated that even after accounting for age in months (as well as gender and receptive vocabulary), fantasy orientation remained a significant predictor of affective empathy scores. As fantasy orientation increased, affective empathy scores also increased. The final regression results are presented in Table 8.
Table 8

Hierarchical Linear Regression Analysis Details.

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor</th>
<th>B</th>
<th>SE B</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Constant</td>
<td>-0.071</td>
<td>1.303</td>
<td>-0.055</td>
<td>.956</td>
</tr>
<tr>
<td></td>
<td>Age in Months</td>
<td>0.041</td>
<td>0.011</td>
<td>3.752</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-0.254</td>
<td>0.196</td>
<td>-1.292</td>
<td>.200</td>
</tr>
<tr>
<td></td>
<td>PPVT Standard Score</td>
<td>0.003</td>
<td>0.010</td>
<td>0.341</td>
<td>.734</td>
</tr>
<tr>
<td>2</td>
<td>Constant</td>
<td>0.753</td>
<td>1.306</td>
<td>0.577</td>
<td>.566</td>
</tr>
<tr>
<td></td>
<td>Age in Months</td>
<td>0.035</td>
<td>0.011</td>
<td>3.183</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-0.294</td>
<td>0.191</td>
<td>-1.541</td>
<td>.127</td>
</tr>
<tr>
<td></td>
<td>PPVT Standard Score</td>
<td>-0.001</td>
<td>0.010</td>
<td>-0.080</td>
<td>.936</td>
</tr>
<tr>
<td></td>
<td>Composite Fantasy Orientation Score</td>
<td>0.483</td>
<td>0.196</td>
<td>2.458</td>
<td>.016</td>
</tr>
</tbody>
</table>

Note. The dependent variable was affective empathy scores (EMP).
Model 1: F(3, 76) = 5.28, p = .002, R² = .415.
Model 2: F(4, 75) = 5.73, p < .001, R² = .484, ΔR² = .062, ΔF(1, 75) = 6.04, p = .016.

Aim 3. To explore the hypothesis that fantasy orientation fosters faster development of both theory of mind and affective empathy, a cross-sectional developmental trajectory analysis was conducted following the guidelines discussed in Thomas et al. (2009). Two cross-sectional developmental trajectories were computed. The first ANCOVA included fantasy orientation as the factor (low, high), age in months, gender, and receptive vocabulary as covariates, fantasy orientation by age as the interaction term, and theory of mind ability as the dependent variable. The second ANCOVA included fantasy orientation as the factor (low, high), age in months, gender, and receptive vocabulary as covariates, fantasy orientation by age as the interaction term, and affective empathy scores as the dependent variable. For both analyses, a main effect of
fantasy orientation would indicate a difference in intercept between groups (low FO versus high FO), suggesting that the level of theory of mind understanding and affective empathy between the groups began at different starting points. For both analyses, a fantasy orientation by age interaction would indicate that empathy and theory of mind develop at different rates among low and high fantasy oriented children. Results indicated that for both ANCOVAs, there was no main effect of fantasy orientation, $F(1, 76) = .247, p = .621,$ and $F(1, 76) = .126, p = .724,$ respectively. Similarly, for both ANCOVAs, the interaction term was not significant, $F(1, 76) = .257, p = .614,$ and $F(1, 76) = .030, p = .862,$ respectively.

To explore the hypothesis that fantasy orientation fosters better development of both theory of mind and affective empathy, two one-way ANOVAs were conducted. The first ANOVA included fantasy orientation (low, high) as the factor and theory of mind scores as the dependent variable, with age in months, gender, and receptive vocabulary as covariates. The second ANOVA included fantasy orientation (low, high) as the factor and affective empathy scores as the dependent variable. For both analyses, a significant main effect of fantasy orientation, with higher mean scores in the high fantasy orientation group, would indicate that high fantasy children perform better on theory of mind and affective empathy tasks than do low fantasy children. Results indicated that, for both ANOVAS, there was no main effect of fantasy orientation, $F(1, 77) = .002, p = .963,$ ($M_{low} = 3.73, M_{high} = 4.09$) and $F(1, 77) = 2.06, p = .155,$ ($M_{low} = 2.26, M_{high} = 2.72$), respectively.

**Teacher Reports**

Table 9 provides means, standard deviations, and possible ranges for the teacher variables. Table 10 provides correlations between teacher reports and child variables.
Table 9

*Descriptive Statistics for Teacher Reports.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age</th>
<th>$M$</th>
<th>$SD$</th>
<th>Possible Range</th>
<th>Actual Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Empathy (GEM)</td>
<td>3-year-olds</td>
<td>.23</td>
<td>1.39</td>
<td>-4 – 4</td>
<td>-2.33 – 4.00</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>.41</td>
<td>1.23</td>
<td>-4 – 4</td>
<td>-2.33 – 4.00</td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>1.47</td>
<td>1.08</td>
<td>-4 – 4</td>
<td>-2.33 – 4.00</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>.69</td>
<td>1.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective Empathy (GEM)</td>
<td>3-year-olds</td>
<td>.15</td>
<td>1.23</td>
<td>-4 – 4</td>
<td>-2.44 – 2.44</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>.07</td>
<td>1.13</td>
<td>-4 – 4</td>
<td>-2.44 – 2.44</td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>.36</td>
<td>1.07</td>
<td>-4 – 4</td>
<td>-2.44 – 2.44</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>.19</td>
<td>1.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathic Concern (ERS)</td>
<td>3-year-olds</td>
<td>2.96</td>
<td>.84</td>
<td>1 – 5</td>
<td>2 – 4.75</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>3.18</td>
<td>.67</td>
<td>1 – 5</td>
<td>2 – 4.75</td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>3.79</td>
<td>.55</td>
<td>1 – 5</td>
<td>2 – 4.75</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>3.30</td>
<td>.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perspective Taking (ERS)</td>
<td>3-year-olds</td>
<td>2.61</td>
<td>.57</td>
<td>1 – 5</td>
<td>1 – 4.25</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>2.73</td>
<td>.55</td>
<td>1 – 5</td>
<td>1 – 4.25</td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>3.18</td>
<td>.68</td>
<td>1 – 5</td>
<td>1 – 4.25</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>2.84</td>
<td>.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fantasy Orientation (Teacher)</td>
<td>3-year-olds</td>
<td>2.88</td>
<td>.91</td>
<td>1 – 5</td>
<td>1 – 5</td>
</tr>
<tr>
<td></td>
<td>4-year-olds</td>
<td>3.17</td>
<td>.95</td>
<td>1 – 5</td>
<td>1 – 5</td>
</tr>
<tr>
<td></td>
<td>5-year-olds</td>
<td>2.92</td>
<td>.89</td>
<td>1 – 5</td>
<td>1 – 5</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>3.00</td>
<td>.92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 10

Correlations between Teacher Reports and Child Variables of Interest.

<table>
<thead>
<tr>
<th>Child Variable</th>
<th>Cognitive Empathy (GEM)</th>
<th>Affective Empathy (GEM)</th>
<th>Empathic Concern (ERS)</th>
<th>Perspective Taking (ERS)</th>
<th>Fantasy Orientation (Teacher)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in Months</td>
<td>.381***</td>
<td>.077</td>
<td>.434***</td>
<td>.366**</td>
<td>-.011</td>
</tr>
<tr>
<td>Gender</td>
<td>-.222*</td>
<td>-.170</td>
<td>-.120</td>
<td>-.272*</td>
<td>.078</td>
</tr>
<tr>
<td>PPVT Standard Score</td>
<td>-.112</td>
<td>.058</td>
<td>-.015</td>
<td>-.090</td>
<td>.147</td>
</tr>
<tr>
<td>Cognitive Empathy (EMP)</td>
<td>-.105</td>
<td>-.008</td>
<td>.191</td>
<td>.015</td>
<td>.248*</td>
</tr>
<tr>
<td>Affective Empathy (EMP)</td>
<td>.117</td>
<td>.068</td>
<td>.327**</td>
<td>.223*</td>
<td>.117</td>
</tr>
<tr>
<td>Theory of Mind Scale</td>
<td>.335**</td>
<td>.221*</td>
<td>.429***</td>
<td>.395***</td>
<td>.015</td>
</tr>
<tr>
<td>Composite Fantasy Orientation</td>
<td>-.195</td>
<td>-.112</td>
<td>.016</td>
<td>-.152</td>
<td>.476***</td>
</tr>
</tbody>
</table>

*Note. * p < .05, ** p < .01, *** p < .001.

Table 11 provides correlations between teacher reports. As expected, the Cognitive Empathy subscale of the Griffith Empathy Measure (GEM; Dadds et al., 2008) was positively correlated with the Perspective Taking subscale from the Empathic Responsiveness Scale (ERS; Belacchi & Farina, 2012), and the GEM Affective Empathy subscale was positively correlated with the ERS Empathic Concern subscale. Of interest, the GEM Cognitive Empathy subscale was negatively correlated with teacher reports of fantasy orientation, r = -.274, p < .05. As teacher ratings of cognitive empathy increased, teacher reports of fantasy orientation decreased.
Table 11

**Correlations between Teacher Reports.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cognitive Empathy (GEM)</td>
<td>.471***</td>
<td>.735***</td>
<td>.668***</td>
<td>-.274*</td>
</tr>
<tr>
<td>2. Affective Empathy (GEM)</td>
<td></td>
<td>.485***</td>
<td>.430***</td>
<td>-.004</td>
</tr>
<tr>
<td>3. Empathic Concern (ERS)</td>
<td></td>
<td></td>
<td>.700***</td>
<td>.166</td>
</tr>
<tr>
<td>4. Perspective Taking (ERS)</td>
<td></td>
<td></td>
<td></td>
<td>-.170</td>
</tr>
<tr>
<td>5. Fantasy Orientation (Teacher)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* *p* < .05, *** *p* < .001.

**Primary aims.** In the sections that follow, the three primary aims were investigated again, this time using teacher reports.

**Aim 1.** To assess the general relationship between theory of mind and affective empathy, scores on these measures from teacher reports were correlated. The teacher report analogues for theory of mind are the GEM Cognitive Empathy subscale and the ERS Perspective Taking subscale. The teacher report analogues for affective empathy are the GEM Affective Empathy subscale, and the ERS Empathic Concern subscale. As shown in Table 11, analyses revealed a significant positive correlation between both the Cognitive Empathy and Affective Empathy subscales of the GEM, \( r(81) = .471, p < .001 \). As teacher reports of cognitive empathy increased, teacher reports of affective empathy also increased. A significant positive correlation was also found between the Perspective Taking and Empathic Concern subscales of the ERS, \( r(81) = .70, p < .001 \). As teacher reports of perspective taking increased, teacher reports of empathic concern also increased.
Additionally, it had been planned to conduct a univariate ANOVA (Age: 3, 4, 5) on possible combinations of children’s theory of mind and affective empathy abilities (i.e., using the teacher report analogues mentioned above) to determine if there was a significant pattern by age group. However, it was not conducted for the reason explained below. To create the combination dependent variable, the data for all four subscales (GEM: Cognitive Empathy, Affective Empathy; ERS: Perspective Taking, Empathic Concern) was assessed via histograms (see Figures 4 through 7) to determine which children could be categorized as having a theory of mind or not, and which children could be categorized as having affective empathy or not. Table 12 present the modes for each of the four subscales, as well as the number of children who scored at the modes or higher and those who scored below the modes.

To be categorized as having theory of mind, children had to score at the mode or higher for both the GEM Cognitive Empathy and ERS Perspective Taking subscales. To be categorized as having affective empathy, children had to score at the mode or higher for both the GEM Affective Empathy and ERS Empathic Concern subscales. Based on this coding, 19 children were found to have both theory of mind and affective empathy, 11 were found to have only theory of mind, and 42 were found to have neither. Nine children had the unexpected pattern of being categorized as having affective empathy but not theory of mind. In the previous Aim 1 analysis with child data, this unexpected pattern was excluded from the ANOVA analysis because the low cell $n$ would have skewed the results. Comparing cell $ns$ in the case of the teacher data, the unexpected pattern ($n = 9$) was not considered to be a low cell $n$ and thus could not logically be excluded from the analyses. Thus, the ANOVA analysis was not conducted.
Figure 4

*Histogram of Average Cognitive Empathy Subscale Scores from the Griffith Empathy Measure for Teachers.*

![Histogram of Average Cognitive Empathy Subscale Scores](image)

Figure 5

*Histogram of Average Perspective Taking Subscale Scores from the Empathic Responsiveness Scale for Teachers.*

![Histogram of Average Perspective Taking Subscale Scores](image)
Figure 6

*Histogram of Average Affective Empathy Subscale Scores from the Griffith Empathy Measure for Teachers.*

![Histogram of Average Affective Empathy Subscale Scores](image)

Figure 7

*Histogram of Average Empathic Concern Subscale Scores from the Empathic Responsiveness Scale for Teachers.*

![Histogram of Average Empathic Concern Subscale Scores](image)
Table 12

*Mode Statistics for GEM and ERS Subscales.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mode</th>
<th>( n \geq \text{Mode} )</th>
<th>( n &lt; \text{Mode} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEM Cognitive Empathy</td>
<td>1.33</td>
<td>36</td>
<td>45</td>
</tr>
<tr>
<td>ERS Perspective Taking</td>
<td>3</td>
<td>41</td>
<td>40</td>
</tr>
<tr>
<td>GEM Affective Empathy</td>
<td>.11</td>
<td>49</td>
<td>33</td>
</tr>
<tr>
<td>ERS Empathic Concern</td>
<td>3.75</td>
<td>34</td>
<td>48</td>
</tr>
</tbody>
</table>

**Aim 2.** To examine fantasy orientation as a potential moderator of the relationship between theory of mind and affective empathy, analyses were conducted following the guidelines discussed in Baron and Kenny (1986). As mentioned previously, the teacher report analogues for theory of mind are the GEM Cognitive Empathy subscale, and the ERS Perspective Taking subscale. The teacher report analogues for affective empathy are the GEM Affective Empathy subscale, and the ERS Empathic Concern subscale. Four moderation analyses were performed: (1) using the GEM subscales and teacher reports of fantasy orientation, (2) using the ERS subscales and teacher reports of fantasy orientation, (3) using the GEM subscales and composite fantasy orientation scores, and (4) using the ERS subscales and composite fantasy orientation scores.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression analysis was used to assess fantasy orientation as a potential moderator by inputting the scores from the GEM Cognitive Empathy subscale and teacher reports of fantasy orientation on Step 2, and the interaction vector (GEM Cognitive Empathy subscale \( \times \) teacher reports of fantasy orientation) on Step 3. Scores from the GEM Affective Empathy subscale were entered as the dependent variable. Despite a significant model for Step 3, the interaction vector was not significant, \( F(6, 74) = 4.60, p = .001, B = .046, p = .615 \), indicating that teacher reports of
fantasy orientation did not moderate the relationship between scores on the GEM Cognitive 
Empathy and GEM Affective Empathy subscales.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear 
regression analysis was used to assess fantasy orientation as a potential moderator by inputting 
scores from the ERS Perspective Taking subscale and teacher reports of fantasy orientation on 
Step 2, and the interaction vector (ERS Perspective Taking subscale x teacher reports of fantasy 
orientation) on Step 3. Scores from the ERS Empathic Concern subscale were entered as the 
dependent variable. Despite a significant model for Step 3, the interaction vector was not 
significant, \(F(6, 74) = 14.02, p < .001, B = -.016, p = .852\), indicating that teacher reports of 
fantasy orientation did not moderate the relationship between scores on the ERS Perspective 
Taking and ERS Empathic Concern subscales.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear 
regression analysis was used to assess fantasy orientation as a potential moderator by inputting 
scores from the GEM Cognitive Empathy subscale and composite fantasy orientation scores on 
Step 2, and the interaction vector (GEM Cognitive Empathy subscale x composite fantasy 
orientation scores) on Step 3. Scores from the GEM Affective Empathy subscale were entered as the 
dependent variable. Despite a significant model for Step 3, the interaction vector was not 
significant, \(F(6, 72) = 4.47, p = .001, B = .101, p = .589\), indicating that composite fantasy 
orientation scores did not moderate the relationship between scores on the GEM Cognitive 
Empathy and GEM Affective Empathy subscales.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear 
regression analysis was used to assess fantasy orientation as a potential moderator by inputting 
scores from the ERS Perspective Taking subscale and composite fantasy orientation scores on
Step 2, and the interaction vector (ERS Perspective Taking subscale x composite fantasy orientation scores) on Step 3. Scores from the ERS Empathic Concern subscale were entered as the dependent variable. Despite a significant model for Step 3, the interaction vector was not significant, $F(6, 72) = 13.38, p < .001, \beta = .119, p = .526$, indicating that composite fantasy orientation scores did not moderate the relationship between scores on the ERS Perspective Taking and ERS Empathic Concern subscales.

As done in the previous Aim 2 child analyses, hierarchical linear regression was then used to assess whether fantasy orientation predicted affective empathy above and beyond that predicted by theory of mind ability, given the significant correlations between the GEM and ERS subscales. Four hierarchical linear regression analyses were performed: (1) using the GEM subscales and teacher reports of fantasy orientation, (2) using the ERS subscales and teacher reports of fantasy orientation, (3) using the GEM subscale and composite fantasy orientation scores, and (4) using the ERS subscales and composite fantasy orientation scores.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression analysis was conducted by inputting scores from the GEM Cognitive Empathy subscale on Step 2, and teacher reports of fantasy orientation on Step 3. Scores from the GEM Affective Empathy subscale were entered as the dependent variable. Despite a significant model for Step 3, the fantasy orientation coefficient was not significant, $F(5, 75) = 5.53, p < .001, \beta = .202, p = .151$, indicating that teacher reports of fantasy orientation did not predict GEM Affective Empathy scores above and beyond that predicted by GEM Cognitive Empathy scores.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression analysis was conducted by inputting scores from the ERS Perspective Taking subscale on Step 2, and teacher reports of fantasy orientation on Step 3. Scores from the ERS Empathic Concern subscale were entered as the dependent variable. Despite a significant model for Step 3, the interaction vector was not significant, $F(6, 72) = 13.38, p < .001, \beta = .119, p = .526$, indicating that composite fantasy orientation scores did not moderate the relationship between scores on the ERS Perspective Taking and ERS Empathic Concern subscales.

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Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression analysis was conducted by inputting scores from the GEM Cognitive Empathy subscale on Step 2, and teacher reports of fantasy orientation on Step 3. Scores from the GEM Affective Empathy subscale were entered as the dependent variable. Despite a significant model for Step 3, the fantasy orientation coefficient was not significant, $F(5, 75) = 5.53, p < .001, \beta = .202, p = .151$, indicating that teacher reports of fantasy orientation did not predict GEM Affective Empathy scores above and beyond that predicted by GEM Cognitive Empathy scores.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression analysis was conducted by inputting scores from the ERS Perspective Taking subscale on Step 2, and teacher reports of fantasy orientation on Step 3. Scores from the ERS Empathic Concern subscale were entered as the dependent variable. Despite a significant model for Step 3, the interaction vector was not significant, $F(6, 72) = 13.38, p < .001, \beta = .119, p = .526$, indicating that composite fantasy orientation scores did not moderate the relationship between scores on the ERS Perspective Taking and ERS Empathic Concern subscales.
Concern subscale were entered as the dependent variable. Despite a significant model for Step 3, the fantasy orientation coefficient was not significant, $F(5, 75) = 17.03, p < .001$, $B = .095, p = .145$, indicating that teacher reports of fantasy orientation did not predict ERS Empathic Concern scores above and beyond that predicted by ERS Perspective Taking scores.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression analysis was conducted by inputting scores from the GEM Cognitive Empathy subscale on Step 2, and composite fantasy orientation scores on Step 3. Scores from the GEM Affective Empathy subscale were entered as the dependent variable. Despite a significant model for Step 3, the fantasy orientation coefficient was not significant, $F(5, 73) = 5.36, p < .001$, $B = -.016, p = .948$, indicating that composite fantasy orientation scores did not predict GEM Affective Empathy scores above and beyond that predicted by GEM Cognitive Empathy scores.

Controlling for age, gender, and receptive vocabulary on Step 1, a hierarchical linear regression analysis was conducted by inputting scores from the ERS Perspective Taking subscale on Step 2, and composite fantasy orientation scores on Step 3. Scores from the ERS Empathic Concern subscale were entered as the dependent variable. Despite a significant model for Step 3, the fantasy orientation coefficient was not significant, $F(5, 73) = 16.11, p < .001$, $B = -.045, p = .702$, indicating that composite fantasy orientation scores did not predict ERS Empathic Concern scores above and beyond that predicted by ERS Perspective Taking scores.

**Aim 3.** To explore the hypothesis that fantasy orientation fosters faster development of both theory of mind and affective empathy, a cross-sectional developmental trajectory analysis was conducted following the guidelines discussed in Thomas et al. (2009). First, teacher reports of fantasy orientation were categorized into High Fantasy and Low Fantasy. As shown in Figure 8, the mode teacher report fantasy orientation score was 3. Children who scored a 3 or below
were categorized as Low Fantasy, and children who scored above a 3 were scored as High
Fantasy. Based on this coding, 17 children were found to be High Fantasy, and 64 children were
found to be Low Fantasy.

Figure 8

*Histogram of Teacher Reports of Fantasy Orientation.*

Four cross-sectional developmental trajectories were then computed, each using one of
the following dependent variables: GEM Cognitive Empathy subscale, ERS Perspective Taking
subscale, GEM Affective Empathy subscale, and the ERS Empathic Concern subscale. Each
ANCOVA included age in months, gender, and receptive vocabulary as covariates, teacher
reports of fantasy orientation (low, high) as the factor, and teacher reports of fantasy orientation
by age as the interaction term. For all four analyses, a main effect of fantasy orientation would
indicate a difference in intercept between groups, suggesting that the level of theory of mind
understanding and affective empathy between the groups began at different starting points. For
all four analyses, a fantasy orientation by age interaction would indicate that empathy and theory
of mind develop at different rates among low and high fantasy oriented children. Results
indicated that for all four ANCOVAs, there was no main effect of fantasy orientation: (1) $F(1, 75) = .004, p = .953$, (2) $F(1, 75) = .078, p = .781$, (3) $F(1, 75) = .171, p = .680$, and (4) $F(1, 75) = .258, p = .613$. Similarly, for all four ANCOVAs, the interaction term was not significant: (1) $F(1, 75) = .105, p = .747$, (2) $F(1, 75) = .017, p = .896$, (3) $F(1, 75) = .113, p = .738$, and (4) $F(1, 75) = .159, p = .691$.

These analyses were also conducted using the categorical fantasy orientation variable described in the “Coding of Fantasy Orientation” section. This variable includes the following fantasy orientation measures: (1) reports of imaginary companions, (2) impersonation activities, (3) imaginative play predisposition, (4) pretend phone conversations, (5) teacher reports of beliefs in fantasy figures, and (6) teacher ratings of overall fantasy orientation. No significant results were found.

To explore the hypothesis that fantasy orientation fosters better development of both theory of mind and affective empathy, four one-way ANOVAs were conducted using the teacher report analogues for theory of mind and affective empathy, each using one of the following dependent variables: GEM Cognitive Empathy subscale, ERS Perspective Taking subscale, GEM Affective Empathy subscale, and the ERS Empathic Concern subscale. Each ANCOVA included age in months, gender, and receptive vocabulary as covariates, and teacher reports of fantasy orientation (low, high) as the factor. For all analyses, a significant main effect of fantasy orientation, with higher mean scores in the high fantasy orientation group, would indicate that high fantasy children perform better on theory of mind and affective empathy tasks than do low fantasy children. Results indicated a main effect of fantasy orientation for the first ANOVA, with the GEM Cognitive Empathy subscale as the dependent variable, $F(1, 76) = 5.09, p = .027, \eta_p^2 = .063$. Children with low fantasy orientation ($M = .85, SE = .15$) were rated by teachers as having
higher levels of cognitive empathy than children with high fantasy orientation ($M = .11, SE = .29$). For the three other ANOVAS, there was no main effect of fantasy orientation, (1) $F(1, 76) = 1.656, p = .202$, (2) $F(1, 76) = .480, p = .491$, and (3) $F(1, 76) = .920, p = .341$. These analyses were also conducted using the categorical fantasy orientation variable described in the “Coding of Fantasy Orientation” section. No significant results were found.
CHAPTER 4
DISCUSSION

The purpose of the present study was to explore the relations between theory of mind, empathy, and fantasy orientation in a typically developing preschool population. There were three primary aims. The first aim was to examine the general relationship (i.e., correlation, developmental timeline) between theory of mind and affective empathy. As hypothesized, results indicated that 3-year-olds tested as having neither theory of mind nor affective empathy, 4-year-olds tested as having theory of mind only, and 5-year-olds tested as having both, supporting the notion that theory of mind precedes affective empathy. The second aim was to examine the specific relationship between theory of mind and affective empathy along the fantasy orientation continuum. It was hypothesized that fantasy orientation moderates the relationship between theory of mind and affective empathy. Although support for this hypothesis was not found, results indicated that fantasy orientation predicted affective empathy above and beyond theory of mind ability. The third aim was to examine the hypothesis that fantasy orientation fosters faster and/or better development of affective empathy. No support was found for this hypothesis. In the sections that follow, results concerning the three primary aims will be discussed in turn, followed by a discussion of teacher reports.

Primary Aim 1: Does theory of mind precede affective empathy?

As hypothesized, support for a developmental progression was found in children’s performance on the measures of theory of mind and affective empathy. Three-year-olds tested as
having neither theory of mind nor affective empathy, 4-year-olds tested as having theory of mind only, and 5-year-olds tested as having both. This finding is consistent with past research that theorizes that cognitive empathy (i.e., a component of theory of mind) is a prerequisite for affective empathy (Batson, Fultz, & Schoenrade, 1987; Feshbach, 1987). These researchers suggest that being able to recognize and understand others’ emotions (i.e., theory of mind) is a necessary, but not sufficient, component of affective empathy. For example, a child might have attained a theory of mind, but is not yet able to share and participate appropriately in others’ emotions. In some situations the child may appear to be appropriately sharing in emotion, but this is likely simple emotional contagion (Hoffman, 1978).

Interestingly, however, nine children had the unexpected pattern of being scored as having affective empathy but not theory of mind. It should be noted, however, that six of these nine children were one point off from being coded as having a theory of mind. To be stringent, they were not categorized as having a theory of mind. For statistical purposes these children could not be included in the analysis, but their existence remains puzzling. This result could possibly be due to the cross-sectional nature of the data; future research should explore the relationship between theory of mind and affective empathy using a longitudinal design. Additionally, a more current and rigorous assessment of theory of mind was used (Theory of Mind Scale; Wellman & Liu, 2004). This involved a battery of seven tasks, instead of just one false belief task as has been done in past work. Thus, children had to pass more tasks in the scale in order to be categorized as having a theory of mind, whereas in past work, they would have needed to pass only one or two.

This study adds to the affective empathy literature by demonstrating the developmental progression of skills necessary for affective empathy. For children who have difficulty with
affective empathy, such as those diagnosed with Autism Spectrum Disorders (ASD), therapists should consider focusing on scaffolding components of theory of mind, such as perspective taking and cognitive empathy, before scaffolding affective empathy skills. This might be especially applicable to therapists employing the Early Start Denver Model, a comprehensive early intervention model for young children with ASD that encourages the scaffolding of important skills during natural play and daily routines (Dawson et al., 2009; Rogers & Dawson, 2009). Similarly, for children who display callous-unemotional traits consistent with adult psychopathy, researchers and clinicians should explore whether these individuals have intact theory of mind skills, but lack affective empathy, as found in past research (Dadds et al., 2009; Maurage et al., 2011), and might work on preventive interventions designed to help children with psychopathic traits develop affective empathy in a developmentally appropriate way. Fantastical play might be a good environment in which to scaffold these skills in order to allow the children to take on the emotion of another in the context of pretense. This study is one of the first to clearly demonstrate a developmental progression between theory of mind and affective empathy in a preschool population. Particularly due to the rigor of the chosen measures (i.e., a scale of theory of mind tasks instead of one or two), this study makes a solid contribution to the mixed literature on this topic (Astington & Jenkins, 1995; Harris et al., 1989; Hinnant & O’Brien, 2007; Hughes et al., 2010; Massoff, 2007). Future research should seek to corroborate this finding via longitudinal designs, as discussed below.

**Primary Aim 2: Does fantasy orientation moderate the relationship between theory of mind and affective empathy?**

Fantasy orientation was not found to moderate the relationship between theory of mind and affective empathy. Further analyses, however, indicated that it is related to children’s
affective empathy. Even after controlling for age in months, gender, and receptive vocabulary, fantasy orientation significantly predicted affective empathy scores—as children’s fantasy orientation increased, so too did their affective empathy scores. This finding contributes to the dearth of information concerning the relationship between fantasy orientation and affective empathy, and extends the literature on the relationship between fantasy orientation and emotion regulation. Researchers have typically argued that pretend play (particularly sociodramatic play) affords children the opportunity to practice highly arousing emotional experiences and garner emotion regulation skills in a safe environment that permits (and often encourages) creative affect expressions (Bretherton, 1989; Fein, 1989; Hoffman & Russ, 2012; Howes & Matheson, 1992).

Extending this explanation beyond pretend play (the behavior) to fantasy orientation (the trait), it logically follows that children’s natural proclivity to think and play in a fantastical realm is also related to affective empathy. These children not only engage in pretend play behaviors (e.g., they engage in sociodramatic play and create imaginary companions) but also simply think about (e.g., they believe in many fantastical beings and frequently have fantastical thoughts before going to sleep at night) and prefer (e.g., they self-select fantastical books, TV, games) fantasy and fantasy-related things more. This increases children’s chances of having to grapple with emotions—be it their own emotions, the emotions of real playmates, the emotions of pretend playmates, or the emotions of characters in their play. This in turn increases their chances of recognizing and understanding their own emotions in themselves and in others. Most importantly of all, it increases their chances of learning how their own emotions as well as others’ emotions impact social interaction.
Future research should endeavor to go beyond the correlational work reported here to determine whether fantasy orientation plays a causal role in children’s empathy development. If it were shown to be causal, this would not only inform and guide future research, but curriculum and intervention designs as well. The research reported here, as well as other current research, suggests a very positive relationship between pretend play, fantasy orientation, and a myriad of developmental skills, including emotion regulation skills and empathy. Research has suggested that this special form of play and special orientation towards fantasy helps facilitate self-regulation and provides an enriched environment to foster neurological developmental in the frontal lobe (Berk, Mann & Ogan, 2006). However, research has not clearly established whether pretend play or fantasy orientation serves as a causal mechanism in development (Lillard et al., 2012). At a minimum, however, the early childhood research suggests that it is simply a benign and fun aspect of childhood.

**Primary Aim 3: Does fantasy orientation foster faster and/or better development of theory of mind or affective empathy?**

Analyses indicated that fantasy orientation fostered neither faster nor better development of theory of mind and affective empathy. These findings provide support for the argument that pretend play does not play a crucial role in child development, at least in the domain of theory of mind and affective empathy (Lillard et al., 2012). However, it should not be taken as the final word in the debate for several reasons. Regarding the first null finding, the cross-sectional data provided limited means to rigorously examine whether fantasy orientation fosters faster development of theory of mind and affective empathy. Although the developmental trajectory analysis was designed to be used with cross-sectional data, longitudinal analysis would provide stronger support. Regarding the second null finding, it is possible that the small number of
children coded as high fantasy \((n = 23, \text{ out of 82 children})\) contributed to the null finding. Although the means were in the correct direction (i.e., with high fantasy children having better theory of mind and affective empathy scores), it is possible the low number of fantasy-oriented children prevented the analyses from reaching significance. Additionally, although the power of the present study prevented the examination of this possibility, it could be that a single component of fantasy orientation (e.g., impersonation and cognitions, toys and games, imaginary companions) drives faster or better development of theory of mind and affective empathy (Pierucci et al., 2014). Future research should attempt to validate possible components of fantasy orientation and investigate how they might relate to theory of mind and affective empathy.

**Teacher Reports**

The three primary aims and hypotheses were examined with teacher reports in addition to the child measures. Overall, data from teacher reports did not support the hypotheses. In one particular case, teachers rated children with low fantasy orientation as higher on cognitive empathy than children with high fantasy orientation. A possible reason for this discrepancy could be due to a context effect of fantasy orientation (e.g., home versus school, child versus teacher). Teachers and parents interact with children in drastically different contexts. Teachers generally interact with many similarly aged children in their classrooms, with a largely structured scheduled of daily events. They do not interact with children in a home environment, where the children likely engage in different activities than they do at school.

In the present study, fantasy orientation was measured via child reports (i.e., imaginary companions, impersonation activities, imaginative play predisposition, pretend phone conversations) and teacher reports (i.e., child beliefs in fantasy figures, ratings of overall fantasy orientation). It could be that teachers are inaccurate sources regarding children’s beliefs in
fantasy figures. Although many of these fantasy figures are encountered in books that are prominent in preschool classrooms or are associated with various holidays, it is possible that teachers do not learn children’s explicit beliefs in fantasy figures. Additionally, it could be that asking teachers to provide an overall rating of fantasy orientation is hard for them to do, and not a sensitive enough measure. Perhaps a more appropriate measure for teachers to complete is a longer questionnaire, that asks about the frequency of children’s involvement in fantasy play (e.g., How often does X self-select fantastical books? How often does X engage in pretend play on the playground? How often does X engage in pretend play in the classroom?). Alternatively, parents might simply be better informants about children’s fantasy orientation.

**Limitations and Directions for Future Research**

There are several limitations of the present study, and as such, there are many directions for future research. The use of a longitudinal design would better support the finding that theory of mind development precedes the development of affective empathy. The cross-sectional data reported here represent an initial step toward establishing this progression, but longitudinal designs are needed to corroborate the finding. Future research should attempt to longitudinally explore the relationship between theory of mind and affective empathy. Furthermore, researchers should continue to investigate and parse the relationship between theory of mind, cognitive empathy, and affective empathy. In particular, there is a great need for agreement and consistency regarding operational definitions and similarity across measures. Future research should also investigate the effects of different sources of reports (i.e., children, parents, teachers) and whether the context effect explanation is sufficient to explain the discrepancy sometimes found between the three sources.
Additionally, a limitation of the present data is that they are correlational in nature, rather than experimental. The data suggested a positive relationship between fantasy orientation and affective empathy, but they unfortunately can shed no light on causality or directionality. That is, it is unknown whether fantasy orientation causes children to have better affective empathy, or whether children who have better affective empathy are likely to also be fantasy-oriented. The correlational nature of the data also does not rule out the possibility of a third, unknown variable accounting for the relationship between fantasy orientation and affective empathy. Lillard et al. (2012) thoroughly addressed the issue of correlational research on pretend play, arguing that the limited, correlational evidence for pretend play (and by extension, fantasy orientation) playing a causal role in development is quite weak. Lillard and colleagues argue that equifinality (i.e., pretend play is one of many routes to positive developmental outcomes) and epiphenomenalism (i.e., pretend play is extraneous, going along with positive developmental outcomes) models are better supported. The present data provide general support for Lillard et al.’s argument against causality, but do not distinguish between the other two alternatives, equifinality or epiphenomenalism. The case is clear: more longitudinal and experimental work on the effects of fantasy orientation is critically needed.

**General Conclusions**

The present study provides support for the notion that theory of mind development precedes affective empathy development. Fantasy orientation was found to be an important predictor of children’s affective empathy skills as well as comprised of multiple components. Although the present data generally support fantasy orientation playing either an equifinal or epiphenomenal role in the development of affective empathy, more work is needed to clarify its contribution. What is clear, however, is that fantasy orientation plays a natural, harmless, and
likely contributing role in development. Parents and teachers should continue to support and encourage children’s involvement in pretend play and other fantastical activities (e.g., beliefs in fantastical figures, fantastical storybooks, games, and toys), as it has been repeatedly shown to have a very positive relationship with many aspects of young children’s development. In addition to the current study’s implications for parents and teachers of children with normative development, it also has implications in clinical settings, particularly for preventive interventions for children with aggression or callous-unemotional traits and for therapy with children who have difficulty understanding and sharing others’ emotions, such as children with ASD.
REFERENCES


Pratt, C., & Bryant, P. E. (1990). Young children understand that looking leads to knowing (so long as they are looking into a single barrel). *Child Development, 61*, 973–982.


Office for Research
Institutional Review Board for the Protection of Human Subjects

THE UNIVERSITY OF ALABAMA RESEARCH

March 15, 2013

Ansley Gilpin, PhD
Department of Psychology
College of Arts & Sciences
Box 870348

Re: IRB Application # 13-007
Application Title: The Relation between Empathy and Theory of Mind in Preschool: The Case of Fantasy Orientation

Dear Dr. Gilpin:

The University of Alabama IRB has received the revisions requested by the full board on 2/22/13. The board has reviewed the revisions and your protocol is now approved for a one-year period. Please be advised that your protocol will expire one year from the date of approval, 2/22/13.

If your research will continue beyond this date, complete the IRB Renewal Application by the 15th of the month prior to project expiration. If you need to modify the study, please submit the Modification of An Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure Form.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number. Please use reproductions of the IRB approved stamped consent form to obtain consent from your participants.

Good luck with your research.

Sincerely,

Stuart Usdan, PhD.
Chair, Non-Medical Institutional Review Board
The University of Alabama
UNIVERSITY OF ALABAMA
INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS
REQUEST FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

I. Identifying Information

Principal Investigator: Ansley Tullos Gilpin, Ph.D.
Second Investigator: Melissa McLinn, M.A., graduate student
Third Investigator: 

Department: Psychology
College: Arts and Sciences
University: University of Alabama
Address: Box 870348, Tuscaloosa, AL 35487-0348
Telephone: 205-348-9903
FAX: 205-348-8648
E-mail: agilpin@ua.edu

Title of Research Project: The Relation Between Empathy and Theory of Mind in Preschool: The Case of Fantasy Orientation

Date Submitted: 1/15/2013
Funding Source: Department of Psychology Faculty Research Award to Dr. Gilpin, University of Alabama Research Grants Committee Award to Dr. Gilpin

Type of Proposal: ☒ New, ☐ Revision, ☐ Renewal, ☐ Completed, ☐ Exempt

Please attach a renewal application
Please attach a continuing review of a study form
Please enter the original IRB # at the top of the page

II. NOTIFICATION OF IRB ACTION (to be completed by IRB):

Type of Review: ☒ Full board, ☐ Expedited

IRB Action:
□ Rejected Date:
□ Tabled Pending Revisions Date:
□ Approved Pending Revisions Date:
☒ Approved—this proposal complies with University and federal regulations for the protection of human subjects.

Approval is effective until the following date:

Items approved: ☒ Research protocol (dated_______)
□ Informed consent (dated_______)
□ Recruitment materials (dated_______)
□ Other (dated_______)

Approval signature ____________________________ Date _____________
December 18, 2013

Ansley Gilpin, PhD
Department of Psychology
College of Arts & Sciences
Box 870348

Re: IRB # 13-007-R1 “The Relation Between Empathy and Theory of Mind in Preschool: The Case of Fantasy Orientation”

Dear Dr. Gilpin:

The University of Alabama Institutional Review Board has granted approval for your renewal application.

Your protocol has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 8 as outlined below:

(8) Continuing review of research previously approved by the convened IRB as follows:

(a) where (i) the research is permanently closed to the enrollment of new subjects; (ii) all subjects have completed all research-related interventions; and (iii) the research remains active only for long-term follow-up of subjects; or

(b) where no subjects have been enrolled and no additional risks have been identified; or

(c) where the remaining research activities are limited to data analysis.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number.

Your application will expire on December 17, 2014. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the IRB Study Closure Form.

Good luck with your research.

Sincerely,

[Signature]
UNIVERSITY OF ALABAMA
INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS
REQUEST FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

I. Identifying Information

Principal Investigator: Ansley Tullis Gilpin, Ph.D.
Second Investigator: Melissa McManis, M.A., graduate student
Third Investigator:

Department: Psychology
College: Arts and Sciences
University: University of Alabama
Address: Box 870348, Tuscaloosa, AL 35487-0348
Telephone: 205-348-9903
Fax: 205-348-8648
E-mail: agilpin@un.edu

Principal Investigator:
Second Investigator:
Third Investigator:

Department: Psychology
College: Arts and Sciences
University: University Of Alabama
Address: Box 870348, Tuscaloosa, AL 35487-0348
Telephone: 205-348-9903
Fax: 205-348-8648
E-mail: mmanmms1@crimson.ua.edu

Title of Research Project: The Relation Between Empathy and Theory of Mind in Preschool: The Case of Fantasy Orientation

Date Submitted: 1/15/2013, 3/14/2013 (first amendment), 4/29/2013 (second amendment), 12/18/2013 (renewal)

Funding Source: Department of Psychology Faculty Research Award to Dr. Gilpin, University of Alabama Research Grants Committee Award to Dr. Gilpin

Type of Proposal

☐ New
☐ Renewal
☐ Completed
☐ Exempt

Please attach a renewal application

Please enter the original IRB # at the top of the page

II. NOTIFICATION OF IRB ACTION (to be completed by IRB):

Type of Review: Full board ✓ Expedited

IRB Action: Approved ✓ Pending Revisions Date:

☐ Tabled Pending Revisions Date:

☐ Approved Pending Revisions Date:

Approval is effective until the following date: 12/17/2019

Items approved:
- Research protocol (dated)
- Informed consent (dated)
- Recruitment materials (dated)
- Other (dated)

Approval signature ______________________ Date ______________________
APPENDIX B

Informed Consent for School Administrators

The Relation Between Theory of Mind and Empathy in Preschool: The Case of Fantasy Orientation

The University of Alabama
Research Consent Form
IRB #13-007
Page 1 of 2

Dear School Administrator:

We are studying the components of child and fantasy development in young children. Specifically, we are interested in investigating the imaginations and cognitive and social skills of typically developing preschool and elementary school children. Ansley Tullos Gilpin, Ph.D., at the University of Alabama, is directing this project.

If you consent to your school being involved in this study for the upcoming school year, children (ages 3-5) and their teachers will be recruited to participate. Children will complete measures such as various perspective taking tasks, a picture vocabulary assessment, and a storybook empathy task. Children will also be asked to describe his/her pretend play and any imaginary friends. We will also ask teachers to complete a short questionnaire that assesses children’s interest in pretend play and social skills. All data collected will be identified using a randomly generated number only and will not be tied to any child’s personal information.

The child measures will take no more than 45 minutes to one hour, and will be divided into one or more sessions, as individual children require. We would like for these sessions to be videotaped in order to facilitate later coding. Teacher questionnaires will take approximately 15-20 minutes to complete per student. Subject to your approval, a trained research assistant will accompany children to a quiet place for the interview chosen by you. Children will be offered stickers for participating. We will bring extra stickers in the case children who do not participate would also like a sticker.

Parents will be told, should they decide not to participate in this research, that this will in no way affect their child’s educational program at the school and the child will not be allowed to participate in the study. They will also be told that that their decision to participate or not will also have no effect on their relations with the school. Teachers will be told that their decision to participate will in no way affect their job. You will receive a copy of the teacher and parent consent forms to keep.

We do not anticipate negative risks to the children or their teachers as a result of participating in this study. Potential benefits include the knowledge that they have participated in a research study that could increase our knowledge about how to help children in the future.
Children and teachers can ask any questions and discuss his or her reactions with our staff. We will also be pleased to respond to any questions that you may have and to share information about the study with you. Participation is voluntary and children and teachers have the right to withdraw at any time. The confidentiality of all information obtained will be closely guarded. The information gathered will be kept in a locked file cabinet in the Dr. Gilpin’s lab that will only be accessed by her research staff.

If you have any questions about this study, please contact Dr. Ansley Tullos Gilpin at the University of Alabama at (205) 348-9903. If you have questions or concerns about your rights as a research participant, please contact Tanta Myles, Research Compliance Officer, at (205) 348-8461 or toll free at (877) 820-3066. Thank you very much for your interest and cooperation.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at [http://osp.ua.edu/site/PRCO_Welcome.html](http://osp.ua.edu/site/PRCO_Welcome.html) or email us at [participantoutreach@bama.ua.edu](mailto:participantoutreach@bama.ua.edu). After you participate, you are encouraged to complete the survey for research participants that is online at the outreach website or you may ask the investigator for a copy of it and mail it to the University Office for Research Compliance, Box 870127, 358 Rose Administration Building, Tuscaloosa, AL 35487-0127.

Sincerely,

Ansley Tullos Gilpin, Ph.D.
Principal Investigator
The University of Alabama

I have had an opportunity to ask any questions I had about this study.

_____ I agree to allow this research to be conducted at my school. To this end, I agree to allow consent forms to be sent to parents and teachers for their approval.

_____ I choose not to participate in this research.

____________________ ___________________  ___________________
Administrator’s signature     Date
Informed Consent for Parents

The Relation Between Theory of Mind and Empathy in Preschool: The Case of Fantasy Orientation
The University of Alabama
Research Consent Form
IRB #13-007
Page 1 of 3

Dear Parent:

We are studying the components of child and fantasy development in young children. Specifically, we are interested in investigating the imaginations and cognitive and social skills of typically developing preschool and elementary school children (ages 3-5). Ansley Tullos Gilpin, Ph.D., at the University of Alabama, is directing this project.

If you consent to being in this study, your child will complete measures such as various perspective taking tasks, a picture vocabulary assessment, and a storybook empathy task. Your child will also be asked to describe his/her pretend play and any imaginary friends. We will also ask your child’s teacher to answer questions that assess your child’s interest in fantasy and social skills. All data collected will be identified using a randomly generated number only and will not be tied to you or your child’s information.

The child measures will take no more than 45 minutes to one hour, and will be divided into one or more sessions, as your child requires. We would like for these sessions to be videotaped in order to facilitate later coding. A trained research assistant will take your child to a quiet place for the interview chosen by a school administrator. Your child will be offered stickers for participating. If you should decide not to participate in this research, this will in no way affect your child’s educational program at his or her school and the child will not be allowed to participate in the study. Your decision to allow your child to participate or not participate in this research study will also have no effect on your relations with your child’s school. All children are being asked to take part in the study. 108 participants are being recruited from local Tuscaloosa preschools and elementary schools with consent of the principals and school administrators.

We do not anticipate negative risks to you or your child as a result of participating in this study. Potential benefits include the knowledge that you have participated in a research study that could increase our knowledge about how to help children in the future and can help us better design and distribute programs to help children with difficult school-related transitions.
[Assessment Consent — Parent]

The University of Alabama
Research Consent Form
IRB #13-007
Page 2 of 3

Your child can ask any questions and discuss his or her reactions with our staff. We will also be pleased to respond to any questions that you may have and to share information about the study with you. Participation is voluntary and you have the right to withdraw at any time. The confidentiality of the information will be closely guarded. The information gathered will be kept in a locked file cabinet in the Dr. Gilpin’s lab that will only be accessed by her research staff. Teachers and administrators at your child’s school or elsewhere will not have access to this assessment information, nor will any of this information be placed in your child’s school records. The information gathered will be kept in a locked file cabinet at the University that will only be accessed by our research staff.

You do not give up any of your legal rights by signing this consent form. You will be given a copy of this consent form to keep. Save it in case you want to review it later or you decide to contact the investigator or the university about the study. The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and the study is being carried out as planned. School protocol will be followed should any emergencies occur throughout the study.

If you have any questions about this study, please contact Dr. Ansley Tullos Gilpin at the University of Alabama at (205) 348-9903. If you have questions or concerns about your rights as a research participant, please contact Tanta Myles, Research Compliance Officer, at (205) 348-8461 or toll free at (877) 820-3066. Thank you very much for your interest and cooperation.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at http://osp.ua.edu/site/PRCO_Welcome.html or email us at participantoutreach@bama.ua.edu. After you participate, you are encouraged to complete the survey for research participants that is online at the outreach website or you may ask the investigator for a copy of it and mail it to the University Office for Research Compliance, Box 870127, 358 Rose Administration Building, Tuscaloosa, AL 35487-0127.

Sincerely,

Ansley Tullos Gilpin, Ph.D.
Principal Investigator
The University of Alabama
I have read this consent form. My child and I have had a chance to ask questions. Our questions have been answered. We understand what we will be asked to do. I freely agree my child will take part in it.

_____________________________________________ Date of Birth

Child’s name (please print)

_______________________________________________________________________

Name(s) of Parent(s) or Legal Guardian (please print)

_________________________________________________________ Date

Signature(s) of Parent(s) or Legal Guardian

_________________________________________________________ Date

Signature of Investigator

Below please check your preference for videotaping the session.

________ I consent to my child’s interview being videotaped in order to facilitate later coding.

________ I do NOT consent to my child’s interview being videotaped.

The Use of My Child’s Video/Audio Tape:
We may wish to present some of the tapes from this study at scientific meetings or as demonstrations in classrooms (for educational purposes only). If your child’s tape is shown, your child’s name or other identifying information will not be shared. Please sign below if you are willing to allow us to do so with your child’s tape. Note that this signature is entirely voluntary and separate from your decision to participate. You may give permission for your child to participate and be videotaped above, but not give permission for his/her tape to be shown. Tapes will be stored in a locked and secure cabinet in Gordon Palmer 410C. Only investigators will have access to the tapes.

I have read the statement above and give permission for my child’s video/audio tape from his/her interview to be shown for educational purposes with the limitation that my child will not be identified to the audience.

______________________________________________ Date

Signature(s) of Parent(s) or Legal Guardian
Optional: We may wish to contact you briefly for more information (e.g., corroboration of imaginary friends). Your contact information will not be shared with others, and will only be used to contact you for research questions.

I agree to be contacted for further information via e-mail, telephone, or message home in my child’s cubby.

_______________________________________  __________________________
Signature(s) of Parent(s) or Legal Guardian  Date

____________________________________
E-mail Address

____________________________________
Phone Number  Best Time to Call
Informed Consent for Teachers

The Relation Between Theory of Mind and Empathy
in Preschool: The Case of Fantasy Orientation
The University of Alabama
Research Consent Form
IRB #13-007
Page 1 of 2

Dear Teacher:

We are studying the components of child and fantasy development in young children. Specifically, we are interested in investigating the imaginations and cognitive and social skills of typically developing preschool and elementary school children (ages 3-5). In addition to interviewing the children, we are also interested in obtaining teacher perspectives. Ansley Tullos Gilpin, Ph.D., at the University of Alabama, is directing this project.

If you consent to being in this study, you will complete several short questionnaires about the interest in fantasy and social skills of students in your class that are involved in the study (both the student and his or her parents have consented to participation). The teacher questionnaires should take approximately 15-20 minutes to complete for each student.

The children participating in the study will undergo 45-minute to one-hour battery of tasks, divided into one or more sessions, as the children require. We will ask your assistance in identifying the child participating in the study and a suitable space in which the cognitive tasks can be conducted. The children will be offered stickers as a reward for participating in the study. We will bring extra stickers in the case children who do not participate would also like a sticker.

You can ask any questions you have about this study or these forms and discuss any reactions with our staff. Participation is voluntary and you have the right to withdraw at any time. The confidentiality of the information will be closely guarded. The information gathered will be kept in a locked file cabinet in the Dr. Gilpin’s lab that will only be accessed by her research staff. Other teachers and administrators at the school will not have access to this assessment information, including whether you consented to participate in the study or not. The information gathered will be kept in a locked file cabinet at the University that will only be accessed by our research staff.

If you should decide not to participate in this research, this will in no way affect your job. Also, if you consent to participate in the research, this will not prevent later withdrawal from the research if you wish to do so. We do not anticipate adverse risks to you as a result of participating in this study. Potential benefits include the knowledge that you have participated in a research study that could increase our knowledge about how to help children in the future.
If you have any questions about this study, please contact Dr. Ansley Tullos Gilpin at the University of Alabama at (205) 348-9903. If you have questions or concerns about your rights as a research participant, please contact Tanta Myles, Research Compliance Officer, at (205) 348-8461 or toll free at (877) 820-3066. Thank you very much for your interest and cooperation.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at http://osp.ua.edu/site/PRCO_Welcome.html or email us at participantoutreach@bama.ua.edu. After you participate, you are encouraged to complete the survey for research participants that is online at the outreach website or you may ask the investigator for a copy of it and mail it to the University Office for Research Compliance, Box 870127, 358 Rose Administration Building, Tuscaloosa, AL 35487-0127.

Sincerely,

Ansley Tullos Gilpin, Ph.D.  
Principal Investigator  
The University of Alabama

I have had an opportunity to ask any questions I had about this study.

______ I agree to participate in this research.

______ I choose not to participate in this research.

Teacher’s Name (Please Print)  
__________________________________________  

Teacher’s Signature  
__________________________________________  

Date
APPENDIX E

Child Assent Script

In the classroom: “[Child’s Name], my name is [experimenter’s name] and your teacher, and your mom and dad told me that you could help me out today. I have some questions I want to ask you about what you think. We’re going to talk about friends, and pretending, and play some games together. Would you like to go do that now? Your teacher said it’s OK for you to go with me now if you want to. Just to let you know, nobody will know what you do or say, except maybe your mom or dad. You do not need to be afraid that other people will find out how you did. All your answers will be kept safe and secure in a locked room that only a few people have the key for. “

On video: “[Child’s Name], my name is [experimenter’s name] and your teacher, and your mom and dad told me that you could help me out today. I have some questions I want to ask you about what you think. We’re going to talk about friends, and pretending, and play some games together. Would you like to start now? Remember that if you want to stop, just tell me, and we’ll stop. Just to let you know, nobody will know what you do or say, except maybe your mom or dad. You do not need to be afraid that other people will find out how you did. All your answers will be kept safe and secure in a locked room that only a few people have the key for.”
Empathy Measure for Preschoolers (Sezov, 2002)

Scene Descriptions for Child and Dog Vignettes

Empathy for Children

Happiness: A child gets the exact present he wanted for his birthday.

Scene 1: Child looking in a toy store window wishing for a new bike.
Scene 2: Child getting the bike for his birthday.
Scene 3: Child riding on bike with a big smile on his face.

Anger: A child breaks lamp, lies about who did it, and the innocent child is punished.

Scene 1: A child breaks a lamp.
Scene 2: That child points out another child to the teacher and says he did it.
Scene 3: The innocent child is put in time out with an angry expression on his face.

Sadness: A child’s favorite toy breaks and can’t be fixed.

Scene 1: The child happily plays with the toy.
Scene 2: The toy falls apart while he’s playing with it.
Scene 3: The child holds the toys and cries.

Fear: A child is frightened by a loud thunderstorm.

Scene 1: A child is in bed (narrator explains that the child hates loud thunderstorms).
Scene 2: Shows lightning outside.
Scene 3: Shows the child sitting up in bed looking scared.
Empathy for Dogs

_Happiness:_ A dog gets its favorite bone.

Scene 1: Shows a friendly dog (a basic mutt) facing forward with its tail wagging (narrator explains that the dog loves bones).
Scene 2: Shows the dog getting the bone.
Scene 3: Shows the dog happily eating the bone.

_Anger:_ Another dog steals a bone a dog had buried.

Scene 1: Shows a happy dog burying its favorite bone.
Scene 2: Shows another dog digging it up.
Scene 3: Shows original dog chasing the other dog away.

_Sadness:_ No one will play with a dog.

Scene 1: A dog brings a stick to its owner to be thrown.
Scene 2: The owner walks away without throwing the stick.
Scene 3: Dog turns away with its tail between its legs.

_Fear:_ The dog disturbs a hornets’ nest.

Scene 1: Shows a dog running into a big hornets’ nest in a bush.
Scene 2: Shows the dog rubbing his face with his paws and rearing back as a cloud of hornets’ attacks.
Scene 3: Shows the dog galloping away with a swarm of hornets following.
APPENDIX G

Counterbalancing for the Empathy Measure for Preschoolers (Sezov, 2002).

1. HSAF-C AHFS-D
2. AHFS-C HSAF-D
3. SFHA-C FASH-D
4. FASH-C SFHA-D
5. AHFS-D HSAF-C
6. HSAF-D AHFS-C
7. FASH-D SFHA-C
8. SFHA-D FASH-C

Key:

Emotions
H = Happy  S = Sad  A = Anger  F = Fear

Protagonist
C = Child  D = Dog
APPENDIX H

Fantasy Orientation Questionnaire (Gilpin, 2013)

We’re interested in finding out more about this child’s interests and environment, specifically pertaining to his or her interest in fantasy and animals. Your responses will help us account for the differences between children so that each child is seen as an individual. Please be as specific and detailed as you wish.

<table>
<thead>
<tr>
<th>Character</th>
<th>Believes Is Real</th>
<th>Belief Unknown</th>
<th>Believes Is Pretend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Santa Claus</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Easter Bunny</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Tooth Fairy</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Fairies</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Witches</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Ghosts</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Dragons</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Please list the television shows, video games, and books that this child enjoys and sees often.

What games does this child most enjoy playing? (For example, “Chutes and Ladders,” playing trucks/dinosaurs, pretending to be a mommy)

How would you rate this child’s level of fantasy orientation? (i.e., Does this child do a lot of pretending, have great interest in fantastical beings, watch television programs and read books that are fantasy oriented?)

1 Child is strongly interested in reality (e.g., plays sports)
2 Child is mostly interested in reality, but sometimes interested in fantasy
3 Child is equally interested in fantastical and reality play/media
4 Child is mostly interested in fantasy, but sometimes interested in reality
Child is strongly interested in fantasy (e.g., often engages in pretense, enjoys fantastical books, etc.)

Some kids engage in fantasy in different ways, such as having imaginary friends. To your knowledge, does this child currently have an imaginary friend or has s/he had one in the past?

YES

NO

If yes, please elaborate on this friend and their relationship (e.g., name of friend? characteristics of friend? is it a stuffed animal or entirely imaginary? what do they do together? is it a positive relationship or not?). Do you have any insight or thoughts as to why this friend was created?
APPENDIX I

Empathic Responsiveness Scale (Belacchi & Farina, 2012)

EC = Empathic Concern Subscale

PT = Perspective Taking Subscale

1. S/he often feels affection and concern for sad or unlucky people. (EC)
2. Sometimes s/he finds it difficult to see things from another person’s point of view. (PT) *
3. In case of disagreement, s/he tries to consider others’ points of view. (PT)
4. When s/he sees someone treated badly, s/he feels protectiveness toward him/her. (EC)
5. If s/he feels right about something, s/he does not waste time listening to others’ reasons. (PT) *
6. When s/he sees someone treated wrongly, s/he does nothing to help him/her. (EC) *
7. S/he could be described as a soft-hearted child. (EC)
8. When s/he is in contrast with someone, s/he usually tries to put himself/herself in others’ shoes. (PT)

* Reverse coded
Griffith Empathy Measure (Dadds, Hunter, Hawes, Frost, Vassallo, Bunn, Merz, & Masry, 2008)

A = Affective Empathy Subscale
C = Cognitive Empathy Subscale
A/C = Item loaded onto both Affective and Cognitive subscales

1. This child becomes sad when other children are sad. (A)
2. This child gets upset seeing another child being punished for being naughty. (A)
3. This child seems to react to the moods of people around them. (A)
4. This child gets upset when another person is acting upset. (A)
5. This child cries or gets upset when seeing another child cry. (A)
6. This child gets sad when watching sad movies or TV. (A)
7. This child becomes nervous when other children around them are nervous. (A)
8. This child acts happy when another person is acting happy. (A)
9. This child can continue to feel okay even if people around are upset. (A) *
10. This child can’t understand why other people get upset. (C) *
11. This child rarely understands why other people cry. (C) *
12. This child would eat the last cookie, even when they know someone else wants it. (C) *
13. This child reacts badly when they see people kiss and hug in public. (C) *
14. This child doesn’t understand why other people cry out of happiness. (C) *
15. This child doesn’t seem to notice when I get sad. (C) *
16. This child gets sad to see a child with no one to play with. (A/C)
17. This child treats cats and dogs like they have feelings. (A/C)
18. This child feels sorry for another child who is upset. (A/C)
19. This child likes to watch people open presents, even if not one for him/her. (A/C)
20. This child gets upset when seeing another child being hurt. (A/C)
21. This child laughs when seeing another child laugh. (A/C)
22. This child gets upset when seeing an animal being hurt. (A/C)
23. This child feels sad for people who are physically disabled. (A/C)

* Reverse coded
APPENDIX K

Theory of Mind, Empathy, & Fantasy Orientation

<table>
<thead>
<tr>
<th>Participant Number</th>
<th>Today's Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child's Gender</td>
<td>Child's DOB</td>
</tr>
<tr>
<td>Child's Ethnicity</td>
<td>Exptr. Initials</td>
</tr>
</tbody>
</table>

******************************************************************************

**Assent Script**

On tape: “[Child’s Name], my name is [experimenter's name] and your special number is X-XXX-XX. Your teacher, and your mom and dad told me that you could help me out today. I have some questions I want to ask you about what you think. We’re going to read some stories, play some games, and talk about pretending. Would you like to start now? Remember that if you want to stop, just tell me, and we’ll stop. Just to let you know, nobody will know what you do or say. You do not need to be afraid that other people will find out how you did. All your answers will be kept safe and secure in a locked room that only a few people have they key for.”

(circle) YES NO

******************************************************************************

**Task 1: Empathy Measure For Preschoolers**

**Instructions:** Select one of 4 empathy booklets and circle the order below (flip books over to begin with dog). Each vignette is 3 pages long (4 child vignettes, 4 dog vignettes). Read the vignettes in a reasonable storybook manner. At the end of each vignette, ask the child the affective question FIRST, and then the cognitive question. Write down their responses using the tables on the following page. Pay attention to the emotion displayed in the story and the corresponding row in the table.

**Booklet Code (circle)**

1. HSAF-C AHFS-D
2. AHFS-C HSAF-D
3. SFHA-C FASH-D
4. FASH-C SFHA-D
5. AHFS-D HSAF-C
6. HSAF-D AHFS-C
7. FASH-D SFHA-C
8. SFHA-D FASH-C
Affective Question 1: “How do you feel?” or “How do you feel after hearing this?”
Cognitive Question 2: “How does [insert human or dog character’s name] in the story feel?”

**Child Protagonists**

<table>
<thead>
<tr>
<th>Story Type</th>
<th>Empathy Question</th>
<th>Verbatim Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy (Chris)</td>
<td>Affective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
<tr>
<td>Sad (Jessie)</td>
<td>Affective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
<tr>
<td>Angry (Taylor)</td>
<td>Affective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
<tr>
<td>Afraid (Terry)</td>
<td>Affective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
</tbody>
</table>

**Dog Protagonist (Cody)**

<table>
<thead>
<tr>
<th>Story Type</th>
<th>Empathy Question</th>
<th>Verbatim Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td>Affective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
<tr>
<td>Sad</td>
<td>Affective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
<tr>
<td>Angry</td>
<td>Affective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
<tr>
<td>Afraid</td>
<td>Affective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
</tbody>
</table>
Task 2: Theory of Mind Scale

1. Diverse desires
Show the child a toy figure of an adult male and a sheet of paper with a carrot and cookie drawn on it.

“Here’s Mr. Jones. It’s snack time, so, Mr. Jones wants a snack to eat. Here are 2 different snacks: a carrot and a cookie.” (Point to each drawing)

“Which snack would you like best? Would you like a carrot or a cookie best?”

<table>
<thead>
<tr>
<th>Carrot</th>
<th>Cookie</th>
</tr>
</thead>
</table>

(If carrot) “Well, that’s a good choice, but Mr. Jones really likes cookies. He doesn’t like carrots. What he likes best are cookies.”

(If cookie) “Well, that’s a good choice, but Mr. Jones really likes carrots. He doesn’t like cookies. What he likes best are carrots.”

“So now it’s time to eat. Mr. Jones can only choose one snack, just one. Which snack will Mr. Jones choose? A carrot or a cookie?

<table>
<thead>
<tr>
<th>Carrot</th>
<th>Cookie</th>
</tr>
</thead>
</table>

2. Knowledge Access
Show the child the small white box. Make sure it has a toy animal inside. Modify the animal below as needed (e.g., dog, pig, cow, etc.).

“Here’s a box. What do you think is inside this box?” Write answer.

______________________________________________________________________________________

Open the box and show the child the toy animal.

“Let’s see...it’s really a [toy animal] inside!”

Put the toy animal back in the box and close the lid.

“Okay, what’s really inside this box?”

| Toy Animal     | Other: ___________ |
Show the child a toy figure of a girl.
“Polly has never ever seen inside this box. Now here comes Polly. So, does Polly know what is in the box?”

Yes
No

“Did Polly see inside the box?”

Yes
No

3. Belief Emotion
Show the child a toy figure of a boy and an individual-size cereal box with rocks inside.

“Here is a cereal box and here is Teddy. What do you think is inside this cereal box?”

Cereal
Other ____________


Place Teddy out of sight of the child. Show the child what is inside the cereal box.

“Let’s see… there are really rocks inside and no cereal! There’s nothing but rocks.”

Close the cereal box.

“Okay, what is Teddy’s favorite snack?”

Cereal
Other ____________

“Teddy has never ever seen inside this box. (Bring Teddy back) Now here comes Teddy. Teddy’s back and it’s snack time. Let’s give Teddy this box.”

“So, how does Teddy feel when he gets this box? Happy or sad?”

Happy
Sad

Open the cereal box and let Teddy look inside.

“How does Teddy feel after he looks inside this box? Happy or sad?”

Happy
Sad
4. Explicit False Belief
Show the child a toy figure of a boy and the sheet of paper with a backpack and closet drawn on it. Point to pictures as you mention them. Emphasize underlined words.

“Here’s Scott. Scott wants to find his mittens. His mittens might be in his backpack or they might be in the closet. Really, Scott’s mittens are in his backpack. But Scott thinks his mittens are in his closet.”

“So, where will Scott look for his mittens? In his backpack or in the closet?”

<table>
<thead>
<tr>
<th>Backpack</th>
<th>Closet</th>
</tr>
</thead>
</table>

“Where are Scott’s mittens really? In his backpack or in the closet?”

<table>
<thead>
<tr>
<th>Backpack</th>
<th>Closet</th>
</tr>
</thead>
</table>

5. Diverse Beliefs
Show the child a toy figure of a girl and the sheet of paper with bushes and a garage drawn on it.

“Here’s Linda. Linda wants to find her cat. Her cat might be hiding in the bushes or it might be hiding in the garage.”

“Where do you think the cat is?”

<table>
<thead>
<tr>
<th>Bushes</th>
<th>Garage</th>
</tr>
</thead>
</table>

(If bushes) “Well, that’s a good idea but Linda thinks her cat is in the garage. She thinks her cat is in the garage.”

(If garage) “Well, that’s a good idea but Linda thinks her cat is in the bushes. She thinks her cat is in the bushes.”

“So, where will Linda look for her cat? In the bushes or in the garage?”

<table>
<thead>
<tr>
<th>Bushes</th>
<th>Garage</th>
</tr>
</thead>
</table>
6. Contents False Belief
Show child the Band-Aid box.

“Here’s a Band-Aid box. What do you think is inside the Band-Aid box?”

<table>
<thead>
<tr>
<th>Band-Aids</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Open box and let child see stickers.

“Let’s see...it’s really stickers inside!”

Close the box and show child a toy figure of a boy.

“Peter has never ever seen inside this Band-Aid box. Now here comes Peter. So, what does Peter think is in the box?” Band-Aids or Stickers?

<table>
<thead>
<tr>
<th>Band-Aids</th>
<th>Stickers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

“Did Peter see inside this box?”

Yes            No

7. Real-Apparent Emotion
Show children the sheet of paper with 3 emotion faces drawn on it.

“Okay, take a look at these faces. This is a happy face (point), this is a just okay face (point), and this is a sad face (point).”

Put emotion faces aside and pull out the sheet of paper with a picture of a boy walking away drawn on it.

“This is a story about a boy. I’m going to ask you how the boy really feels inside and how he looks on his face. He might really feel one way inside but look a different way on his face. Or, he might really feel the same way inside as he looks on his face. I want you to tell me how he really feels inside and how he looks on his face.”

Emphasize underlined words.

“This story is about Matt. Matt’s friends were playing together and telling jokes. One of the older children, Rosie, told a mean joke about Matt and everyone laughed. Everyone thought it was funny but not Matt. But, Matt didn’t want the other children to see how he felt about the joke, because they would call him a baby. So, Matt tried to hide how he felt.”

“What did the other children do when Rosie told a mean joke about Matt?”

<table>
<thead>
<tr>
<th>Laughed</th>
<th>Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“In the story, what would the other children do if they knew how Matt felt?”

Call Matt a baby Other: ___________

Point to 3 emotion pictures.

“So, how did Matt really feel, when everyone laughed? Did he feel happy, sad, or okay?”

Happy Sad Okay

“How did Matt try to look on his face, when everyone laughed? Did he look happy, sad, or okay?

Happy Sad Okay

***************

Task 3: Imaginary Companion and Impersonation Interview

“Now I’m going to ask you some questions about friends. Some friends are real like the kids at school, the ones you play with. And some friends are not real friends. Pretend friends are ones that are make-believe, that you pretend are real. Do you have a pretend friend?”

YES NO

(IF YES)
What’s your friend’s name? ________________________________

Is X a toy or is she totally pretend? ________________________________

Is X a boy or a girl? (If not clear from name) ________________________________

How old is X? ________________________________

What does she look like? ________________________________

What do you like about X? ________________________________

What do you not like about X? ________________________________

Where does X live? ________________________________

Where does s/he sleep? ________________________________
“Let’s talk some more about pretending things.”

“Do you ever pretend to be an animal?”  

YES  

NO  

(If yes) “Which animal(s)?”

________________________________________

“Do you ever pretend to be a different person?”

YES  

NO  

(If yes) “What person do you pretend to be?”

________________________________________

“How have you ever pretended to be anything else, like a machine, a plane, or something like that?”

YES  

NO  

(If yes) “What sort of thing did you pretend to be?”

________________________________________

*******************************************************************************************

Task 4: Singer’s Imaginative Play Predisposition Interview

“Let me ask you a few questions about yourself.”

“What’s your favorite game?” (Ask for clarification if necessary)

________________________________________________________________________________________

“What’s your favorite toy?” (Ask for clarification if necessary)

________________________________________________________________________________________

“What’s your favorite story?” (Ask for clarification if necessary)

________________________________________________________________________________________

“What’s your favorite TV show?” (Ask for clarification if necessary)

________________________________________________________________________________________
“What do you like to do when you are by yourself?” (Ask for clarification if necessary)

“What do you like to do when you are with other kids?” (Ask for clarification if necessary—e.g., “What kind of play?”)

“What do you like to think about just before you go to sleep?”

“Do you talk to yourself when you are lying in bed?”

YES
NO

Task 5: Toy Phone Task
Show the child the toy phone. If child does not call right away, ask again, up to 3 times.

“Look, here’s a toy phone. Do you know how to use a phone? Can you pretend to call a friend you like to play with?”

“Who would you like to call?” __________________________________________ (write down name)

Checklist:

_____ Child dialed a number or pushed buttons on the phone.
_____ Child held phone to their ear.
_____ Child talked on the phone.
_____ Child appeared to listen to the other person.
_____ Child generated a conversation that went beyond stereotyped greetings (e.g., “Hi,” “How are you?”)

Use best judgment. Possible benchmarks in parentheses.
_____ Short Conversation (< 10 seconds)
_____ Medium Length Conversation (>10 seconds, < 30 seconds)
_____ Long Conversation (> 30 seconds)

Write down notes on the following page.
Conversation Notes:

Task 6: PPVT

Please conduct the PPVT in a second session. Follow the directions as they appear in the PPVT book.