Predictors of mental state understanding in preschoolers of varying socioeconomic backgrounds

Pamela W. Garner  
George Mason University, Fairfax, VA, USA

Stephanie M. Curenton  
Florida State University, Tallahassee, FL, USA

Kelli Taylor  
Virginia Commonwealth University, Richmond, VA, USA

Two studies investigated the influence of age, language, and family background on the development of preschoolers’ social cognitive skills. Study 1 examined variability in economically disadvantaged preschoolers’ understanding of fantasy and evaluated the relation of age and language to children’s skill in this area. Children were shown drawings of fantasy and real-life events and asked if the event could happen in real life and to justify their responses. Children were more likely to answer correctly when the drawing depicted real-life events. Age and language were positively related to children’s overall understanding of fantasy. In Study 2, both low- and middle SES preschoolers were included and two false belief understanding measures were added to the battery of tasks. As before, age and language were related to fantasy understanding as well as to false belief performance. In addition, SES was predictive of fantasy understanding, but not false belief performance, regardless of how it was assessed. Social competence was unrelated to the social cognitive variables, even when the effects of age, language, and SES were controlled.

A defining characteristic of early childhood is the importance of pretend. Children begin engaging in pretend play with their parents near the end of the very first year of life (Haight & Miller, 1993). These acts of pretend become less parent-directed and increasingly complex across the early childhood years (D. J. Singer & Singer, 1990), with older toddlers and preschoolers showing an ability to independently produce make-believe actions and to respond to such actions in others (Kavansugh, Eisenman, & Harris, 1997). Several components underlie children’s fantasy competence, including the ability to believe in imaginary companions and the reality of supernatural beings and events (Harris, Brown, Marriott, Whitall, & Harner, 1991; Rosengren & Hickling, 1994). Nevertheless, the focus has been on the behavioural aspects of pretend, even though young children are frequently exposed to pretend content in the context of fantasy and imaginary characters depicted in books, television programmes, and movies (Woolley, 1997). Furthermore, some claim that it is the cognitive representations of pretend that provide the basis for the development of higher-order thinking, including counterfactual reasoning (Richards & Sanderson, 1999). Countertemporal reasoning is the understanding of behaviours and events that are counter to reality or true and contrasting reality to an imagined alternative (Kahneman & Miller, 1986; Kavanaugh & Harris, 1999), skills that are first evidenced in pretend play (Amsel & Smalley, 2000) and later implicated in theory of mind understanding (Gualberto & Turley-Ames, 2004).

Because pretend play and thinking about fantasy both involve deliberte imagination and beliefs that violate the accepted laws of nature or views of reality (Goncu, 1993; Woolley, 1997), competency in the fantasy arena may provide insight into children’s overall understanding of mental states. For instance, researchers have asserted that engaging in fantasy with others encourages children to rehearse a mental state lexicon and to coordinate multiple perspectives and imaginary roles (Symons, 2004). Young children make frequent references to mental states during pretend play (Howe, 1991), and engaging in frequent social pretend play provides an important context for learning how to mentally create fantasy scenarios (Howe, Petras, & Rinaldi, 1998). Moreover, friends who frequently create make-believe together are less likely to experience verbal misunderstandings and conflict than other children (Dunn & Cutting, 1999), and playing pretend is associated with the understanding of emotional states (Seja & Russ, 1999).

Some have asserted that the representational skills involved in the understanding of pretending are the same ones that underlie children’s understanding of false beliefs. The idea is that, like knowledge of pretense, false belief understanding hinges upon the realization that mental states are internal and distinct from real-world events and situations, even though they may reflect reality and manifest in overt behaviour (Leslie, 1987). Several authors have proposed that children may first learn to understand the possibility of a mismatch between mental representations and reality in the domain of fantasy and only subsequently master the related insights concerning beliefs. Custer (1996) demonstrated that preschoolers can correctly identify the mental representation of a hypothetical
story character engaged in pretense when given the option of choosing reality or the current mental representation of the fantasy situation. Some preschoolers demonstrate an understanding of the mental qualities of pretense when it is based in fantasy rather than reality (Lillard & Sobel, 1999). Similarly, Dias and Harris (1988) report that preschoolers perform better on verbal syllogism tasks when they are based on known reality, unknown facts, or fantasy material than when the problem concerns a premise that is inconsistent with their known reality.

At the same time, others suggest that young children may not understand that pretense involves mental state understanding. Instead, young children are said to understand pretense in terms of its associated behavioral cues (Lillard, 1993). Supporting this claim, Lillard and colleagues found that the preschoolers tend to believe that inanimate objects can pretend but not think (Lillard, Zeljo, Currenton, & Kaugars, 2000). Lillard and Flavell (1992) also reported that, when action is removed, there is no difference in children’s understanding of pretense and beliefs, with young children tending to have difficulty with both. The present studies differed from past research by focusing on children’s ability to distinguish between reality and fantasy as opposed to a consideration of the understanding of pretense. Although there is a close association between the two, pretense aims to represent reality whereas fantasy and imagination do not. That is, fantasy represents objects and/or characters that are not real or cannot be acted upon in ways that are real (Woolley & Wellman, 1993).

Distinguishing between fantasy and reality requires a consideration of whether something is known to have happened in the real world and/or whether it is possible for something to ever happen (Kelly, 1981). In an important study, Wellman and Estes (1986) asked children to make judgments about characters that were really in possession of an object, thinking about something, or pretending something. Results demonstrated that young children understood that, unlike real objects, objects of thought and imagination cannot be acted upon. Many young children are quite capable of distinguishing between events that are really possible and those that can only occur in books and fairy tales in verbal reports, even though they often behave as if these supernatural figures and events actually exist (Taylor & Flavell, 1973).

Between the years of 2 and 4 years, children become increasingly able to differentiate between real-life and fantastical events. Harris and his colleagues found that children who were at least 2 years of age could correctly choose a representation of the outcome of an imagined event, regardless of whether the imaginary episode was depicted by a picture or toy (Harris, 2000; Harris, Kavanaugh, & Dawson, 1997). Preschoolers are also able to identify real and impossible pictures and to complete pictures to make them look real or impossible (Leevers & Harris, 1998). Many 4-year-olds are also quite skilled at differentiating the behavioural cues of fantasy and real events (Richert & Lillard, 2004). By 4 years of age, children also attribute make-believe emotions and cognitions to inanimate objects (Wolf, Rygh, & Alshuler, 1984).

These previous conclusions are based on research with middle SES and typically Caucasian children. One objective of the present studies was to contribute to the existing literature by examining whether these previous findings can be generalised to economically disadvantaged children. Research on children being reared in poverty has shown that, although these children are quite capable of engaging in high-quality fantasy play (Weinberger & Starkey, 1994), they show low levels of this type of play (Doyle, Ceschin, Tesnier, & Doehring, 1991), less diversity in their pretend play themes, and less interaction with others during fantasy-oriented play than other children (Griffin, 1980; Smith &Dodsworth, 1978). These findings may be due to the fact that poor children may have less exposure to fantasy play materials than other children (J. Singer, 1994). That is, the availability of certain types of toys does increase the frequency of pretend and imaginative play in low SES preschoolers (McLoyd, 1983). Children are also exposed to high levels of fantasy and mental state information in their book-reading (Dyer, Shatz, & Wellman, 2000), and low SES children may have fewer opportunities for book-reading with an adult than other children (Snow, Perlmutter, & Nuthan, 1987). Despite these findings, it is important to point out that expressions of fantasy play in economically disadvantaged children may differ from that of middle SES children and researchers may not have always included a methodology that adequately captures these differences (Schwarzwax, 1984).

Given that the act of pretending requires the pretender to have some capacity to distinguish between their real beliefs and the possibility of a fantastical event, it seems reasonable to expect that low-income children may also experience difficulties in the understanding of fantasy. For instance, children with a tendency to engage in fantasy activities are more likely than other children to demonstrate higher-level thinking about fantasy (Taylor, Cartwright, & Carlson, 1993). At the same time, other work has failed to document a linkage between fantasy involvement and the ability to differentiate real and pretend events (Dietzker & Sandern, 1996). The present studies build on existing research by examining the role of individual differences and contextual factors in the development of fantasy understanding in a sample of children reported to have difficulty with other aspects of fantasy.

In the first of these investigations, individual differences in economically disadvantaged children’s fantasy understanding were investigated, as was the association between fantasy understanding and social competence among these children. The purpose of the second study was to consider the role of socioeconomic status (SES) in the development of fantasy understanding and to evaluate associations among fantasy understanding, social competence, and false belief performance. This second study was particularly unique in that the sample was ethnically as well as economically diverse. Even more important is that children from a range of economic and ethnic backgrounds were included. Affluent minority children are rarely included as participants in developmental research because it is so difficult to find an adequate sample of middle SES parents with a child of the specific age range under study (Hoffman, 2003). Thus, many prior studies that investigate the potential effects of SES on young children’s cognitive and social development are flawed because they confound SES and race, such that economically disadvantaged children tend to be mostly from minority groups and are often compared to middle SES Caucasian children.

Study 1

The first study investigated low SES preschool children’s ability to distinguish fantasy and reality drawings and whether their ability to do so was dependent upon whether fantastical
or realistic cues were presented in the drawings. Given the wide age range for the preschoolers participating in the two studies (children were between 38 and 72 months of age), it was expected that older preschoolers would perform better than younger preschoolers on the fantasy understanding task (e.g., Dietiker & Sanders, 1996; Samuels & Taylor, 1994). Also of interest was whether the realistic or fantastical nature of the drawing influenced children’s performance on the fantasy understanding task. Distinguishing between fantasy and reality may be easier for young children if the stimulus is of a realistic rather than a fantasy event (e.g., Samuels & Taylor, 1994). Children’s explanations of how they made decisions about how to characterise an event as realistic or fantastical were also examined. Because the fantasy understanding of low SES and minority children has not been explored in previous research, it was difficult to make predictions about how children would reason about the reality or fantastical nature of the events.

In terms of the linkage between fantasy understanding and social competence, both theorists and researchers alike have suggested the importance of fantasy in the development of social and emotional competence. Early psychoanalytic writers frequently discussed the importance of fantasy in helping children to understand and control their own negative emotions and in contributing to the ability to resolve social conflicts (Waelder, 1923). This is consistent with the developmental view that differentiating fantasy from reality helps children control the content of their fantasies and promotes the development of self-regulation and other social skills (Singer, 1961). Low SES preschoolers who participate in a fantasy-training programme show increases on measures of empathy, self-regulation, and other social skills (Selzer, Dixon, & Johnson, 1977). Other work has shown that elementary school children who are able to put reality aside and imagine the cognitions of others in a make-believe situation describe themselves as more empathic (Nieuw & Russ, 2002). Additionally, children’s ability to understand the content of a fantasy-oriented cartoon book is associated with their coping ability (Goldstein & Russ, 2001) whereas deficiencies in the ability to distinguish fantasy and reality are sometimes observed in children with identified clinical and behavioural disorders (Bolton, Dearsly, Madronal-Luque, & Baron-Cohen, 2002).

Method

Participants

Participants were 43 low SES preschoolers (24 boys and 19 girls; mean age 53.44 months, range = 39–69 months) recruited from two Head Start classrooms in a small southwestern community. Fifty-three per cent of the children were African American, 21% were Latino American, 23% were Caucasian American, and 3% were Asian American. All families were classified as low SES according to Head Start criteria. The mean years of education for the mothers was 12.33 years (SD = 1.59). So that we could compare our results to Samuels and Taylor (1994), children were divided into two age groups: 21 younger preschoolers (ages ranged from 36 to 53 months) and 21 older preschoolers (ages ranged from 54 to 67 months). There were 9 boys and 12 girls in the younger group and 14 boys and 7 girls in the older group. The children in the older group had to be 4 years and 6 months or older. One child had missing data for fantasy understanding.

Measures and Procedure

Children were interviewed individually in a quiet room in the Head Start centre. They sat at a low table in a child-sized chair next to either a Latino American male or an African American female examiner. Before the assessment began, the examiner discussed general topics of interest to young children (e.g., favourite toys and activities) to put the children at ease.

Fantasy understanding. Before the study began, 66 undergraduate psychology students were asked to rate the degree to which 40 situations depicted in drawings could happen in real life on a scale from 1 (realistic) to 7 (very unrealistic/fantasy). The 20 drawings used in this study included 10 pictures that were rated high on the fantasy/reality scale (M = 6.87, SD = 0.61) and 10 reality pictures that were rated low on the scale (M = 1.86, SD = 1.04). Because we wanted to include stimuli that were unambiguous in their depiction of fantastical and realistic events, adults, rather than children, were used in this validity study. Examples of fantasy events are a watermelon burning a drum, a spoon and a fork dancing, and a dog riding a bike. Reality drawings depicted such scenarios as a juggler man, a dancing ballerina, and a woman talking on the phone. Drawings used here were devoid of explicit cues of emotion.

Before being questioned, children were asked to describe what was happening in the drawing to make sure they understood the story. In 21% of the 840 descriptions, children were unable to describe the events depicted in the drawing when first presented with the drawings. A closer inspection of the data indicated that this was just as likely to occur for the fantasy drawings as for the realistic drawings. When this happened, the child was told what was happening in the drawing and then given a second chance to describe the depicted event. All of these children were able to describe the portrayed event after the explanation by the experimenter. Next, children presented the drawings in one of two orders and asked three questions: (1) “Could this happen in real life?”, (2) “How do you know?”, and (3) “Could this happen in a dream?” (Samuels & Taylor, 1994). Only data from the first two questions were analysed. For the fantasy understanding score, children received a “1” if they answered “yes” that a realistic picture could happen in real life and “0” that the fantastical event could not happen in real life (otherwise the response was scored as 0). Scores were summed separately for fantasy and reality drawings and a composite fantasy understanding score was also calculated by summing the fantasy and reality scores.

Following Samuels and Taylor (1994), justifications (i.e., children’s responses to the “How do you know?” question) were coded as: (1) no explanations, (2) knowledge or experience (e.g., “because that happened to me once”), (3) fantasy/reality (“because you can’t do it in real life”), (4) emotion, (5) dream (“because I saw it in a dream”), or (6) other. Scores were summed across the 20 drawings. Reliability was determined by having two coders independently score 90% of the responses. Coders were instructed to code the children’s justification responses into the following categories: no explanation (i.e., don’t know), knowledge or experience, fantasy/reality, emotion, dream, or other. However, none of the children cited emotion, so there were five possible categories.
The probability of the two coders agreeing on how a response should be coded was computed with Cohen's kappa and was .77.

Language. The vocabulary subtest of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) was used as a language assessment. The subtest contains 22 words and requires the child to explain orally the meaning of each word. The WPPSI was included because low SES children's scores on this measure have been associated with their performance on false belief tasks (Hughes et al., 2000). Items are scored 2 for a totally correct response, 1 for a near correct response, and 0 for an incorrect response. Administration of the measure is discontinued after five consecutive failures (Sattler, 1988). Test-retest reliability is .84 and Cronbach's alpha is .85 in this sample was .84. Validity is demonstrated by its association with the full-scale WPPSI ($r = .65$) and the verbal subscale ($r = .66$, Sattler, 1988). The raw scores were used in the analyses ($M = 15.62$, $SD = 7.15$).

Social competence. The children's teachers were asked to fill out the Social Competence and Behavior Evaluation Short Form (SCBE-30; LaFreniere & Dumas, 1996), which measures the affective quality of children's relationships with others. Each item is rated on a 6-point Likert-type scale (1 = not at all, 6 = always). The SCBE-30 provides information about positive and negative behaviors in the preschool classroom and yields three 10-item subscales: social competence, anger-aggression, and anxiety-withdrawal. Research supports the use of the scale with low SES preschoolers (Dumas & Secketich, 1993). Because the fantasy/reality stories were deliberately devoid of emotional cues and because of our specific interest in the link between mental state understanding and social competence, the anger and anxiety subscales were not included here. A sample item includes "comforts or assists another child in difficulty". Internal consistency was .77.

Test-retest reliability is high and good internal consistency for the measure has been demonstrated in other research. Construct validity of the SCBE-30 is demonstrated by research that shows that the three subscales are highly correlated with their corresponding scales from the original measure and with the Revised Behavior Problem Checklist (LaFreniere & Dumas, 1996).

Results

Three sets of analyses are presented. The first set is aimed at providing descriptive information about the participants and the study variables. The second set of analyses focuses on the correlations among the study variables. The third set of analyses address the predictive power of the demographic variables and language competence in accounting for individual differences in low SES preschoolers' understanding of fantasy. The relation between understanding of fantasy and social competence was also explored with separate regression analyses.

Table 1

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>No explanation</td>
<td>11.76</td>
<td>9.36</td>
<td>0–20</td>
</tr>
<tr>
<td>Knowledge</td>
<td>8.42</td>
<td>7.16</td>
<td>0–20</td>
</tr>
<tr>
<td>Fantasy/Reality</td>
<td>0.14</td>
<td>0.41</td>
<td>0–2</td>
</tr>
<tr>
<td>Emotion</td>
<td>0.00</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>Dream</td>
<td>0.02</td>
<td>0.15</td>
<td>0–1</td>
</tr>
<tr>
<td>Other</td>
<td>0.37</td>
<td>2.01</td>
<td>0–12</td>
</tr>
</tbody>
</table>
These findings were used in constructing the multiple regression equations. With fantasy understanding as the criterion variable, age was included on the first step, and language ability was entered next to determine if it explained additional unique variance. On the first step, age accounted for 22% of the variance in low SES preschoolers' understanding of fantasy, \( F(1, 40) = 11.45, p < .01 \). With the addition of the language score (\( \beta = .47, p < .01 \)), the model remained significant and an additional 18% of the variance in fantasy understanding was explained, \( F(2, 39) = 12.89, p < .01 \).

Next, we evaluated whether the understanding of fantasy was associated with low SES children's social competence, once the effects of age and language were removed. When included on the first step, the model was significant, \( F(2, 39) = 8.08, p < .01 \), and explained 29% of the variance in social competence. However, only age was a significant predictor (\( \beta = .43, p < .01 \)). When included on the second step, fantasy understanding emerged as a significant positive predictor and explained an additional 7% of the variance, \( F(3, 38) = 7.13, p < .01, R^2 = .36 \).

Study 2

The purpose of the second study was to consider the role of SES in the development of fantasy understanding and to evaluate associations among fantasy understanding, social competence, and false belief performance. The sample for this second study included low and middle SES Caucasian and minority children. Moreover, unlike many studies that include low-income participants, low and middle SES children with parents from a range of educational backgrounds and varying family structures were included.

False belief understanding

One of the most widely used methodologies for testing children's mental state understanding is the false belief task (Wimmer & Perner, 1983). False belief tasks assess children's ability to predict someone's behaviour in relation to that person's beliefs and have been used repeatedly with many samples of children. There is evidence that the reliability of children's performance varies across different task types, indicating that methodology may be an important factor to consider when investigating children's theory of mind (Mayes, Klin, Tercyak, Cicchetti, & Cohen, 1996). Methodology may be even more important when assessing the false belief performance of children from diverse backgrounds. For instance, low SES African American children perform worse on a false belief contents task than on a false belief location task (Curren, 2005; Holmes, Black, & Miller, 1996). To decrease the influence of task procedure on children's performance, some have suggested that children should be assessed using multiple questions and various task formats (Cutting & Dunn, 1999; Mayes et al., 1996). Furthermore, Curren (2004) suggests that nontraditional false belief tasks be used when assessing the skills of African American children from low SES backgrounds because they may allow for a more valid assessment.

To address these issues, multiple assessments of nontraditional and traditional false belief tasks were used. Specifically, we included a false belief task with physical referents and a task that assessed false belief within the realm of a social interaction. Interpreting social rather than physical referents may be more difficult because people's behaviour is emotionally based and social interactions are so subject to change. Measures that are embedded within social situations may reduce task demands and allow all children to demonstrate their strengths (Curren, 2004; Denham, 1986).

Another goal of this work was to explore whether previously identified correlates of false belief understanding such as language are also predictive of fantasy understanding, especially when task demands are minimised and variation due to SES is explained. Although theorists continue to debate whether language precedes theory of mind development or vice versa, research shows a strong association between preschoolers' theory of mind understanding and language ability, both concurrently and longitudinally (Aston, Jenkins, 1999; Cutting & Dunn, 1999; Ruffman, Slade, Rowlandson, Runsey, & Garnham, 2005). Much less is known about the role of language in the development of fantasy understanding, even though a minimum level of linguistic ability is required before one can successfully complete such tasks because verbal responses are often necessary (Woolley, 1997). Moreover, there is preliminary evidence that children with increased language ability may be better able to talk about pretend–real distinctions than other children (Flavell, Flavell, & Green, 1987).

False belief and social competence

Next, the associations among fantasy understanding, false belief performance, and social competence were investigated as research has begun to consider the role of mental state understanding in the development of social skills. Also of interest was the association between false belief performance and social competence. According to Aston, Harris, and Olson (1988), the ability to understand the mind is important for predicting, explaining, and manipulating others' behaviours, and is therefore at the heart of all social interactions. False belief understanding may also have implications for the ability to make cooperative plans and persuade and motivate others (Taylor, 1996) and the activation of such knowledge may be strongly motivated by the desire to enhance the quality of one's social interactions (Dunn, Brown, Slomkowski, Telsa, & Youngblut, 1991). Lalande and Chandler (1995) recently reported a positive correlation between false belief understanding and teachers' ratings of social competence, but only when the items involved an understanding of others' mental states. When other indicators of behavioural adjustment were considered (e.g., following rules during group games), false belief understanding was not related to social competence. Watson and colleagues also found that false belief understanding was associated with teachers' ratings of children's social skills but only after age, language skills, and children's talkativeness to peers were statistically controlled (Watson, Nixon, Wilson, & Capage, 1999). Still, a second experiment reported in this same paper found no association between peer popularity (as measured via teacher report) and false belief understanding. In another study, Slomkowski and Dunn (1996) found that false belief understanding predicts children's social communication with a friend. At-risk children who participate in a social skill intervention programme that provides training in theory of mind principles show significant improvement on false belief tasks. Such training does not seem
to affect others’ ratings of the children’s social competence (Ozonoff & Miller, 1995).

The inclusion of two false belief tasks allowed us to better explore the complexity of the relationship between social competence and false belief understanding. Bedenes, Batevan, and Baccetti (2000) reported a correlation between the ability to deceive others and girls’ popularity. This same study indicated that peer-rejected children performed similarly on several theory of mind tasks to children classified sociometrically as average. In a study of preadolescents, Bosaci and Astington (1999) found that once the effect of language was removed, theory of mind performance was positively associated with peer-related social interaction (i.e., responses to hypothetical peer situations) but not peer-likeability. The authors concluded that judging the competence of a child involved in a hypothetical social interaction is more of a cognitive task whereas peer popularity is more of an affective measure.

The final aim was to consider the relation between fantasy understanding and false belief performance. Preschoolers engage in pretense and appear to understand fantasy earlier than they understand false beliefs or before they are able to distinguish between appearance and reality (e.g., Lillard & Flavell, 1992). Moreover, most preschoolers can pass a false belief task when the belief is about pretense (Cassidy, 1999), and are more likely to be aware of the mind’s involvement in the realm of pretense when pretending to be a fantastical versus a realistic character (Lillard & Sobol, 1999). Many preschoolers can also correctly identify the mental representation of a hypothetical story character engaged in pretense when given the option of choosing reality or the current mental representation of the fantasy situation (Custer, 1996). Nonetheless, very few studies have examined the specific linkage between fantasy understanding and theory of mind development (see Taylor & Carlson, 1997, for an exception).

Method

Participants
An independent sample of 113 preschoolers was recruited to participate in Study 2. The low SES group included 38 preschoolers (20 boys and 18 girls; mean age 53.02 months, range = 38–72 months) recruited from two local Head Start centres in a large south-western city. Additional demographic information was obtained for 111 of the children. Ninety-five per cent of the children characterised as low SES were African American, 2.5% were Latino American, and 2.5% were Asian American. Forty-two per cent of these children were being reared in single-parent families, 42% were being reared in intact families, and 16% were living in homes in which the parents were separated or divorced. For those reporting such information, 67% of the mothers had graduated from high school and 33% had attended or completed vocational school or college. For fathers reporting their level of education, 72% had completed high school and 28% had graduated from college or attained some vocational school or college.

The middle SES group was comprised of 37 boys and 38 girls (mean age: 53.23 months, range = 54–75 months) recruited from area preschools and day care centres located in middle-class suburban neighbourhoods. Fifty-six per cent of the middle SES children were African American, 42% were Caucasian American, 1% were Latino American, and another 1% were Asian American. Eighty-seven per cent of these children were being reared in intact families, 12% came from families in which the parents were separated or divorced, and 1% were living in single-parent homes. Sixty-four per cent of the mothers and 56% of the fathers had a university education or higher.

Measures and Procedures

SES was coded as a dummy variable ("1" was assigned to the low-SES children; "2" was assigned to the middle SES children). Because many of the families recruited from both sites were uncomfortable reporting SES information, specific SES information was not available for most families. Therefore, Head Start SES eligibility criteria were used to identify families as lower SES as this is the basis for enrollment for the majority of children there. In some Head Start programmes, developmentally disabled children are enrolled despite their SES status. However, this was not the case for any of the children in our sample. For the middle SES families, the preschool director provided the SES range for enrolled families. Although not all of the children in the centre agreed to participate, the annual income for enrolled families was reported to exceed $50,000. The centre staff also verified that none of the families received government financial assistance for tuition or were eligible for the free government-subsidised lunch program. Although it would have been ideal to have data regarding actual income earned in a year, other researchers have also discussed the difficulties associated with obtaining specific and accurate income information (Ensminger et al., 2000). Study findings are often unchanged when income in thousands of dollars is considered instead of using the poverty line to categorise families as low or middle SES (Boyle, 2002).

Fantasy understanding. The procedures and materials for fantasy understanding were identical to those used in Study 1. As before, children were asked to describe what was happening in the drawing to make sure they understood the story before being asked to respond. In 11% of the descriptions, children were unable to describe the events and were told what was happening in the drawing. These children were then given a second chance to describe the depicted event and all did. This occurrence was not associated with whether the drawing was fantastical or real.

Language. The Peabody Picture Vocabulary Test-Revised (PPVT-R) was included as the language measure. As one of the preschools did not approve of its use, the WPPSI was not included. The PPVT-R is an individually administered test of young children’s receptive semantic language ability. Its inclusion allowed for the investigation of whether the association between language and mental state understanding persists when a receptive vocabulary measure is used. The PPVT-R is a widely used measure in developmental research and it is significantly associated with other measures of language as well as with children’s general intelligence. It also has excellent test-retest reliability (Bracken & Murray, 1984) and was developed and normed with nationally representative samples of children. The other major change involved the inclusion of three false belief tasks, all described in detail below.

False belief understanding. Following Nguyen and Frye (1999), one of the tasks was a social activity false belief task
in which the referents were social rather than physical and the second task was a standard false belief task in which the referents were physical (see Wimmer & Perner, 1983). Both tasks have been used successfully with low and middle SES children (Nguyen & Frye, 1999).

**Social activity false belief task.** Using the procedure described in Nguyen and Frye (1999), the children were shown a miniature book and two stuffed animals, a rabbit and a bear, and presented with the following scenario: "Here are Bunny Rabbit and Bear. They said that they would read together. They are reading together. Now the Bunny Rabbit leaves to go to another room. Bunny Rabbit cannot see or hear what you, I, or Bear are doing. Bear changes what he is doing. Bear does not want to read anymore. He wants to sleep. Bear is sleeping now. Does Bunny Rabbit think that Bear is reading, or does Bunny Rabbit think that Bear is sleeping?"

**Standard false belief task with physical referents.** For the second task, children were shown a green box, a black box, several crayons, and a stuffed pig. They were presented with the following scenario: "Here is Piggy. These are Piggy’s crayons. Piggy is putting them in the green box. Now Piggy leaves to go to another room. Piggy cannot see or hear what you or I are doing. I am going to move the crayons to the black box. They are in the black box now. Where does Piggy think the crayons are? Does Piggy think that they are in the green box, or does Piggy think that they are in the black box?"

The order of presentation for the two tasks was counterbalanced and each of the tasks was presented on two separate occasions as described by its developers. Sessions were separated by a minimum of 7 days and for as long as 13 days. For the social activity false belief task, children were scored as passing ("1") if they correctly predicted that the absent character is still engaged or still wants to engage in the original activity. For the standard false belief task, responses were scored as passing if, upon return, the absent character predicts that the physical object is in the original location. In addition to computing separate scores for the tasks, an aggregate false belief score was also calculated by summing the scores.

**Social competence.** As before, teachers completed the SCBE-30 (LaFreniere & Dumas, 1996) for each child. However, social competence data was only available for 61 of the children (34 of the lower SES children and 27 of the middle SES children). There were no differences in gender or SES distribution for children with and without social competence data (ps < .10).

### Results

**Preliminary analysis**

There were no gender differences for any of the study variables, but children performed better on the standard activity false belief task than on the standard false belief task, \( F(1, 112) = 12.87, p < .001 \). (See Table 2.)

**Descriptives**

As shown in Table 3, SES was associated with language scores and fantasy understanding tasks. Language was positively correlated with fantasy understanding and the social activity and standard false belief scores. Age was also positively associated with fantasy understanding and the social activity false belief measure. The social activity and the standard false belief scores were correlated with one another and both were associated with higher fantasy understanding scores.

**Regression analysis**

To better understand the relations among the variables, multiple regression analyses were conducted.

Recall, though, that the false belief measures were administered twice so that children could receive a "0" (for failing both times), "1" (passing one time), or "2" (passing twice). However, the vast majority of children either failed twice or passed twice so that it was more appropriate to treat the measures as categorical rather than continuous and to use logistic regression for these variables. That we had more than two categories (e.g., failing twice, passing twice, and passing once/failing once) was not a problem as logistic regression can be safely used even when the dependent variable has more than two categories (Tabachnick & Fidell, 1989).

With overall fantasy understanding as the dependent variable, age and SES were both positive predictors of fantasy understanding on the first step and explained 25% of the variance, \( F(2, 110) = 18.43, p < .01 \). Language explained

---

1. The results of the logistic regression equations were similar to results obtained with hierarchical regression analyses with the false belief measures treated as continuous rather than categorical variables.
additional unique variance in fantasy understanding when added on the second step, $R^2_{\text{change}} = .05, F(1, 109) = 7.17, p < .01$. Together, age, SES, and language accounted for 30% of the variance. Given that preschoolers are more likely to answer correctly when the drawing depicts reality rather than fantasy, separate scores for each were calculated so that a consideration of how age, SES, and language might differentially impact the individual scores could be made. For the reality drawings, the model was significant when age and SES were included on the first step, $F(2, 110) = 4.24, p < .05$, and explained 7% of the variance. Only age was a significant predictor ($\beta = .26, p < .05$). When added on the second step, language competence did not contribute to unique variance. For fantasy drawings, the model was significant when age and SES were included on the first step and explained 22% of the variance. Both age ($\beta = .37, p < .01$) and SES ($\beta = .28, p < .01$) were significant predictors. Adding language ($\beta = .36, p < .01$) explained additional variance, $R^2_{\text{change}} = .14, F(1, 109) = 22.69, p < .01$.

As already noted, separate equations were constructed for the two standard false belief scores using logistic regression techniques. Age and SES were included on the first step and language was added on the second step. Overall fantasy understanding was included on the third step in order to investigate whether fantasy understanding was a positive predictor of false belief understanding once age, SES, and language were controlled.

With social activity false belief as the dependent measure, age was significant on the first step and language was significant on the second step. When the standard false belief score was included as the dependent measure, age and SES were not significant. However, language was a significant predictor when added on the second step. In addition, fantasy understanding was a significant predictor of the social activity false belief score on the third step.

The next analysis included fantasy understanding as a dependent variable and evaluated the contribution of social competence, after controlling for the effects of age, language, and SES. Given that social competence was related to fantasy understanding in Study 1 when only low SES children were included, it was possible that SES moderated the relation between the two variables. Therefore, moderational analyses were conducted according to procedures described by Aiken and West (1991). Specifically, the interaction term of social competence and SES was created and entered (along with main effects for age, language, SES, and social competence). Neither the main effects nor the interaction term was significant. (See Table 4.)

### General Discussion

This research began with a consideration of economically disadvantaged preschoolers' ability to distinguish fantasy and reality. As highlighted in the introduction, children being reared in economically disadvantaged families are less likely to incorporate fantasy in their play than their more advantaged counterparts (e.g., Griffith, 1980). These results add to earlier findings by demonstrating that economic risk is also associated with lower levels of fantasy understanding. When separate scores for fantasy and realistic drawings were considered, low SES children only had difficulty with the task when fantastical characters were shown. This suggests that these children have problems with some aspects of fantasy, regardless of whether they are evaluating iconic representations or, as demonstrated in earlier work, engaging in more active forms of fantasy play themselves. It is important, though, to interpret the findings within the framework of social contextual theory. Factual accounts of events may be especially valued in middle SES families whereas in low SES communities, telling an interesting and engaging story is as important as presenting the facts (Heath, 1986), which indicates that low and middle SES children may have different motives for understanding fantasy, and suggests the need for research that considers the socialisation of fantasy among these children.

SES was unrelated to the false belief measures. That SES was unrelated to the two socially based false belief tasks was not unexpected. That the two groups of children performed similarly on the standard false belief task was, however, surprising, given that numerous studies have shown positive associations between SES and false belief understanding (e.g., Cole & Mitchell, 1998; Cutting & Dunn, 1999). Unlike many studies, the low SES children in this study were minority and the majority of children in the middle SES group were also ethnically diverse. Further, most of the low SES children had not experienced the multiple risk factors often associated with economic disadvantage, such as living in a single-parent headed household and low parental education.

Overall, older preschoolers performed better than younger preschoolers on fantasy understanding, especially when the

### Table 4

**Study 2: Summary of logistic regression analyses**

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Social activity false belief</th>
<th>Standard false belief</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parameter $\chi^2$ estimate Standard square error</td>
<td>Parameter $\chi^2$ estimate Standard square error</td>
</tr>
<tr>
<td><strong>Step 1:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.05</td>
<td>4.88*</td>
</tr>
<tr>
<td>SES</td>
<td>-.51</td>
<td>1.47</td>
</tr>
<tr>
<td><strong>Step 2:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.05</td>
<td>5.38*</td>
</tr>
<tr>
<td>SES</td>
<td>-.27</td>
<td>0.37</td>
</tr>
<tr>
<td>Language</td>
<td>-.02</td>
<td>4.02*</td>
</tr>
<tr>
<td><strong>Step 3:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fantasy understanding</td>
<td>-13</td>
<td>4.07*</td>
</tr>
</tbody>
</table>

* $p < .05$; ** $p < .01$; *** $p < .001$. 

drawing was of a realistic situation. As would be expected, language was predictive of social activity false belief performance and fantasy understanding, but only when fantastical rather than realistic drawings were used. When viewing the findings across the two studies, language was a positive predictor of fantasy understanding, regardless of whether it was assessed with semantic or syntactic language measures. Other work has demonstrated that different aspects of language competence may contribute uniquely to mental state understanding. In a study that included measures of syntactic and semantic ability, Astington and Jenkins (1999) found evidence that syntactic ability may be particularly important in the development of a false belief, once semantic ability is statistically controlled, which may mean that language ability may actually precede the development of certain aspects of false belief understanding. Although two measures were included, they were not considered in the same study. It will be important to include multiple measures of language in future studies in order to better understand the role of language in mental state understanding, particularly for children who are at risk for poor vocabulary development (Hoff-Ginsberg, 1991). Future research that includes a more naturalistic language assessment such as those obtained with narratives might also be helpful as low and middle SES children show differences in language quality and use in the school context but not at home (Peagans & Hemdas, 1986).

Fantasy understanding was also associated with performance on the social activity false belief tasks. This is in accord with other studies that show that children higher in fantasy (e.g., who have an imaginary companion, play with fantasy-oriented toys) tend to perform better on false belief tasks (Taylor & Carlson, 1997). Our results are consistent with the supposition that children's understanding of other people's mental states may depend upon their imaginative understanding (Harris, 1994). In other work, children were presented with video clips of real or pretend sequences and asked if the events portrayed were real or pretend. If children answered correctly, they were then asked what the characters in the scene were thinking about and what they were "really, really" doing. It was responses to the latter question that were related to false belief (Rosen, Schwebel, & Singer, 1997). Although this finding may seem counter to what was reported here, the children were shown pretend sequences rather than fantasy content. Unlike fantasy, pretense has a strong action component (Perner, 1991). Here, children were shown fantasy characters that may or may not have been involved in specific actions. Future research should further examine how stimuli depicting fantasy versus pretence might impact children's responses and their subsequent associations with false belief understanding. It is also possible that children with more vivid imaginations had an easier time creating images of the actions of the characters depicted in the drawings; perhaps the use of different stimuli would have produced different results.

Recall that linguistic ability was associated with fantasy understanding and children's performance on the social activity false belief task, which means that the link between the two may be due to the fact that language underlies performance on both measures. Though the correlational nature of this work precludes causal statements, the potential importance of fantasy competence in the development of false belief understanding cannot be ignored.

Overall, many low SES children are quite competent at distinguishing fantasy and reality drawings and understanding false belief. That SES accounted for relatively little unique variance in mental state understanding may be due to several factors. SES is a marker variable that is a function of parental education, income level, and/or occupational status, and by itself, may tell us very little about how economic disadvantage contributes to children's problems in this area. Other factors associated with SES might better explain children's competence, such as parental child-rearing practices, school experiences, and family religious beliefs (Cole & Mitchell, 1998), and these should be explored in future research.

Another interesting result was that fantasy understanding was related to social competence in Study 1. This is the first research to link this aspect of fantasy and social competence. Given its correlational design, it is not known whether fantasy understanding helps children to behave more competently in certain types of social interactions or if children are better able to distinguish between fantasy and reality because they are already more socially competent. Children who have a coherent understanding of fantasy and reality have greater access to more themes with which to enact fantasy or other types of play scenarios (Bretherton, 1989). Children may also use their competence in the fantasy arena to cope with difficult situations (Cornelius, 1989). Still, fantasy understanding and social competence were not related when a more diverse group of preschoolers was included, suggesting that SES may moderate the relation between the two. This was not confirmed here. Nonetheless, this is a question that certainly warrants more research attention.

Surprisingly, false belief was not associated with social competence, even when age, SES, and language were removed. This is in contrast to work that shows an association between false belief performance and children's communication with a friend (Slomkowski & Dunn, 1996) and pretend play skills (Youngblade & Dunn, 1995). The lack of findings may be due to the fact that the teachers' ratings of social competence were included rather than observations of children's actual social behaviour. The social competence scale used here was a more global index of positive and adaptive functioning rather than social skill. Teacher ratings may provide information about behaviours that contribute to classroom cohesion rather than peer-related social competence. We had hoped that inclusion of various types of false belief would help us to better understand the relation between mental state understanding and social competence. We have not abandoned the hypothesis that particular aspects of false belief understanding may be more strongly related to social competence than others. Future research should include various components of false belief understanding as well as multiple measures of social competence.

There are several limitations to the current work. First, only one component of fantasy understanding was assessed. A greater understanding might occur if the fantasy understanding measures were expanded and if children's understanding of pretence was also included. The fact that this work is correlational and that causal conclusions cannot be drawn is also a limitation. Longitudinal associations among fantasy understanding, false belief, and social competence would be helpful in this regard. Finally, much of the variance in mental state understanding was not explained by age, SES, and language. Still, findings provide much-needed information about the mental state understanding of low SES and minority-group children. Specifically, the correlates of mental state understanding of children at economic risk are similar to those
identified in research on middle SES preschoolers. Even so, the need for continued research on these children should remain a priority to ensure that existing developmental theories are based on data from all children (Lutchen, 1999).

Manuscript received March 2004
Revised manuscript received October 2004

References


African American and Caucasian Preschoolers’ Use of Decontextualized Language: Literate Language Features in Oral Narratives

Stephanie M. Curenton
Society for Research in Child Development, Washington, DC

Laura M. Justice
University of Virginia, Charlottesville

The preschool years are a critical period for the development of emergent literacy (Tate & Sulzby, 1986). There are several precursors to later reading achievement that are evident during this time, such as letter knowledge, phonological awareness (see Hecht, Burgess, Torgesen, Wagner, & Rashotte, 2000), and advances in oral language (see Snow, Burns, & Griffin, 1998). In the present study, a less-frequently studied aspect of preschool children’s oral language was examined, namely their use of decontextualized discourse in oral narratives. The specific form of decontextualized discourse investigated in this study was preschool children’s use of literate language features, which are viewed as key indices of later literacy skill (Westby, 1991).

DECONTEXTUALIZED LANGUAGE

In decontextualized discourse, meaning is conveyed through specific linguistic devices, primarily grammar and vocabulary. This may be contrasted with contextualized discourse, in which meaning is conveyed through extra-linguistic devices (e.g., gesture, intonation, facial expression), contextual cues within the environment, and knowledge shared among discourse participants (Pellegrini, 1985; Scott, 1994; Westby, 1991). Contextualized discourse predominates when there is shared knowledge or context among participants; decontextualized discourse occurs in situations in which shared knowledge or context is unavailable.

Westby (1991, 1994) depicted the language used in the two types of discourse styles as occurring along a continuum. The two extremes use linguistic features that contrast both functionally and structurally. Functionally, contextualized language is used primarily to regulate social interactions of the present and to share information about the “concrete and the practical” (Westby, 1991, p. 337). In contrast, decontextualized language is used to talk about the past or future and to share information about abstract objects, events, and situations that are removed from the

ABSTRACT

Purpose: Low-income preschoolers’ use of literate language features in oral narratives across three age groups (3-4, and 5-year-olds) and two ethnic groups (Caucasian and African American) was examined.

Method: Sixty-seven preschoolers generated a story using a wordless picture book. The literate language features examined were simple and complex elaborated noun phrases, adverbs, conjunctions, and mental/linguistic verbs.

Results: Literate language features occurred at measurable rates for 3- to 5-year-old children. Conjunction use was positively associated with the use of complex elaborated noun phrases and adverbs and the use of complex and simple elaborated noun phrases was inversely related. There were no differences between African American and Caucasian children’s usage rates. Age-related differences were observed in the use of mental/linguistic verbs and conjunctions.

Clinical Implications: The importance of supporting decontextualized language skills during the preschool period is discussed.

KEY WORDS: literate language, narration, preschoolers, emergent literacy.

240 LANGUAGE, SPEECH, AND HEARING SERVICES IN SCHOOLS • Vol. 35 • 240–253 • July 2004 © American Speech-Language-Hearing Association 0161-1461/04/3503-0240
immediate context. Structurally, the syntax and vocabulary of decontextualized language requires use of a more precise vocabulary and formal syntactic marking of the temporal and causal nature of events. These decontextualized language features verbally elaborate and render explicit those events or ideas that are displaced from the immediate context. Children presumably acquire much of their decontextualized language through interactions with print (see Wallach & Butler, 1994); however, other types of verbal interactions also may facilitate acquisition, such as listening to sermons, speeches, or oral stories that refer to events in the past or future.

LITERATE LANGUAGE FEATURES

The unique linguistic features that are used in decontextualized discourse situations are collectively referred to as literate language features. Literate language features increase explicitness and reduce ambiguity during decontextualized discourse. The four structural indices of language that are most commonly associated with literate language are elaborated noun phrases, adverbs, conjunctions, and mental and linguistic verbs (Greenough & Strong, 2001; Pellegrini, 1983). Collectively, these four structures permit the linguistic rendering of meaning in situations with restricted contexts. Elaborated noun phrases, in which general or specific nouns are modified through the addition of determiners (e.g., articles, possessives, demonstratives, and quantifiers) and/or adjectives, increase the explicitness of character, object, and event descriptions. Simple and compound adverbs (e.g., almost, now, nowhere, often, quickly, right there) enhance the explicitness of time, manner, and place references. Coordinating (e.g., and, or, but, so) and subordinating conjunctions (e.g., because, since, until, when) organize information into causal and temporal sequences to clarify relationships among story elements. Mental and linguistic verbs (e.g., think, know, tell, call) provide explicit and elaborated information about the mental and linguistic processes of story characters.

Facility with decontextualized language has been identified as critical for language, literacy, and academic success (e.g., Dickinson & Snow, 1987; Heath, 1983; Nippold, 1988; Snow et al., 1998). The mastery of literate language features is often associated with academic success because school is an environment that emphasizes flexibility in decontextualized discourse (see Edwards & Mercer, 1986; Gillam, Penne, & Miller, 1999; Greenough & Strong, 2001; Nippold, 1988; Tannen, 1984). Further, children having difficulties with use or comprehension of literate language features are generally viewed as being at risk for problems with literacy and academic achievement (e.g., Gillam & Johnston, 1992; Snow, 1991). Such difficulties may be associated with an oral language impairment influencing acquisition of specific linguistic forms and functions (Gillam & Johnston, 1992), but can also occur when the discourse style of the child's home environment differs dramatically from the discourse of the academic environment. As noted by Michaels (1981), academic achievement may be particularly challenging for children whose discourse style is "at variance with the teacher's own literate style and expectations" (p. 424).

Despite suggestions in the literature indicating that language skills that are important to literacy development are acquired in early childhood, few studies have examined the use of literate language features by preschool children. The limited research is particularly surprising given the perceived importance of literate language features to academic success and the possibility of using literate language features as an index of competency in oral language and/or literacy.

Preschoolers' Use of Literate Language Features

The preschool period provides an opportunity to investigate decontextualized discourse because of the advancement in mental representation skills within this age group. McGillicuddy-DeLisi and Sigel (1991) suggested that decontextualized language requires children to mentally represent objects and events that are absent from the immediate context. A large body of literature on children's social-cognitive reasoning details developments in mental representation from infancy through preschool, indicating that children become proficient in mentally representing objects and the internal states of people or story characters around age 4 (see Flavell & Miller, 1998, for review). Hence, if comprehension and production of decontextualized discourse requires mastery of mental representation, perhaps age-related changes in the use of literate language features will be evident when studying age groups that have not yet fully mastered mental representation.

For the most part, studies of literate language features in spoken or written discourse have focused on describing the abilities of school-age children (e.g., Heath, 1983; see Tannen, 1984). A recent study by Greenough and Strong (2001) examined age-related differences in the use of literate language features for 104 seven- to ten-year-old Caucasian children, all of whom were native English speakers residing in Utah. These researchers compared the use of literate language features for 52 typically developing children and 52 children exhibiting language impairment (LI). Results revealed that the rate of occurrence for literate language features differentiated children with LI from their typically developing peers, particularly the use of elaborated noun phrases and conjunctions. However, there were no gender- or age-related differences in the use of literate language features. The absence of age-related differences in Greenough and Strong's work raises the question of whether the developmental trajectory of literate language features is evident at earlier ages, before children begin receiving formal instruction in reading and language during elementary school. Perhaps the developmental trajectory for children's acquisition of decontextualized language skills could be explored by examining literate language use in preschool children.

The only known study to have examined preschool children's use of literate language features was conducted...
by Pellegrini (1985). Pellegrini studied the relationship between the use of literate language features and symbolic play in 20 Caucasian middle-class preschoolers, hypothesizing that children would employ literate language features in sociodramatic play “to define symbolic transformations so as to avoid and clarify ambiguity” (p. 83). Consistently high correlations (ranging from .62 to .93) were observed between categories of play and children’s use of literate language features. The findings indicated that preschool children had the ability to create decontextualized language, and that such features occurred frequently in play-based interactions with peers. Pellegrini and colleagues (Pellegrini, Galda, Bartini, & Charsak, 1998; Pellegrini, Galda, Flor, Bartini, & Charsak, 1997) subsequently conducted several studies showing that kindergarten children also frequently use literate language features within the context of friendship interactions.

THE PRESENT STUDY

Viewing the use of literate language as a developmental process of emergent literacy suggests that early forms of literate language may be evident during preschoolers’ play interactions. The purpose of the present study was to explore and characterize preschool children’s use of literate language features to determine if these features were present in the preschoolers’ narratives, and to determine whether usage varied as a function of age and/or ethnicity. The research questions included:

- Are literate language features present in preschoolers’ oral narratives?
- Are age-related changes evident when examining preschoolers’ use of literate language features?
- Are differences in literate language feature use evident when comparing African American and Caucasian children?

Presence of Literate Language Features in Preschoolers’ Narratives

The first research question examined the extent to which literate language feature use was evident within the context of preschoolers’ oral narratives. Production of a narrative (e.g., a fictional story, event retelling) is viewed as a complex language task requiring integration of the varied domains of language, including grammar, vocabulary, and morphology (McCabe & Rollins, 1994).

Preschoolers show gradual increases in the sophistication of their oral narratives. Their narratives are linguistically (Craig, Washington, & Thompson-Porter, 1998; Shapiro & Hudson, 1991) and social-cognitively more complex (Benson, 1997; Curenton, 2004) than the narratives that are characteristic of the toddler years. Given the noted advances in the linguistic and social-cognitive elements of narratives, preschool children’s narratives may be useful for reliably and explicitly examining children’s narratives for literate language use. Consistent with emergent literacy theory asserting the preschool years as a critical period for the emergence of literacy precursors (Kaderavek & Sulzby, 2000), it was hypothesized that literate language features would be evident and measurable in the oral narratives of preschoolers.

Age-related Changes in the Use of Literate Language Features

The second research question investigated age-related changes in preschool children’s use of the four literate language features studied. It was anticipated that higher rates of use would be observed in older children’s narratives. This expectation was garnered by the considerable research base showing gradual but consistent growth over the preschool years for each of the four structural indices under consideration: elaborated noun phrases (Brown, 1973; de Villiers & de Villiers, 1973; Gathercole, 1985; Miller, 1981), adverbs (Bowerman, 1978; Nippold, 1988), conjunctions (Brown, 1973; French & Nelson, 1983; Peterson & McCabe, 1987), and mental and linguistic verbs (Bartsch & Wellman, 1995; Moore, Furrrow, Chiasson, & Patrigni, 1994). Of the four features studied, it was anticipated that rate of conjunction use would be most discriminating in terms of age-related changes. Recent studies, such as works by McGregor (2000) and Shapiro and Hudson (1991), have shown conjunction use to be a particularly sensitive index of increasing language proficiency. For instance, McGregor found that 4- and 5-year-old low-income, African American children were more likely than 3-year-old children to use temporal conjunctions. Segal and Duchan (1997) argued that conjunctions are particularly important features of literate language because conjunctions allow the listener to determine meaning from the text, particularly causal and temporal relationships. As preschoolers mature, they become better at understanding the causal and temporal structuring of narratives; hence, older children were expected to be more likely than younger children to use conjunctions in their narratives (McGregor, 2000).

Comparison of African American and Caucasian Preschoolers

The third question compared literate language features for African American and Caucasian preschoolers. Analyses of children’s oral narratives are increasingly being advocated as one of the most valid and culturally sensitive means for examining children’s language use (Stockman, 1996), particularly for children whose culture or dialect may differ from that of the mainstream. The comparison of African American and Caucasian children’s use of literate language features was motivated by three salient issues in the literature: (a) the need for more information on the language and literacy ability of African American children, (b) variations in the literacy socialization practices of African American and Caucasian cultures, and (c) differences in African American and Caucasian children’s narrative skills.

Need for more information concerning the language and literacy of African American children. When
summarizing her 1970’s work on the language and literacy socialization practices of southern communities, Heath (1994) proclaimed, “We have [little] information about the variety of ways children from non-mainstream homes learn about reading, writing, and using oral language to display knowledge in the preschool environment” (p. 98). Craig and her colleagues (Craig et al., 1998) echoed Heath’s sentiment: “Very little information is available concerning the language and development of the African American child” (p. 433). Although a number of recent studies have focused attention on the oral language and literacy achievements of African American children (e.g., Bradford & Harris, 2003; Craig, Connor, & Washington, 2003), no study has documented the emergence of literate language features in this population. The present study contributes to the small, yet growing, body of research on low-income, African American children’s language and literacy development by providing information about the link between oral narrative skills and literacy-related language skills.

Poverty is a well-known risk factor exerting considerable influence on literacy achievement, regardless of ethnicity (e.g., Lonigan et al., 1999). However, African American children are particularly vulnerable for difficulties in early and later literacy achievement because of both the disproportionate number of African Americans in poverty and the distinct language and literacy socialization practices of African Americans (see Craig et al., 2003). Therefore, studies examining developmental skills in samples of ethnically diverse low-income children are needed in order to discern which risks (or resiliencies) are related to poverty and which are related to sociocultural customs. The validity of cross-cultural comparisons of children’s literacy abilities has often been questioned because ethnicity has frequently been confounded by poverty status for African American children. In the present study, so as to avoid confounding ethnicity and socioeconomic status, all participants were sampled from preschools serving low-income families. Thus, in terms of socioeconomic status and educational participation, all children were similar.

Variations in sociocultural practices. The second motivating factor for the comparison of African American and Caucasian children was the opportunity to examine literate language features in two groups with reportedly distinct literacy socialization practices. Literacy socialization practices are important to consider when examining children’s skills because families’ literacy practices predict children’s oral and written language skills (Payne, Whitehorn, & Angell, 1994; Senechal, Lefevre, Thomas, & Daley, 1998). Furthermore, it has been well established that children’s oral narratives reflect individual differences associated with sociocultural beliefs and practices (see Gutiérrez-Clellen & Quinn, 1993). Linguistic, thematic, and stylistic features of children’s narratives are influenced by sociocultural factors, such as the frequency and style of narratives heard within children’s cultural communities and the frequency and style of verbal and nonverbal narrative scaffolding used by adults (Berman, 1995; John-Steiner & Panafozky, 1992; Payne et al., 1994; Senechal et al., 1998). In addition, the amount of decontextualized language that parents use has been associated with the amount of decontextualized language that children produce (Peterson & McCabe, 1994).

Research has demonstrated variations between African Americans and Caucasians in terms of literacy socialization. Heath’s (1994) ethnographic depiction of two working-class communities, one African American and one Caucasian, suggested that these two groups had distinct methods for socializing preschoolers’ literacy skills. The Caucasian preschoolers, according to Heath, acquired literacy skills through adults’ intentional coaching using storybooks and alphabet letters. In contrast, the African American preschoolers acquired literacy skills indirectly and implicitly through their participation in narrative talk. For instance, both Heath and Sperry and Sperry (1996) reported that African American children were often encouraged to tell, and praised for telling, oral stories. Nevertheless, Heath reported that neither African American nor Caucasian adults encouraged decontextualized language skills in children.

Heath’s (1994) work examined spontaneous, unstructured interactions between parents and their children, but similar sociocultural variations have been found for other structured literacy interactions as well. Anderson-Yockel and Haynes (1994) examined joint book-reading interactions for 20 working-class African American and Caucasian mother–toddler dyads. They found that Caucasian mothers asked more What questions and Yes/No questions during storybook reading relative to African American mothers. Caucasian children produced more responses to questions, whereas African American children produced more spontaneous vocalizations during the interaction. Similar findings have been reported by Scheffner Hammer (2001) and Washington and Craig (2002).

Differences in narrative skills. Sociocultural differences in the early literacy experiences of African American and Caucasian preschoolers may contribute to differences between African American and Caucasian children’s narrative skills. Bliss, Covington, and McCabe (1999) explained that African American children’s narratives typically contain more descriptions and subjective evaluations of events, whereas Caucasian children’s narratives contain more factual and objective statements. Michaels (1981) reported that African American children were more likely to produce topic-associating narratives, whereas Caucasian children were more likely to produce topic-centered narratives. Topic-associating narratives are stories in which a series of loosely related episodes containing multiple shifts in temporal, locative, and character references are woven around a single theme. In contrast, topic-centered narratives are ordered chronologically and contain a single episode. Hyon and Sulzby’s (1994) work examining African American children’s narratives supported Michael’s findings, but it also highlighted the within-group variation among African American kindergartners’ narrative skills. For instance, Hyon and Sulzby reported that 33% of the narratives that children told were classified as topic-associating and 58% were topic-centered.

Much of the literature regarding African American children’s narrative skills pertains to children’s narrative

 Curenton • Justice: Literate Language Features 243
structure (i.e., narrative style); however, this study examined children's narratives for linguistic features. Despite the differences in narrative style, African American and Caucasian children may be more similar in terms of the linguistic properties of their narratives because syntactic features of language are less likely to be affected by sociocultural factors. Whitehurst (1997) explained that syntactic abilities reflect the neurological structures underlying language acquisition, and findings from his research with ethnically diverse Head Start children demonstrated that syntactic measures were less affected by poverty than other aspects of language development, such as vocabulary. Similarly, Craig and Washington (1994) found that the low-income African American preschool children in their sample who spoke African American English vernacular used complex syntax skills. Furthermore, African American children's syntactic complexity was the best predictor of children's utterance length (Craig et al., 1998).

Thus, it appears that socialization practices may be a stronger influence on children's narrative style than on the syntactic structure of their narratives. Therefore, it is not clear whether sociocultural differences may influence African American and Caucasian children's use of literate language features. This study compared usage rates of literate language features for African American and Caucasian children to determine if early decontextualized language skills differed for children from diverse sociocultural backgrounds. Because there has been no prior work comparing the literate language features of African American and Caucasian preschoolers, no a priori hypothesis was advanced.

Clinical and Theoretical Significance

Researchers and clinicians in speech-language pathology and related disciplines are interested in understanding the developmental pathways associated with successful language and literacy achievement and in applying this understanding to the design and delivery of prevention and intervention models. Given the integrative links between literate language and literacy achievement, characterizing developmental trajectories is worthwhile both theoretically and clinically. Studying the emergence of literate language will refine current theoretical models of oral language and literacy achievement, which has implications for understanding risk and resiliency in language and literacy development. In terms of clinical practice, the characterization of emergent literate language will provide descriptive-developmental indicators, which may be used for interventions and comparisons between typically and atypically developing populations (Naremore, 1980; Paul, 2001).

METHOD

Participants

Seventy-two children from a small southern city were recruited via letter and parent meetings to participate in a larger study of preschool children's narrative and social-cognitive skills. Children were recruited from six Head Start classrooms, two preschools designed to serve low-income children (viz., the Salvation Army and a local preschool that has historically served urban African American children), a preschool classroom at the YMCA, and several private preschools. Those children attending private preschools received income-based child care subsidies from Temporary Aid for Needy Families. Forty-six percent of the children attended Head Start and 54% attended private or other preschool programs. All of the children were from lower socioeconomic status homes as determined by community demographics and low-income preschool eligibility.

The Language and Cognition subscale of the Early Screening Inventory—Revised (ESI-R; Melsa & Marsden, 1997) was administered to each child to broadly examine language and cognitive skills. There are two age-normed versions of the ESI-R—the ESI-Kindergarten (ESI-K) and the ESI-Prechool (ESI-P). The subscale contains four content areas—number concepts, verbal expression, verbal reasoning, and auditory sequential memory. Children's performance on the subscale was not used for screening or classification purposes; it was used merely to provide information regarding whether children's language and cognitive skills were generally comparable to those of their typically developing age-matched peers. Children's performance on the items was compared with the performance of children from the norming sample. With the exception of 2 African American children (mean age = 47 months; 1 male, 1 female), each child received a score on the ESI-R that was within 1 SD of the score for his or her chronological age. Because the purpose of this work was to examine literate language features in typically developing children, those with low scores were excluded. Additionally, 3 African American children (mean age = 45 months; 1 female, 2 males) who did not produce an oral narrative using the narrative task were excluded from participation.

The remaining sample consisted of 67 preschoolers. There were twenty-two 3-year-olds (M = 43 months, SD = 3.39, range 36–47), twenty-one 4-year-olds (M = 53 months, SD = 2.72, range 49–58), and twenty-four 5-year-olds (M = 63 months, SD = 2.60, range 60–69). There were more females (n = 38) than males (n = 29), and there were fewer African Americans (n = 31) than Caucasians (n = 36). Table 1 depicts the participants' mean age by race, age group, and gender.

General Procedures

Schedule and setting. The narratives analyzed in the present study were collected during two waves of data collection spanning approximately 1 year. The procedures used for collecting narrative samples were identical for all participants; however, the total number of tasks and testing sessions varied across the two waves. During the first wave, 36 children were tested in two 20- to 30-min sessions per child. The time between sessions ranged from 1 to 3 weeks. One of three trained female undergraduate psychology students tested children individually at a table.
Table 1. Mean age of participants by race, age group, and gender (N = 67).

<table>
<thead>
<tr>
<th>Age group (n)</th>
<th>Gender (n)</th>
<th>Mean age in months (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>Male (4)</td>
<td>45.30 (1.50)</td>
</tr>
<tr>
<td>3-year-old (10)</td>
<td>Female (6)</td>
<td>43.17 (4.54)</td>
</tr>
<tr>
<td>4-year-old (9)</td>
<td>Male (2)</td>
<td>52.00 (6.0)</td>
</tr>
<tr>
<td>5-year-old (12)</td>
<td>Female (7)</td>
<td>52.43 (3.05)</td>
</tr>
<tr>
<td>Male (7)</td>
<td>62.58 (1.40)</td>
<td></td>
</tr>
<tr>
<td>Female (5)</td>
<td>62.60 (3.78)</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>Male (4)</td>
<td>43.75 (1.50)</td>
</tr>
<tr>
<td>3-year-old (12)</td>
<td>Female (8)</td>
<td>42.00 (3.70)</td>
</tr>
<tr>
<td>4-year-old (12)</td>
<td>Male (6)</td>
<td>54.33 (1.75)</td>
</tr>
<tr>
<td>5-year-old (12)</td>
<td>Female (6)</td>
<td>52.33 (3.45)</td>
</tr>
<tr>
<td>Male (6)</td>
<td>63.17 (2.32)</td>
<td></td>
</tr>
<tr>
<td>Female (6)</td>
<td>64.50 (3.02)</td>
<td></td>
</tr>
</tbody>
</table>

in a quiet area within the preschool center. The first session included administration of the ESI-R as well as several social–cognitive measures; the second session included administration of additional social–cognitive measures followed by collection of an oral narrative. During the second wave, an additional 26 children were tested in a single 30- to 40-min session. Again, the examiner tested children individually at a table in a quiet area within the preschool center. This session included administration of the ESI-R and several social–cognitive measures followed by collection of an oral narrative. The social–cognitive measures administered to participants in both waves consisted of emotional and social perspective-taking tasks, such as false belief tasks and emotion explanation tasks. Only the results for the ESI-R and analyses of the oral narratives were used in the present study. Children’s completion of these tasks before collection of the oral narrative may have helped to create a familiarity between the children and the examiner, thus increasing the likelihood of obtaining a representative sample.

Narrative collection procedures. The examiner presented the child with the wordless picture book, *Frog, Where Are You?* (Mayer, 1969). Procedures for collecting the spoken narratives were modeled after a protocol that was described in Shapiro and Hudson (1991), in which children are asked to view the entire book before generating their story. The sequenced illustrations of the book provide a map for developing and structuring a self-generated fictional narrative. Without sequenced illustrations, preschoolers produce short and unelaborated stories (Kaderavek & Sutza, 2000; Shapiro & Hudson, 1991). *Frog, Where Are You?* has frequently been used as a stimulus for eliciting narratives from children throughout the world (see Berman & Slobin, 1994), and has been used in prior research assessing literate language features (Greenhalgh & Strong, 2001).

In eliciting the spoken narrative, the examiner instructed the child, “Now I want you to tell me a story. Here is my special storytelling book. This book has lots of pictures, but it doesn’t have any words. Take a look at all the pictures in my book.” The examiner then showed the children the entire book by pointing out each illustration. If a child looked away from the book at any point, the examiner said, “Look at this page” to refocus the child’s attention to the book. The child was then asked to produce a narrative using the book. The instructions were as follows: “Tell me a make-believe story using the pictures in this book. You can make up a story about anything you want. Use the pictures in this book to tell me a story.” If children were hesitant during the narrative production task, the experimenter provided story-eliciting prompts as needed, such as “Tell me about this page” and “What about this page?” Children’s narratives were audiotaped using a traditional full-size Panasonic cassette recorder.

Narrative Transcription and Coding

**Transcription.** Trained research assistants transcribed each narrative interaction verbatim. Transcription included all child and experimenter utterances. The interactions were transcribed orthographically using the conventions of the Children’s Data Exchange System (CHILDES; MacWhinney, 1994). A second psychology student research assistant then independently reviewed each transcript while listening to the audiotaped interaction, at which point corrections were made to the transcript when discrepancies were observed. After the typed transcripts were verified for accuracy, the first author reviewed and modified each transcript based on a set of deletion rules (see Appendix A).

**Segmentation.** The transcripts were then segmented into communication units (C-units; Loban, 1976). C-unit segmentation is a common way to organize and analyze children’s narrative productions (see Retherford, 2000). A C-unit consists of a single main clause and any dependent constituents, including clauses and phrases. Hence, children’s utterances lacking clausal structure or a finite verb were omitted. Children’s sentences comprising a series of successive main clauses, linked by coordinating or subordinating conjunctions, were thus segmented accordingly. For instance, “and the boy who was in the water
yelling and he slide down the water” was segmented into two C-units: (a) “and the boy who was in the water yelling,” and (b) “and he slide down the water.” Descriptive indices for each narrative were calculated by Child Language Analysis (CLAN; MacWhinney, 1994), including the total number of C-units per narrative and the mean length of C-units in morphemes (MLCU).

**Coding literate language features.** The frequency of occurrence for children’s use of five mutually exclusive literate language features was coded for each narrative. Four main categories were adopted from Greenhalgh and Strong (2001) and included: (a) elaborated noun phrases (ENP), (b) adverbs, (c) conjunctions, and (d) mental and linguistic verbs. Elaborated noun phrases were divided into two exhaustive categories of simple versus complex phrases. As a result, five types of literate language features were analyzed—simple ENP, complex ENP, adverbs, conjunctions, and mental and linguistic verbs. Appendix B provides further description and examples for each. To control for variation in narrative length, frequency counts for all literate language features were tallied and then divided by the number of C-units in each child’s narrative. Thus, scores for use of a particular literate language feature represented mean rate of usage per C-unit.

Coding of two of the categories, conjunctions and mental and linguistic verbs, was conducted using CLAN. Computer coding was possible for these categories because of the relatively small number of units comprising each category. A computer file listing all possible conjunctions and mental/linguistic verbs that could be observed in children’s narratives was created, drawing from compendia provided in Justice and Ezell (2002) for conjunctions and Pellegrini et al. (1997) for mental and linguistic verbs. The computer program conducted a frequency count of both conjunctions and mental and linguistic verbs for each transcript.

The second author coded simple and complex ENP and adverbs by hand. This was necessary because the possible permutations of items comprising each of these two categories are expansive. In addition, hand coding controlled for the occurrence of functional differences across words of the same form (e.g., here and there can serve as demonstrative pronouns or adverbs depending on their function in a particular clause).

**Interrater Reliability**

To assess the reliability of narrative deletion, segmentation, and coding procedures, two trained coders independently followed the procedures for a subset (25%) of the total narratives that were used in the analyses. Item-by-item comparisons were made to determine scoring agreement. To obtain an interrater agreement score, the total number of agreements was divided by the total number of item comparisons and multiplied by 100. Interrater reliability was 98% (ranging from 94% to 100%) for deletion procedures and 99% (ranging from 96% to 100%) for segmentation. As for the literate language features coded by hand, the mean reliability score for ENP coding was 98% (ranging from 94% to 100%). Categorizing of ENP into simple versus complex phrases was conducted with 99% agreement (ranging from 96% to 100%). The score for adverbs was 92% (ranging from 50% to 100%). Although the mean interrater reliability score for adverbs was high, the range contained a low score of 50%, which occurred for a transcript that contained only two adverbs, in which a single disagreement resulted in a reliability score of 50%. Overall, the coders agreed on 33 of 36 adverbs that occurred across the 17 narratives used for reliability procedures. Any disagreements were resolved through discussion before data analysis.

**RESULTS**

Preliminary analyses of variance (ANOVAs) revealed no differences between boys and girls for either of the two descriptive characteristics of the narratives. Specifically, there was no significant effect for MLCU, $F(1, 66) = .17$, $p = .68$, or number of C-units, $F(1, 66) = .08$, $p = .78$. Similarly, there was no gender effect for any of the five literate language features: simple ENP, $F(1, 66) = 3.02$, $p = .09$; complex ENP, $F(1, 66) = 1.61$, $p = .21$; adverbs, $F(1, 66) = 2.63$, $p = .11$; conjunctions, $F(1, 66) = .01$, $p = .91$; or mental/linguistic verbs, $F(1, 66) = .84$, $p = .36$. Therefore, gender was not included as an independent variable in any further analyses.

**Descriptive Characteristics of Narratives**

The descriptive characteristics of children’s narratives (i.e., MLCU and number of C-units) were examined using a Race (African American vs. Caucasian) × Age (3-, 4-, 5-year-olds) multivariate analysis of variance (MANOVA). Results revealed no multivariate effect for Race, indicating that the narratives of African American and Caucasian children were equivalent in terms of number of C-units and MLCU.

There was, however, a multivariate main effect for Age, Wilk’s $\lambda = .79$, $F(4, 120) = 3.73$, $p = .01$, $\eta^2 = .11$, in which Age accounted for 11% of the variance. To control for Type I error, a traditional Bonferroni procedure was used to test each ANOVA at the .025 level. The ANOVA for number of C-units (i.e., length of narratives) revealed a difference between age groups, $F(2, 61) = 4.37$, $p = .02$. Tukey multiple comparisons indicated that 3-year-old children ($M = 18.27$, $SD = 10.89$) had significantly fewer C-units than 5-year-old children ($M = 26.75$, $SD = 10.07$), whereas 4-year-old children ($M = 25$, $SD = 9.86$) did not differ significantly from either group. The ANOVA for MLCU revealed that C-unit length varied by age, $F(2, 61) = 6.82$, $p < .001$. Results of the Tukey multiple comparisons showed that the mean length of C-units for 3-year-old children ($M = 4.79$, $SD = 1.20$), 4-year-old children ($M = 5.77$, $SD = 1.22$), and 5-year-old children ($M = 6.05$, $SD = 1.10$) were all significantly different from each other.

Age-related changes in narrative length were anticipated based on the extant literature (e.g., Gutierrez-Clellen & Hofstetter, 1994). To control for the differences in narrative
length, all of the following analyses for feature use were based on rate of occurrence.

**Literate Language Features**

The primary purpose of this study was to examine literate language features in low-income preschoolers' oral narratives. Table 2 shows the mean rate of usage and interclass correlations for the features. The correlations show that the rate of conjunction use was correlated with usage rates for complex ENP ($r^2 = .06$) and adverbs ($r^2 = .08$), and that complex ENP use was negatively associated with use of simple ENP ($r^2 = .06$). The $r^2$ statistic indicates a small effect size for these associations (Rosnow & Rosenthal, 1996). None of the other literate language features were significantly correlated.

The mean rates of usage showed that preschoolers incorporated each of the five features into their oral narratives. The highest usage rate occurred for simple ENP, averaging nearly one per C-unit ($M = .85, SD = .34$). Conjunctions averaged approximately one per two C-units ($M = .49, SD = .41$), and adverbs averaged approximately one per three C-units ($M = .29, SD = .22$). Mental and linguistic verbs ($M = .10, SD = .10$) averaged approximately one per ten C-units. The lowest rate of occurrence was for complex ENP ($M = .07, SD = .10$), averaging less than one per ten C-units.

A within-subjects repeated measures ANOVA was used to examine the usage rates across the features. Results indicated that the usage rates were distinct, $F(4, 264) = 104.02, p < .001, \eta^2 = .61$, and accounted for 61% of the variance. Follow-up paired-samples $t$ tests were conducted using the Holm's sequential Bonferroni procedure to control for Type I error across the comparisons. The usage rate for nearly all of the features was distinct except for the comparison between the rate of mental and linguistic verbs and complex ENP. Children used mental and linguistic verbs and complex ENP at the same rate, whereas the other features were used at significantly different rates. Table 3 lists the $t$ values for the pairwise comparisons.

Two-way, between-subjects ANOVAs were conducted to determine the effect of Race and Age on the usage rate for each specific feature. Results revealed no Race or Age effects for simple ENP, complex ENP, or adverbs. Likewise, there were no Race effects for children's use of conjunctions or mental and linguistic verbs. There was, however, a main effect for Age for children's use of conjunctions, $F(2, 61) = 5.15, p = .01, \eta^2 = .15$. Tukey multiple comparisons indicated that 3-year-olds had a lower rate of conjunction use as compared to 4- and 5-year-olds. Additionally, there was an Age effect for mental and linguistic verbs, $F(2, 61) = 3.13, p = .05, \eta^2 = .09$. Tukey multiple comparisons indicated that 3-year-olds used mental and linguistic verbs less frequently than 5-year-olds, but 4-year-olds were not significantly different from either group. Tables 4 and 5 list the means and standard deviations of each feature by ethnicity and age, respectively.

A narrative example from each age cohort is presented in Appendix C. These narratives were chosen because they

---

**Table 2. Descriptive statistics and correlations for literate language features.**

<table>
<thead>
<tr>
<th>Feature</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple elaborated noun phrases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complex elaborated noun phrases</td>
<td>-.24*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adverbs</td>
<td>.05</td>
<td>-.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conjunctions</td>
<td>.03</td>
<td>.24*</td>
<td>.27**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental and linguistic verbs</td>
<td>-.08</td>
<td>-.07</td>
<td>-.17</td>
<td>.11</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3. Pairwise comparison $t$ values for literate language features.**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>$t$ value</th>
<th>df</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple ENP vs. complex ENP</td>
<td>17.17</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Simple ENP vs. conjunctions</td>
<td>-5.56</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Simple ENP vs. adverbs</td>
<td>-11.68</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Simple ENP vs. mental and linguistic verbs</td>
<td>-17.18</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Complex ENP vs. conjunctions</td>
<td>8.97</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Complex ENP vs. adverbs</td>
<td>7.27</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Complex ENP vs. mental and linguistic verbs</td>
<td>1.67</td>
<td>66</td>
<td>.10</td>
</tr>
<tr>
<td>Conjunctions vs. adverbs</td>
<td>4.09</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Conjunctions vs. mental and linguistic verbs</td>
<td>7.89</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Adverbs vs. mental and linguistic verbs</td>
<td>-6.08</td>
<td>66</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

*Note. ENP = elaborated noun phrase.*
approximate the average usage for each age group in terms of conjunctions and mental and linguistic verbs, which were the two features that distinguished between the age groups. Each example has been presented in a narrative format, rather than in C-units, and has been edited for punctuation in order to facilitate narrative cohesion. The conjunction rate for the 3-year-old children was .27 and the rate of the mental and linguistic verbs was .00. For the 4-year-old children, the conjunction rate was .68 and .12 for mental and linguistic verbs. For the 5-year-old children, the rates were .70 and .10, respectively. These examples not only demonstrate quantitative differences in storytelling skills but also qualitative differences.

**DISCUSSION**

The results of this study demonstrated that literate language features were present in preschool children's narratives, and that the usage rate for two specific features varied significantly across the age groups. For instance, the oral narratives of 3-year-old children contained fewer conjunctions than the oral narratives of 4- or 5-year-old children. Additionally, the narratives of 3-year-olds contained fewer mental and linguistic verbs than those of 5-year-olds. The usage rate of other measures of literate language (viz., simple and complex ENP, adverbs) did not vary across the age groups. The results of the cross-cultural investigation showed no difference between African American and Caucasian preschoolers for narrative characteristics (i.e., number of C-units and MLCU) or literate language features.

**Presence of Literate Language Features**

The present research examined the associations among literate language features during the preschool years. Results indicated that most of the measures of literate language features that were employed in this study were distinct entities, but there were positive associations between children's conjunction and adverb use and their use of conjunctions and complex ENPs. The most frequently used literate language feature was the simple ENP, followed by conjunctions, adverbs, mental and linguistic verbs, and finally complex ENPs. This pattern of usage was consistent for every age studied and was similar for both Caucasian and African American children. The finding that preschool children, even those as young as 3 years of age, use literate language features in their oral narratives suggests that the foundation for decontextualized language skills emerges during the preschool years.

**Age-Related Changes in Feature Use**

Of interest were the findings showing conjunctions and mental and linguistic verbs to be indicators of age-related changes in children's use of literate language features. With respect to conjunction use, the findings contribute to an emerging body of literature suggesting that conjunction use is a key feature of oral language skills. Greenhalgh and Strong (2001) found that conjunctions were one of the two most robust literate language features for differentiating school-age children with language impairment (LI) from their typically developing peers; children who were typically developing used more conjunctions than children with LI. McGregor (2000) found that low-income 4- and
5-year-old African American children used a greater number of temporal conjunctions as compared to 3-year-old children. The present findings provide converging evidence by further demonstrating the sensitivity of conjunction use for demonstrating age-related changes in preschool children's oral narratives.

These results also contribute to the body of work pertaining to children's use of cognitive-based mental state terms (e.g., know, think, forgot). The present findings mirror those of other studies that have found children's use of cognitive-based mental state terms to increase throughout the preschool years (Bartsch & Wellman, 1995; Moore et. al., 1994). However, few studies have examined how children's use of linguistic verbs increases throughout preschool. Tager-Flusberg (1997) argued that both mental and linguistic verbs are particularly important markers of syntactic complexity because they allow one clause to be embedded within another (e.g., "He said, 'I want my frog,'" in which said [a linguistic verb] and want [a mental verb] provide the means for clausal embedding). Mastery of this level of syntactic complexity, referred to as complementation, demonstrates that children are able to understand the internal psychological states of story characters (see Tager-Flusberg [1997] and de Villiers & Pyers [1997] for an explanation of mental and linguistic verbs in relation to children's theory of mind). The present findings suggest that children's use of mental and linguistic verbs serves as age-related markers of literate language during the preschool years.

**Comparison of African American and Caucasian Preschoolers**

The results of this study revealed no significant differences in African American and Caucasian preschool children's use of literate language features. This null result may be because the children were from similar socioeconomic backgrounds and education environments. All children were experiencing the same risk factors associated with poverty, and these socioeconomic risk factors may have been more robust than ethnic differences. Additionally, ethnic differences may have been muted because of children's exposure to early care and education experiences. Several studies have indicated that African American children experience greater benefits from early care and education environments than their Caucasian counterparts (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997; Burchinal et al., 2000; Wu & Campbell, 1996).

Yet another explanation for the null result may be that the language task used was particularly amenable to capitalizing on the skills of all participants. Narrative assessment is viewed as an ecologically valid yet sensitive index of oral language proficiency (e.g., Craig et al., 1998). Research examining narrative production has found that low-income African American children perform according to age-appropriate norms on narrative measures (Craig & Washington, 1994; Craig et al., 1998). In fact, prior literature indicates that African American children may have a special talent for creating oral stories. They begin to tell fictional narratives sooner than their Caucasian, middle-class counterparts (see Sperry & Sperry, 1996), and their narrative abilities are associated with their social perspective-taking abilities, whereas Caucasian preschoolers' narratives are not (Curenton, 2004). Thus, when given the opportunity to demonstrate their language proficiency via narratives, African American children may perform better than they would have on standardized tests.

Although several studies have observed differences between African American and Caucasian mothers' use of decontextualized talk during joint book reading (Anderson-Yocel & Haynes, 1994; Scheffler Hammer, 2001), Heath (1994) reported that neither ethnic group encouraged decontextualized talk. Based on the results of the present study, one could assume that the African American and Caucasian children in this sample did not experience a difference in exposure to decontextualized language. However, the extent to which the children actually experienced distinct sociocultural practices was not documented because children's socialization experiences were not examined. Research examining children's literate language use in conjunction with observational or self-reported measures of literacy socialization is needed to determine how the emergence of literate language may be linked to children's sociocultural experiences in their homes and communities.

Comparison of literate language features across children from diverse sociocultural backgrounds may provide some insights into the variance and invariance of the development of particular literacy skills. Presumably, skills that are highly variant are fostered by specific types of sociocultural experiences, whereas those that are invariant are not. Preschool children's alphabet knowledge, which is a highly variant skill (Justice & Ezell, 2001), is predicted by the quantity and quality of home literacy experiences (Bennett, Weigel, & Martin, 2002). On the other hand, many oral language accomplishments are relatively invariant across children. Whitehurst (1997) reported a number of studies showing specific syntactic accomplishments to be invariant when comparing low-income preschoolers from culturally diverse backgrounds. Thus, the present findings suggest that use of literate language features may be an invariant aspect of literacy development, at least from a sociocultural perspective. The developmental findings reported in this manuscript may be useful for future research to identify the causes of risk and resilience in literacy achievement from children from diverse sociocultural backgrounds. Because our moderately sized sample consisted only of low-income children, all of whom were currently attending local preschool programs, these results may not be representative of more affluent children or low-income children who are not attending preschool.

**CLINICAL AND PRACTICAL IMPLICATIONS**

Decontextualized language ability is reported to be critical for academic success and an important marker of conventional literacy ability (Pellegrini, 1983; Scott, 1994; Westby, 1991). The observation that the preschool years
serve as a foundation for decontextualized language ability contributes to the growing research base demonstrating young children's remarkable prowess with respect to literacy (e.g., Dickinson & DeTemple, 1998; Dickinson & Snow, 1987; Justice & Elliott, 2001).

The present findings may be applied to a descriptive–developmental model of preschool language intervention to promote decontextualized language skills in the earliest stage of development for children who may have difficulty in the comprehension or use of decontextualized language. Application of this model (e.g., Paul, 2001) involves deriving goals for children from the normal developmental sequence. The results of the present study are particularly relevant for children from low-income households, a population that appears particularly vulnerable for difficulties in literacy development (Justice & Elliott, 2001). Children who do not appear to be using literate language features at the rates described in this report may receive targeted assistance to support their use of these features. By promoting literate language use in the earliest stages of development, speech-language pathologists may prevent later difficulties from occurring.

ACKNOWLEDGMENTS

This research was made possible by a University of Virginia Dean's Fellowship and a National Academy of Sciences Ford Foundation Predoctoral Fellowship, both of which were awarded to the first author. The views expressed in this manuscript are independent of those of the Society for Research on Child Development. We thank Claudia Reyes, Laura Rogers, and Mignon Jones for their assistance with narrative transcription.

REFERENCES


Received April 21, 2003
Accepted January 15, 2004
DOI: 10.1044/0161-1461(2004/023)

Contact author: Stephanie Curenton, 8715 First Avenue #310-D, Silver Spring, MD 20910. E-mail: smcurenton@rcn.com

---

**APPENDIX A. DELETION RULES**

Transcripts were modified to include only child utterances that were directly relevant to the story. All irrelevant remarks were deleted.

1. Utterances that were responses to experimenter questions or requests for elaboration/clarification were excluded, except for those statements that were responses to the standard probes. For example:

   Child: I like froggy.
   EXP: Hmm?
   Child: I like froggy.

2. False starts and retraces were deleted.

   Child: The boy-I mean the dog is trying to find the frog.

3. Filler words (e.g., hmm, uh-huh, huh) were deleted when they were the only words in the utterance.

4. Unintelligible utterances were deleted.

5. Denials ("I don’t know") and refusals to read were deleted.

6. Children’s questions and discussion about task procedures (e.g., "Do you want me to read this page?") were deleted.

---

252 *Language, Speech, and Hearing Services in Schools* • Vol. 35 • 240–253 • July 2004
APPENDIX B. DESCRIPTIONS AND EXAMPLES OF LITERATE LANGUAGE FEATURES
(see Greenhalgh & Strong, 2001; Justice & Ezell, 2002; Pellegrini, Galda, Bartini, & Charak, 1998)

1. Elaborated Noun Phrases (Simple and Complex): An elaborated noun phrase is a group of words comprising a noun at its head and one or more modifiers providing additional information about the noun. Modifiers may include articles (e.g., a, an, the), possessives (e.g., my, his, their), demonstratives (e.g., this, that, those), quantifiers (e.g., every, each, some), wh-words (e.g., what, which, whichever), and true adjectives (e.g., tall, long, ugly).
   a. Simple elaborated noun phrase: Simple phrases consist of a single modifier and a noun. Examples include big doggy (adjective + noun), that girl (determiner + noun), and those ones (demonstrative + noun).
   b. Complex elaborated noun phrase: Complex phrases consist of two or more modifiers and a noun. Examples include big red house (adjective + adjective + noun), a tall tree (article + adjective + noun), and some mean boys (quantifier + adjective + noun).

2. Adverbs: Adverbs are a particular syntactic form that are used to modify verbs. These modifiers increase the explicitness of action and event descriptions. Adverbs provide additional information about time (e.g., suddenly, again, now), manner (e.g., somehow, well, slowly), degree (e.g., almost, barely, much), place (here, outside, above), reason (therefore, since, so), and affirmation or negation (e.g., definitely, really, never).

3. Conjunctions: Conjunctions are used in discourse to organize information and clarify relationships among elements. They can be categorized as either coordinating or subordinating. Coordinating conjunctions include and, or, but, nor, and so. Subordinating conjunctions are more numerous and include the following examples: after, although, as, because, for, if, how, since, still, that, though, unless, when, where, while, and why.

4. Mental and Linguistic Verbs: This relatively small group of verbs refers to various acts of thinking and speaking. Mental verbs include think, know, believe, imagine, feel, consider, suppose, decide, forget, and remember. Linguistic verbs include say, tell, speak, shout, answer, call, reply, and yell.

APPENDIX C. EXAMPLES OF NARRATIVES

3-year-old

It looks like a animal. It looks like a frog. It is a frog! And here's a little . . . [trails off].

And the dog looking in the water. Him playing in the sand. The dog's playing in the sand. Look at the reindeer. It's done. Look. This page's the dog's on the man's shoulder. And the dog's running around like the man.

4-year-old

A frog was in there, and the dog was looking in there, and the little boy was looking. The frog got out when he was sleep. He saw them when he got out. He didn't see where he was at. He was lost. He was mean to the dog. He hollered at the frog. And that was the mouse. He—and the dog—he up the tree. And the mouse hurt his nose. He was gonna climb up the tree from the bees. And the little boy was going in there, and the dog was running. And he fell. The frog, he climbed the rock. He climbed on the rock and thought that the frog was there. So that reindeer go on him. And he's going to fall down off the reindeer. And they got in the water, and he was mad. He got up there to see the frog. They have baby frogs. And he said, "Bye."

5-year-old

Once upon a time there was a boy who was...had a dog and a frog. He was showing it. And the frog was looking at it. And he went asleep. And the frog came out. And he wakes up, and there no frog in there. He wasn't there. He drop it, and he got mad. He said, "Bumpy, Bumpy, where are you?" He probably up in the beehive. But he's not. He's probably up. But he dropped—they really drop the beehive. And they gonna fix the steamed dog. He's looking there. And there's a owl's that's chaising after the dog bees. And he called, "Willy, where are you?" and "Where did you go?" There was a mouse. And he knocked him down in the pond. And where is fuggy? He's probably there. He look. He said, "Oh." And he found them, "My babies!" and "Come everybody let's go home." The end.
"I’m Happy with My Mommy": Low-Income Preschoolers’ Causal Attributions for Emotions

Stephanie M. Curenton
Melvin N. Wilson
University of Virginia

This study examined low-income African American and European American preschoolers’ socioemotional causal attributions. Forty-seven Young ($M = 48$ months) and Old ($M = 62$ months) preschoolers were asked to justify a puppet’s current emotion and to talk about their past emotional experiences. Responses were coded for Causal Theme and Clarity. Old preschoolers were twice as likely to attribute interpersonal themes, and Young preschoolers were 4 times more likely to generate causal themes that were uncodeable. In terms of clarity, children provided clearer responses for anger and fear than they did for happiness. Old preschoolers’ explanations for emotions were clearer than young preschoolers’ and young African Americans’, who had the most difficulty explaining emotions. Results indicate that younger preschoolers, particularly young African Americans, may need help articulating emotions. Suggestions for how adults can scaffold preschoolers’ emotional reasoning are discussed.

This work is part of a larger study of low-income preschoolers’ narrative and social cognitive skills. This research was made possible by a University of Virginia Dean’s Fellowship and National Academy of Sciences’ Ford Foundation Predoctoral Fellowship awarded to the first author. We would like to thank Angeline S. Lillard for her guidance in developing the procedure.

Address correspondence to Stephanie M. Curenton, 8715 First Avenue #310D, Silver Spring, MD 20910, smcurenton@rcn.com.
"I'm Happy with My Mommy":
Low-income Preschoolers' Causal Attributions for Emotions

It is important for researchers to investigate children's socioemotional skills, especially those of children living in low-income environments where families are exposed to numerous economic and psychological stressors (McLoyd, 1990). These stressors undoubtedly contribute to the high prevalence of socioemotional problems among low-income children (for a review see McLoyd, 1998). Nevertheless, despite the common experience of economic and psychological hardships, low-income populations are heterogeneous. Children from low-income families exhibit a range of social competences (see Bost, Vaughn, Washington, Cielinski, & Bradbard, 1998; Garner, Jones, & Miner, 1994; Jagers, Bingham, & Hans, 1996) and low-income parents exhibit a range of parenting skills (Abell, Clawson, Washington, Bost, & Vaughn, 1996). When studying children who live in poverty, researchers have overlooked the within-group variation, by opting to examine between-group differences. Due to the variation within socioeconomic groups, it is worthwhile to study low-income populations from their own perspective.

The purpose of this paper was to examine low-income children's socioemotional development from a within-group perspective by asking them to generate causal attributions for a puppet's emotion and to talk about their past emotional experiences. We examined the casual themes that children reported and how well they articulated emotion attributions. This paper contributes to the literature on children's emotion understanding by enhancing our knowledge of low-income children's emotional attributions. Although Garner's work (1994, 1997, 2000) offers thorough insight into low-income children's emotional socialization and regulation, little is known about low-income children's emotional attributions. In fact, other studies of preschoolers' emotional attributions have consisted of primarily middle-class samples (Denham, Zoller, & Couchoud, 1994; Fabes, Eisenberg, McCormick, & Wilson, 1988; Fabes, Eisenberg, Nyman, & Mischeleau, 1991; Strayer, 1986). Therefore, this paper supplements our knowledge of low-income children's emotional understanding by providing examples of preschoolers' open-ended causal attributions, and it supplements our knowledge of children's emotion understanding in general by adding socioeconomic diversity to the existing body of literature.

Preschoolers' Emotion Understanding

Most of what developmental psychologists know about children's emotion knowledge is based on children's responses to emotion vignettes, in which children are presented with a stereotypical emotion scenario (e.g., a protagonist dropping his ice cream) and asked to choose among happy, sad, mad, or scared faces. There is a wealth of research demonstrating that children are capable of understanding what situations lead to which emotions using this approach (Denham, 1986; Denham & Couchoud, 1990a, 1990b; Garner, Jones, & Miner, 1994).

Another approach to assessing children's emotion understanding is based on children's open-ended explanations for emotions. Researchers adopting this approach ask children to explain the causes of emotions. In general, research has shown that by the end of their preschool years children are knowledgeable about the causes and consequences of emotions (Harris, 1983). In fact, children's attributions of emotions are nearly as sophisticated as
adults': Fabes et al., (1988) found that children and adults agree approximately 90% of the
time about the causes of emotions. Many studies report that children attribute certain causes
to specific emotions. For example, children are more likely to attribute happiness to personal
gain, fear to frightful fantasy figures, sadness to both material and interpersonal lost, and
anger to interpersonal conflict and aggression (Denham & Zoller, 1991; Dunn & Hughes,
1998; Fabes et al., 1988; Fabes et al., 1991; Strayer, 1986). The present study adopts the
later approach (i.e., evaluating children's open-ended explanations) to assessing children's
emotion understanding, and we are particularly interested in children's use of interpersonal
attributions.

**Interpersonal EmotionAttributions**

The study of children's causal attributions has evolved over time. At one point children
were viewed as behaviorist who understood others based on external situations and behaviors
(Shantz, 1983). Later, theory of mind researchers showed that children understood how
internal states relate to emotions (Wellman & Banerjee, 1991). More recently, Dunn and
Hughes (1998) examined working-class children's emotion explanations within the context
of interpersonal relationships by asking them to explain their mother's, their friend's, and
their own emotions. They found that children most frequently provided interpersonal
explanations for anger and sadness.

The notion of interpersonal relationships contributing to children's emotional knowledge
seems logical. Studies examining emotion talk demonstrate that adults socialize children
toward the interpersonal aspects of emotions. Feeley, Eder, and Rescorla (1996) found that
when adults and preschoolers engaged in conversations about the past, they were more likely
to talk about emotions in the context of interpersonal relationships. Specifically, they talked
about emotions in the context of friendships, such as playing with friends and having fun
with them. Given that parents socialize their children toward interpersonal themes, it is not
surprising that children conceptualize emotions in terms of interpersonal causes. For example,
Fabes et al. (1998) found that children use interpersonal attributions more frequently than
internal or external attributions. Additionally, Strayer's (1986) and Dunn and Hughes' (1998)
findings indicate that interpersonal causes are mentioned particularly for children's attributions
of sadness, anger, and happiness.

Perhaps parents socialize children to conceptualize emotions in an interpersonal context
because children actually experience emotions in an interpersonal context (Fabes et al.,
they found that interpersonal reasons were often the cause of children's anger and sadness.
Children were most often angered by disputes over material possessions (70% of the time)
and physical aggression (20%). The causes of children's sadness were more variable;
approximately, 35% of children were saddened by physical aggression, 30% by disputes
over material possessions, and 20% by teacher reprimands. These results indicate that the
interpersonal conflicts associated with anger and sadness sometimes overlap, which supports
Denham and Couchoud's (1990b) claim that the causes of anger and sadness depend on
personal interpretations of situations. For example, one child could become angry when a
toy is taken away, whereas another child could become sad.

Researchers have indeed found that children often confuse the causes for anger and
sadness. Preschoolers erroneously attributed sadness to the protagonist in the anger vignette
(Borke, 1971; Denham & Couchoud, 1990b; Reichenbach & Masters, 1983). However, Levine (1995) found that by the time children are kindergartners they are able to distinguish between the two: Children attributed anger to scenarios in which there was an aversive conflict and sadness to scenarios in which there was a personal loss. Thus, as children mature they become more sophisticated in distinguishing between the causes of sadness and anger, but nevertheless, the causes for both are likely to be interpersonal.

Children also attribute interpersonal causes for happiness. Although it is more common for children to report external reasons, such as personal gain, as the cause for happiness (see Fabes et al., 1998 and Strayer, 1986), Dunn and Hughes (1998) found that children mentioned interpersonal causes almost as frequently as they did external reasons. Interpersonal attributions for happiness tend to revolve around personal closeness and companionship. For example, Dunn and Hughes report that when children were asked what makes their mothers and friends happy, they replied, “My dad makes mum happy” and “When her friends are here” (p. 178).

In summary, it appears that children have a repertoire of knowledge about the interpersonal causes of emotions. The bulk of the previous research examining causal attributions has focused on linking the causal attribution with specific emotions (Denham et al., 1991; Dunn et al., 1998; Fabes et al., 1988). However, the present study attempts to examine causal attributions as they relate to preschoolers’ age. Strayer (1986) investigated how children’s causal attributions changed with age, but she compared preschoolers to second-graders. She found that second graders used more interpersonal themes than the preschoolers. Our goal is to examine how causal attributions change throughout the preschool period; therefore, we are examining two age groups within the preschool period. Based on Strayer’s work it is assumed that interpersonal attributions are more mature and sophisticated given that the second-graders, as well as a group of adults, cited interpersonal causes the most frequently when asked to explain emotions. Thus, we expect older preschoolers to use more interpersonal explanations than younger preschoolers.

Clarity of Emotional Attributions

A second goal of this study is to examine how well children articulate their causal attributions. The emotion research using situation vignettes reports that children first master positive emotional concepts (i.e., happiness) followed by negative emotional concepts (i.e., sadness, followed by anger, and then fear) (Denham & Couchoud, 1990a). Several studies have found that fear is the most difficult emotional concept for children to grasp (Denham & Couchoud, 1990a; Garner, Jones, & Miner, 1994; Michalson & Lewis, 1985). Denham and Couchoud (1990b) believe that this is because the socialization of fear is different from other emotions. For example, children are often told not to be afraid, and adults talk less about their fear and may not exhibit it as openly and readily as anger or sadness, especially in front of children. Researchers speculate that sadness and anger may be difficult for children to understand because these emotions often overlap and depend on personal interpretation (Denham & Couchoud, 1990a; Garner et al., 2000; Levine, 1995).

Hence, based on the emotion literature in which situation vignettes are used, negative emotions appear to be more difficult for children to conceptualize, and as a result children may have more difficulty articulating these emotions clearly. In Dunn & Hughes’ (1998) study, in which open-ended explanations were used, they assessed the clarity of children’s
emotion explanations. However, they did not compare children's clarity ratings across the four emotions. Thus, at the present time it is unclear whether children have more difficulty conceptualizing and articulating negative emotions. Our study attempts to supplement the literature on this topic by examining children's articulation clarity across the various emotions. It is hypothesized that children will have higher clarity ratings for positive emotions versus negative emotions.

We also investigated whether children were better at explaining their own emotions versus those of a puppet. Dunn and Hughes' (1998) study demonstrates that children are better at articulating their own emotions versus those of their friends and mothers. However, in the present study children's own emotion explanations are compared to those of a fictional protagonist, a puppet. Children's own emotion explanations were compared to a puppet's because this format is more akin to procedures used in situation vignette tasks and other social cognitive tasks, such as false belief tasks; in those tasks, children are asked to take the perspective of a protagonist they have no relationship with. Similar to prior findings (Dunn & Hughes, 1998), we expect children to have higher articulation clarity ratings for their own emotions. Furthermore, because of age-related advances in language ability and social cognitive reasoning, we hypothesize that there will be age differences in articulation clarity. Older preschoolers are expected to have higher clarity ratings than younger preschoolers for both their own emotions and the puppet's emotions.

The Present Study

The purpose of this study was to examine low-income children's socioemotional causal attributions. First, we investigated how the attribution of causal themes develops throughout the preschool years. It was expected that as preschoolers matured, they would be more likely to endorse specific causal themes, particularly interpersonal themes. Secondly, we investigated how well children explain emotions. It was hypothesized that clarity ratings would be lower for negative versus positive emotions. Additionally, it was hypothesized that older preschoolers would receive higher clarity ratings for both their own and a puppet's emotions than younger preschoolers would.

Method

Participants: All children were recruited via letters to parents or parent meetings for a larger study exploring preschoolers' narrative skills and social cognition. Participants were 47 preschoolers from a midsize southern city. The majority of children (68%) were enrolled in one of six local Head Start centers. The remaining 32% attended one of three private preschools (viz., the Salvation Army, YMCA, or a local preschool designed to serve low-income and working-class families) by using childcare subsidies from Temporary Aid to Needy Families. Fifty-five percent of the sample consisted of European Americans and 45% consisted of African Americans. There were approximately equal numbers of African Americans and European Americans in both Head Start and private preschools.

Research on preschoolers' social cognition has found that children's social perspective-taking skills become more sophisticated at 55 months (Wellman, Cross, & Watson, 2001); therefore, there is a meaningful distinction in perspective-taking abilities between preschoolers who are younger than 55 months and those who are more mature. As a result of these findings, the present sample was divided based on age to reflect differences in their social cognitive reasoning.
Children were divided into a Young ($M = 48$ months, $SD = 4.32$, range 41-55 months, $N = 24$) and an Old ($M = 62$ months, $SD = 2.97$, range 56-69, $N = 23$) group based on a dichotomous median split of the sample's age range. The median age for the sample was 55 months. The Young group comprised thirteen 3-year-olds and eleven 4-year-olds who were 55 months or younger; the Old group comprised a few ($n = 4$) 4-year-olds who were older than 55 months and nineteen 5-year-olds. There were nearly equivalent numbers of boys and girls across the age groups: 12 young and 12 old boys, and 12 young and 11 old girls. Table 1 provides a description of the sample in terms of ethnicity and age.

**Table 1.**

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Mean Age</th>
<th>Standard Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>African Americans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>47.50</td>
<td>3.78</td>
<td>10</td>
</tr>
<tr>
<td>Old</td>
<td>61.73</td>
<td>1.79</td>
<td>11</td>
</tr>
<tr>
<td>European Americans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>47.79</td>
<td>4.81</td>
<td>14</td>
</tr>
<tr>
<td>Old</td>
<td>61.83</td>
<td>3.83</td>
<td>12</td>
</tr>
</tbody>
</table>

**Materials & Procedure**

*Emotion Explanations.* Stimuli consisted of 4 puppets with faces depicting the four basic emotions (happy, sad, mad, scared). Each puppet represented a specific gender, race, and emotion. For example, a European American girl had a happy face, a European American boy had a mad face, an African American boy had a sad face, and an African American girl had an angry face. The experimenter showed the puppet and described his/her emotion. For example, children were shown the happy puppet and told, “This is Holly. Holly says, ‘I am so happy today!’” First, children were asked, “Why do you think Holly is happy?” This question assessed children’s ability to explain other people’s emotions.

Next, the experimenter asked children to talk about their past emotional experiences, “Tell me about a time when you were happy.” If children were hesitant, the experimenter prompted with standard probes that addressed concrete actions associated with the emotion. For example, the experimenter would say, “What do you do when you are happy? Do you smile or laugh?” If the child acknowledged these actions, then the experimenter reframed the emotion question in terms of these concrete actions, “Tell me about a time when you smiled or laughed because you were happy.” If the child, still failed to provide a response then the experimenter proceeded to the next emotion. This format was repeated for all of the emotions.

*Language and Cognitive Skills.* As part of the larger study, all children were given the Language and Cognition Subscale of the Early Screening Inventory-Revised (ESI-R; Meisels, Mardsen, Wiske, & Henderson, 1997). There are two age-normed versions of the ESI-R, the
ESI-K for children age 4.7 to 6 and the ESI-P for children age 3 to 4.6. Children were given the appropriate version for their age. Test-retest reliability for ESI-K was .87, and for the ESI-P it was .98. For the present study, the questions on the subscale were used as a general approximation of children’s language and cognitive skills; they were not used to assess children’s developmental risk. Scores on this subscale ranged from 0-12 with higher scores indicating more skills.

A preliminary Race (2) x Age (2) x Gender (2) analysis of variance was conducted in order to assess any differences between the groups in terms of language skills. There was a significant age effect, F(1,46) = 9.25, p < .01. Older preschoolers (M = 9.13, SD = 2.36) had higher scores than younger preschoolers (M = 6.58, SD = 3.01), which is typical given that older children usually have better language skills. There were no main effects for Race or Gender or significant interactions, indicating that both African Americans and European Americans, as well as boys and girls, had equivalent language/cognitive scores.

Coding Schemes

Causal Theme. Children’s responses for each emotion were audiotaped and transcribed. Responses from the transcripts were analyzed for content by coding for a priori Causal Themes, which refers to the reason children gave for the emotion. Causal themes included Internal-Mental State causes (i.e., personality traits, mental states, perceptions), External-Situational events and activities (e.g., weather, getting a gift, monsters, playing outside), and Interpersonal-Relationship causes (e.g., conflict, physical aggression, spending time with loved ones). If the child refused to respond or provided an illogical answer, her response was rated as Uncodable-Miscellaneous. Children’s responses were tallied, resulting in an Internal, External, Interpersonal, and Uncodable score. See Appendix A for a detailed description of the Casual Theme coding scheme.

Clarity of Attributions. Responses from the transcripts were also coded for Clarity following the format set forth by Dunn and Hughes (1998). The clarity rating measured the child’s ability to articulate emotion attributions. In essence, it is a measure of how well children explain emotions. Dunn and Hughes employed a 5-point scale, but in the current study children’s responses were rated for clarity using a 6-point scale in order to characterize responses that were highly sophisticated and story-like. Appendix B provides a more detailed summary of the Clarity scale and examples of children’s responses.

Inter-rater Reliability. Two trained coders who were blind to children’s demographic characteristics and blind to the experimental hypotheses independently coded responses from children’s transcripts for Casual Theme and Clarity. The responses of 25 randomly selected participants were checked for reliability. Inter-rater agreement for both Casual Theme and Clarity was 88% (κ = .84). Any disagreements were resolved through discussion. Our reliability ratings were nearly equivalent to Dunn and Hughes’ (1998), whose kappa statistics were an average of .85 for theme and .87 for clarity.

Results

Causal Theme

Preliminary results indicated that there were no race or gender effects for casual theme, but there were significant age trends. Thus, children’s causal themes for each of the emotional
prompts were analyzed in relation to their age. A cross tabulation of Age (2) x Theme (4) revealed significant differences between the age groups across the themes, \( X^2 (3) = 30.80, \ p < .01, \ \phi = .39 \). Traditionally, a phi coefficient (\( \phi \)) of .10 is a small effect, .30 is a medium effect, and .50 is a large effect. Thus, the present effect size is between medium and large.

A Bonferroni correction was used to control for Type I error in the follow-up analyses (\( p < .01 \)). Follow-up chi-square analyses for each theme revealed that older children were more likely to endorse interpersonal themes, \( X^2 (1) = 7.68, p < .01 \). Older children were 2.4 times more likely to endorse interpersonal themes, such as "Cause those kids don't want to be her friend" or "I miss my daddy. He in jail. He in jail now." On the other hand, younger children were 4 times more likely to generate responses that were classified as uncodeable, \( X^2 (1) = 18.96, p < .01 \). Interestingly, both groups were equally likely to attribute external causes to emotions, and there was no significant age difference for internal themes. Table 2 illustrates the percent of children at each age group who endorsed specific causal themes.

### Table 2.

Percentage of Theme Endorsement by Age

<table>
<thead>
<tr>
<th>Theme</th>
<th>Young</th>
<th>Old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>9%</td>
<td>20%</td>
</tr>
<tr>
<td>External</td>
<td>35%</td>
<td>36%</td>
</tr>
<tr>
<td>Interpersonal*</td>
<td>14%</td>
<td>33%</td>
</tr>
<tr>
<td>Uncodeable*</td>
<td>42%</td>
<td>11%</td>
</tr>
</tbody>
</table>

\( * p < .01 \)

### Clarity of Attributions

Preliminary tests indicated that there were no significant gender effects; therefore, gender was not included in any of the analyses. Race did, however, influence children's clarity ratings, so it was included in the following analyses. In order to assess the clarity of children's emotional responses, a repeated-measures analysis of covariance was performed. The within-subject variables were Target (2) (i.e., self vs puppet responses) and Emotion (4); the between-subject variables were Race (2) and Age (2); the covariate was language scores.

Contrary to the hypotheses, results revealed no within-subject main effect or interactions for Target, indicating no overall differences in children's articulations of their own versus the puppet's emotions. Similarly, there was no within-subject main effect for emotion, which reveals that children explained positive and negative emotions equally well.

The between-subjects effects were significant for Age, Race, and the Age x Race interaction. As predicted, older children (\( M = 3.00, SD = .61 \)) received higher clarity ratings than younger children (\( M = 2.03, SD = 1.7 \)), \( F (1,42) = 10.46, p < .01, \ \eta^2 = .20 \). European Americans (\( M = 2.75, SD = .83 \)) received higher clarity ratings than African Americans (\( M = 2.20, SD = 1.22 \)), \( F (1,42) = 4.27, p < .05, \ \eta^2 = .09 \). The interaction revealed that young,
African Americans had scores that were significantly lower than old African Americans and both young and old European Americans, $F(1,42) = 5.90, p < .01, \eta^2 = .12$. According to Judd and McCleland (1989), $\eta^2$ effect size estimates range from small ($\eta^2 = .03$) to medium ($\eta^2 = .10$) to large ($\eta^2 = .30$); thus, the estimates for these effect sizes, which range from .09-.20, are in the medium range. Figure 1 illustrates this interaction effect.

**Figure 1.**

*Mean clarity rating by age and race.*

**Discussion**

In this study low-income preschoolers' causal attributions and articulation of emotions were examined. The results indicated that older preschoolers provided more complex and sophisticated emotion attributions. Older preschoolers were better at linking emotions to specific causes: Only 10% of old preschoolers' responses were incoherent in comparison to 44% of young preschoolers. Additionally, older children's responses were clearer and more linguistically complex. For instance, an older preschoolers' response typically consisted of a sensible subject-verb clause, such as "Cause it's wintertime," an explanation given for the puppet's happiness. On the other hand, young preschoolers were more likely to respond using one-word phrases, such as "A sad face," an explanation given for the puppet's sadness. Overall, the findings demonstrate a difference between older and younger children's emotion explanations, and these results are consistent with those found in previous studies (Feeny, Eder, & Rescorla, 1996).

We were primarily interested in whether the use of interpersonal causal themes was related to age, and our findings indicate that it was. Older children were more than twice as likely to attribute interpersonal themes. The fact that older preschoolers endorsed interpersonal themes more frequently than younger preschoolers indicates that older children view emotions as caused by interactions with others. These findings are similar to those of Feeny, Eder, and Rescorla's (1996) who found that 4-year-olds talked more about interpersonal aspects of
emotions than 3-year-olds. Furthermore, Strayer’s (1986) work reported that both second-graders and adults cited interpersonal causes the most frequently when asked to explain emotions. Thus, it could be argued that linking interpersonal causes to emotions reflects a more mature conceptualization of emotions. The present findings suggest that the later part of the preschool period (e.g., age 4 ½ to 5) may be the time when children begin to develop an attribution bias towards interpersonal explanations for emotions.

One reason why older preschoolers may use more interpersonal causal reasoning is because of their increasing ability to understand internal states. A meta-analysis of the theory of mind literature (see Wellman, Cross, & Watson, 2001) reports that around 4 ½ children master a critical feat in internal state understanding (viz., passing a false belief task, which demonstrates their understanding that people can have mistaken beliefs). Therefore, at this age children may become more attuned to others’ internal states and behavior, which could facilitate their understanding that other people’s thoughts and behaviors can influence someone’s emotions. Dunn & Hughes’ (1998) work confirms the link between social perspective-taking and emotion explanation, particularly when children are 4 ½. Yet despite the advances in social cognitive perspective-taking typical of this age group, the older preschoolers in the present study did not provide more sophisticated responses for the puppet’s emotions than the younger preschoolers did. This result could be due to the fact that 4-year-olds in general, not just those 4 ½ or older, frequently talk about others’ feelings (Feeny, Eder, & Rescorla, 1996).

Surprisingly, our results failed to demonstrate a difference between children’s articulation clarity across the four basic emotions. This finding is contrary to the results found when situation vignettes are used (Denham & Couchoud, 1990b). Studies examining children’s open-ended causal attributions of emotions did not compare the quality of children’s explanations across emotions (Denham, Zoller, & Couchoud, 1994; Dunn & Hughes, 1998; Fabes et al., 1991). In the present study, we used a clarity rating system that was modeled after Dunn & Hughes (1998); their mean scores for clarity were within the same range and generally followed the same pattern as our scores. Thus, it appears that children are able to explain positive and negative emotions clearly. However, these results will need to be replicated, perhaps by comparing situation-vignettes and open-ended explanations.

Young African Americans’ Performance

Although the original hypotheses did not propose racial differences, the findings from this study revealed that certain groups of children have more difficulty explaining emotions. Young African Americans’ clarity ratings were significantly lower than the other cohorts of children. Their responses tended to consist of random remarks that failed to answer the questions. This difficulty articulating emotions was specific to young African Americans; old African Americans were just as competent as the other children at explaining their emotions. It is the young African American’s responses that were responsible for decreasing the overall mean performance of the African Americans in general.

This race result must be viewed with caution. When considering African Americans as a group their average performance was lower than European Americans, but it should be noted that there was a wide range of articulation ability within their group. In fact, 76% (n = 16) of the African Americans had at least one response that was rated
as having good clarity, but there were 5 young African Americans with consistently poor clarity ratings who may have negatively influence the whole racial groups' performance.

There are several reasons why the young African Americans may have had difficulty explaining emotions. First, it could be argued that they had poorer language and cognitive skills. The preliminary analysis for language skills demonstrated no differences between African American and European Americans language skills; furthermore, language skills were used as a covariate in the analyses. Thus, poorer language skills cannot be an explanation.

Secondly, it could be suggested that these children were exposed to poor parental emotional socialization practices due to their young age. Parent's emotion talk during storytelling is related to children's emotion understanding using situation vignettes (Garner, Jones, Gaddy, & Rennie, 1997). Or perhaps the children in the young African American cohort were exposed to harsh, negative parenting, whereas the children in the other cohorts were not. Research shows that for middle-class European Americans maternal anger is negatively associated with preschoolers' emotion understanding using vignettes (Denham, Zoller, & Couchoud, 1996), but conflicting evidence is found for low-income African Americans. For low-income African American children negative parental emotional socialization practices are positively related to children's emotion understanding (Garner, Jones, & Miner, 1994). In the current study parental socialization practices were not assessed so no conclusions can be drawn about children's emotional socialization. Future work should examine parental socialization in relation to children's emotion explanations.

Strengths and Limitations

The current study had both strengths and limitations. A limitation is that this work was merely descriptive, therefore, no causal conclusions can be drawn. Future research exploring children's emotion attributions could employ emotion vignettes, open-ended formats, as well as parental socialization measures. Such multi-method work would allow for conclusions that could provide more insight into how emotion causal attributions develop. A strength is that it provided child-generated emotion explanations. Using an open-ended format children were able to use their own words and reasoning strategies to talk about emotional experiences. The intention was to demonstrate that children use different causal themes and to illustrate these themes by age.

Recommendations for Parents and Educators

Parents and teachers should make efforts to help young preschoolers learn to articulate their emotions. Adults can help children understand emotions by talking about feelings and their causes. If adults talk to children when they are distressed or angry, these children are more likely to understand emotions (Dunn & Brown, 1994). Harris (1995) speculates that children benefit from the congruence between their personal perspective on their emotions and an objective third-person perspective. For example, Harris offered the following scenario:

The child hesitates to enter a darkened room. An observant [adult] will notice the hesitation and supply the child with a verbal description or a question about what he or she is feeling: "Are you afraid of the dark?" (369)
These types of experiences allow the child to connect their experience of fear with an adult's interpretation (or conceptualization), which leads to advancements in the child's interpretation and conceptualization of their emotions.

References


Appendix A.

Codes for Causal Theme

<table>
<thead>
<tr>
<th>I. Internal—Mental</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Characteristics about the person (she's mean, she's being nice, cause she happy today)</td>
</tr>
<tr>
<td>2. Mental States (beliefs, thoughts, wants, likes/dislikes, dreaming)</td>
</tr>
<tr>
<td>3. Perceptual (hear, feel, taste)</td>
</tr>
<tr>
<td>4. Denied wants – not specific to people (I didn't get a new car)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. External—Situational</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Supernatural/imaginary force (monsters)</td>
</tr>
<tr>
<td>2. Physical condition of body or environment (it's raining, it's dark)</td>
</tr>
<tr>
<td>3. Being in a physical environment (outside, at a party, at school)</td>
</tr>
<tr>
<td>4. Social deviance (murder, stealing)</td>
</tr>
<tr>
<td>5. Focus on an object or presence of animals (toys, candy, alligator)</td>
</tr>
<tr>
<td>6. Activity (playing, running, didn't spill her drink)</td>
</tr>
<tr>
<td>7. Celebrating/participating in an event or specific days (she had a birthday party, Monday)</td>
</tr>
<tr>
<td>8. Physical appearance (happy face, sad face)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Interpersonal—Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conflict or animosity (teasing me)</td>
</tr>
<tr>
<td>2. Physical aggression (my mom hit me, I got a spanking)</td>
</tr>
<tr>
<td>3. Loss/rejection (friends won't play with her, miss my dad)</td>
</tr>
<tr>
<td>4. General interpersonal (being with her, love her brother, wants his mommy)</td>
</tr>
<tr>
<td>5. Empathy for others (when my brother felt better)</td>
</tr>
<tr>
<td>6. Control/denied wants because of a person (my mom wouldn't let me)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV. Uncodeable/Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use emotion to explain emotion (because she is happy)</td>
</tr>
<tr>
<td>2. Not responding to correct emotion (talking about being mad when the question is happy)</td>
</tr>
<tr>
<td>3. Denying emotion</td>
</tr>
<tr>
<td>4. &quot;I don't know&quot;, &quot;cause&quot;</td>
</tr>
<tr>
<td>5. Nonsense/inaudible/incoherent/random remarks</td>
</tr>
<tr>
<td>6. Refusal/no response</td>
</tr>
</tbody>
</table>
Appendix B.
Clarity Ratings

0 = No Response

Description: No response; refusal; denial

Examples: "No"; "I don’t know"; "Never"

1 = Random remarks

Description: Using the emotion to explain the emotion; responses that do not logically answer the question; incoherent remarks

Examples: "At home like anything. I don’t like this thing. I don’t like anything" or "Cause her leg was popping out" or "Yeah. Yeah. Cause he got to."

2 = Adequate Response

Description: Short responses that answer the question in one word or a short phase

Examples: "Monsters" or "My mommy" or "Cause a monster"

3 = Good Responses

Description: Includes a sensible clause that has both a subject and a verb; may not answer correct emotion, but still is good response

Examples: "He didn’t spill his drink." or "Cause it’s dark outside." or "Cause he thinks somebody stole his toys."

4 = Elaborate Response

Description: Has more than one sentence/clause; may be hard to follow, but in general it is sensibly linked by an overarching idea or theme

Examples: "My daddy came home. Then my daddy in jail. And I did happy. I aint mad at him. No, no, uh, no. Not me." or "Her probably gonna go tutoring and do homework and go do some stuff that was really nice." or "I feel happy to my mommy. But I don’t [like] my Neta."

5 = Story-like response

Description: Must have 3 or more sentences/clauses; may seem story-like because they talk about past experiences; might even include dialogue; they are clear and logical; may seem unrealistic or imagined

Examples: "When I went into the childcare room and there was someone in there scary that was sitting down under the table. And it was really dark. And I was screaming and crying" or "Cause she was thinking about her mom cause her mom leaves her at home. And that’s why she mad at her mom. Cause her mom leaves her at home. Everybody left her at home. But her mom said "You can stay up here with her um her um angel." No, I won’t! I’m going to school cause I can’t stay with her when I’m going to school."
The Association Between Narratives and Theory of Mind for Low-Income Preschoolers

Stephanie M. Cureton

Policy Fellow
Society for Research on Child Development

This study investigated the relationship between narrative skills and theory of mind for low-income children. Two groups of low-income preschoolers, one African American (n = 33) and one European American (n = 36), created a narrative and participated in a false belief task. The European Americans outperformed African Americans on the false belief task, but there were no differences in the narrative skills across the groups. After controlling for children's age, false belief performance had no effect on European Americans' narrative abilities. However, African Americans who passed the false belief task told stories that were more grammatically coherent and socially cognitively sophisticated than those African American children who did not pass the task.

This work was made possible by a University of Virginia Dean's Fellowship and National Academy of Sciences Ford Foundation Predoctoral Fellowship to the author. I would like to thank the children, staff, and parents who participated. I also thank Angelica S. Lillard for her advice and methodological guidance, and Laura Justice and Pam Garner for their comments on previous drafts. The views and opinions expressed are independent of those expressed by the Society for Research on Child Development. Please address correspondence to Stephanie M. Cureton at 8715 First Avenue #310-D, Silver Spring, MD 20910 (smcurenton@cn.com).
The Association Between Narratives and Theory of Mind for Low-income Preschoolers

During the preschool period children begin to incorporate social cognitive reasoning into their fictional narratives (Benson, 1997; Trabasso, Stein, Rodkin, Munger, & Baughn, 1992). The specific forms of social cognitive reasoning preschoolers incorporate include information about the protagonist’s goals, desires, beliefs, and emotions. Consider the following narrative by a 5-year-old, African American girl:

Once there was an elephant who lived in a dark cave. She thought she picked up the penny. And then she thought she was rich, but she wasn’t. And she buy something with it. And nothing. And with the one penny she could buy nothing with it. So she was sad.

Her narrative projects mental states onto characters and alludes to the notion that people’s thoughts guide their behavior. She demonstrated her social cognitive abilities by talking about the character’s internal states (i.e., “So she was sad”) and introducing a plot (i.e., the character does not have enough money to buy anything) that reflected the character’s mistaken belief (i.e., “She thought she was rich, but she wasn’t”). Examples like the previous one illustrate that preschoolers are capable of creating stories that demonstrate social cognitive reasoning. However, more research is needed to investigate how children’s social cognitive reasoning relates to their narrative ability. Thus, the purpose of this study is to investigate the association between children’s social cognitive reasoning and their narrative skills.

Theory of Mind in Low-income and Ethnic Minority Preschoolers

Theory of mind is a form of social cognition specifically related to the study of how internal states relate to behavior. One of the most widely used methodologies for testing children’s theory of mind is the false belief task (Wimmer & Perner, 1983). This task tests children’s ability to predict someone’s behavior in relation to that person’s beliefs. Versions of false belief tasks have been used repeatedly over the past two decades. The two traditional versions are the contents task and location task. In a typical location task (Wimmer & Perner, 1983) children are shown a doll (viz., Maxi) who places a candy bar in the cabinet then leaves the scene. Another doll finds the candy and moves it to the drawer. When Maxi comes back, the child is asked to predict where she will look for her candy. The correct answer is in the cabinet because Maxi has no knowledge of the switch. The other task is the contents task (Gopnik & Astington, 1988), in which children are shown a familiar box containing unexpected contents (e.g., a Crayon box with toothpicks inside) and asked to predict what someone who has not seen the contents of the box will think is inside. Children who answer correctly will say Crayons because people usually assume that Crayon boxes contain Crayons, unless they have been shown otherwise. Although Wellman, Cross, & Watson (2001) reported no differences in the children’s performance across these two tasks, some researchers indicate that contents tasks are more difficult for children to pass (Fabricius & Khalil, 2003), particularly low-income, African American children (Curenton, 2003; Holmes, Black, & Miller, 1996). Therefore, in the current study only children’s performance on a false belief location task will be analyzed.
The vast majority of theory of mind studies has consisted of Caucasian children from middle- to upper-income, well-educated backgrounds (for a review see Lillard, 1998), but recently there have been a few studies examining the performance of children from low-income and ethnically diverse backgrounds. In general, these studies report that low-income children are performing more poorly than their middle-income peers. Cole and Mitchell (1998) found that low-socioeconomic status is negatively correlated with false belief performance (i.e., children from families with more financial distress were less likely to pass false belief tasks). Likewise, in a study examining theory of mind in children from various family backgrounds, those middle-class backgrounds had higher scores on false belief tasks than working-class children had (Cutting & Dunn, 1999). Holmes, Block, and Miller (1996) reported that the majority of African American children enrolled in Head Start did not pass false belief tasks until they were 5, approximately 6 months later than the passing age reported in the meta-analysis (Wellman, Cross, & Watson, 2001). Finally, in a study comparing the false belief skills of low-income preschoolers, African Americans performed more poorly on a false belief contents task than European Americans did (Curenton, 2003).

To date, there is no clear explanation as to why low-income and/or ethnic minority children perform more poorly than their middle-income peers on false belief tasks. One speculation for the socioeconomic discrepancy points to the differences in low-income and middle-income children’s language skills. However, differences in language skills may not be a sufficient explanation because even low-income children who have advanced language skills have performance rates below the established middle-class norms (see Hughes & Dunn, 1998). Second, Lillard (1998) speculates that using mental states to explain behavior is an affluent Western European view of human behavior. Curenton (2003) provides support for Lillard’s theory when she reports that the majority of preschoolers in her low-income sample who provided rationale responses for a puppet’s behavior used situational/behavioral explanations rather than mental/internal state explanations. Third, Curenton (2003) speculates that low-income children, particularly those from ethnic minority backgrounds, may perform more poorly on false belief tasks because the task that was originally developed using a White middle-class sample (see Wimmer & Perner, 1983); therefore, low-income children from ethnic minority groups may be at a particular disadvantage when trying to pass false belief tasks. This paper attempts to further explore low-income children’s false belief skills by comparing African American’s and European American’s performance on a false belief location task and examining how children’s performance is related to their narrative skills.

**Narratives as a Language Assessment Tool**

Although many studies comprising samples of middle-income children or children from diverse socioeconomic backgrounds report significant correlations between false belief skills and scores on standardized measures of language assessment (Astington & Jenkins, 1999; Jenkins & Astington, 1996; Happe, 1995), fewer studies have examined the relationship between narrative assessments of language and false belief. It is important to consider narrative ability in the conceptualization of the association between language and theory of mind because narrative assessments can have several advantages over standardized language assessments.
One advantage is that researchers who study children's speech and language development believe narratives are the most precise method for testing language skills. In fact, children's storytelling ability has proven to be a valid predictor of their later language skills (Bishop & Edmundson, 1987), literacy skills (Kaderavek & Sulzby, 2000), and age-related maturational changes. For instance, as children mature they are more likely to use conjunctions (McGregor, 2000; Shapiro & Hudson, 1991) and mental and linguistic verbs in their narratives (Curenton & Justice, in press). In additional, older preschoolers' narratives are more likely to be causally linked than younger preschoolers' (Benson, 1997).

Secondly, unlike standardized tests, narratives are less socioeconomically biased. Research examining narrative production and comprehension in socioeconomically diverse samples has found that low-income children perform according to their age appropriate norms on narrative measures (Craig & Washington, 1994; Craig, Washington, & Thompson-Porter, 1998; Murray, Woolgar, Briers, & Hipwell, 1999; Snow, Tabor, Nicholson, & Kurkiand, 1995).

A third advantage of narrative methods is the wealth of information gathered from children's narratives. Researchers can analyze children's narratives for sociolinguistic features, such as African American English Vernacular (Craig et al., 1998), storytelling skills (Kaderavek et al., 2000; Fletcher, Briggs, & Linzie, 1997), and story recall and comprehension (Beck & Clarke-Stewart, 1998).

Lastly, narratives are particularly useful tools for assessing syntactical skills. Whitehurst (1997) found low-income children's syntactic skills used in narratives were less affected by poverty than were other areas of language. Additionally, Craig and Washington (1994) found that even low-income, African American children who spoke African American English Vernacular produced utterances that were syntactically complex. Therefore, assessing low-income children's syntactic skills using narratives may provide a socioeconomically and ethnically non-biased assessment of their language skills. In the present study children's oral narratives will be used as a measure of language assessment.

Narratives and Theory of Mind

Despite the advantages narrative assessments of language have over standard assessments, most theory of mind researchers fail to use children's narrative ability to investigate their theory of mind. When researchers do examine narrative skills in relation to theory of mind, they typically use two methods, and both methods have yielded contradictory findings. One method has examined how children's understanding of narratives aids the development of their theory of mind. The format for this line of studies asked children false belief questions based on the narrative an experimenter told them. Using this approach, Lewis, Freeman, Hagestadt, and Douglas (1994) found that false belief questions were easier for children. One the other hand, Olver and Ratner (1994) found no difference between children's performance on standard false belief tasks and on narrative false belief tasks. Even more contradictory is a cross-cultural study with Chinese preschoolers which found that children were more successful on standard false belief questions than they were on narrative false belief tasks (Chen & Lin, 1994).

The prior studies asked children false belief questions based on the narratives they were told, but the other method of investigation examines how children's narrative production
relates to their theory of mind. Intuitively, it seems that narrative production would be a useful method for studying theory of mind because narrators "must have some understanding of human motives, and how these [motives] are rooted in feelings and cognitions (internal states)" (Benson, 1997, p. 439). Similarly, Astington (1990) argues that narrative thought "deals with issues of human experience, with beliefs and doubts, intentions and emotions" (p. 152). In fact, narratives often contain social cognitive information, such as internal state talk and talk about the protagonist's interpretation of what is happening in the story (i.e., his consciousness). Hence, the association between social cognitive reasoning and narrative ability seem to be strongly rooted in our folk psychology about how people come to understand minds and behavior.

In the present study, the association between theory of mind and narratives will be assessed by examining how children's performance on a false belief task relates to four indicators of narrative skill—syntactic features (i.e., coherence and complexity), internal state talk, and quality. The syntactic features represent children's ability to create linguistically structured narratives, whereas the internal state talk and quality represent children's ability to use social cognitive reasoning in narratives.

**Syntactic Features.** When studying children's narratives, investigators can gain a measure of syntax by segmenting children's utterances and calculating the average utterance length. One of the most popular and widely used procedures for segmenting and calculating children's narratives is the mean length of utterance (MLU). Research has demonstrated that MLU is a useful predictor of children's age and linguistic complexity during the early stages of language development (Miller & Chapman, 1981). However, other investigators have found that MLU is less associated with linguistic complexity once children reach 4 years of age (Scarborough, Wyckoff, & Davidson, 1986).

One reason that traditional MLU may be less predictive during the later years could be due to its segmenting method. The procedures for parsing traditional MLU stipulate utterances be segmented based on intonation patterns and pauses (see Johnston, 2001). Therefore, even utterances that do not conform to syntactic standards (e.g., "On the reindeer's head") would be calculated in the mean sentence length. Since the purpose of the present research was to analyze children's syntactic features, a segmenting procedure based on syntactic properties was determined to be more useful.

An alternative method for assessing the syntax of narratives is the communication unit (Loban, 1976). A communication unit (C-unit) is defined as an independent clause and all its modifiers; it is a syntactic unit that is based on a clausal structure (i.e., a subject-verb proposition). Because a C-unit is a measure of syntactically constructed units, it demonstrates the child's ability to tell a linguistically coherent story, which provides a measure of syntactic coherence. In addition, C-units can provide a measure of syntactic complexity because they accurately measure the complexity of longer utterances produced by older children. Like the more traditional MLU, there is a significant correlation between average C-unit length and age (Craig et al., 1998). However, C-units are superior to the standard MLU because, the average length of a C-unit can be used to measure syntactic complexity in longer utterances, whereas the relationship between syntactic complexity and MLU weakens once children's utterances exceed 3 words (Scarborough, Rescorla, Tager-Flusberg, Fowler, & Sudhalter, 1991). Therefore, in the present study the syntactic features of children's narratives, both coherence and complexity, will be examined using C-units.
relates to their theory of mind. Intuitively, it seems that narrative production would be a useful method for studying theory of mind because narrators “must have some understanding of human motives, and how these [motives] are rooted in feelings and cognitions (internal states)” (Benson, 1997, p. 439). Similarly, Astington (1990) argues that narrative thought “deals with issues of human experience, with beliefs and doubts, intentions and emotions” (p. 152). In fact, narratives often contain social cognitive information, such as internal state talk and talk about the protagonist’s interpretation of what is happening in the story (i.e., his consciousness). Hence, the association between social cognitive reasoning and narrative ability seems to be strongly rooted in our folk psychology about how people come to understand minds and behavior.

In the present study, the association between theory of mind and narratives will be assessed by examining how children’s performance on a false belief task relates to four indicators of narrative skill—syntactic features (i.e., coherence and complexity), internal state talk, and quality. The syntactic features represent children’s ability to create linguistically structured narratives, whereas the internal state talk and quality represent children’s ability to use social cognitive reasoning in narratives.

**Syntactic Features.** When studying children’s narratives, investigators can gain a measure of syntax by segmenting children’s utterances and calculating the average utterance length. One of the most popular and widely used procedures for segmenting and calculating children’s narratives is the mean length of utterance (MLU). Research has demonstrated that MLU is a useful predictor of children’s age and linguistic complexity during the early stages of language development (Miller & Chapman, 1981). However, other investigators have found that MLU is less associated with linguistic complexity once children reach 4 years of age (Scarborough, Wyckoff, & Davidson, 1986).

One reason that traditional MLU may be less predictive during the later years could be due to its segmenting method. The procedures for parsing traditional MLU stipulate utterances be segmented based on intonation patterns and pauses (see Johnston, 2001). Therefore, even utterances that do not conform to syntactic standards (e.g., “On the reindeer’s head”) would be calculated in the mean sentence length. Since the purpose of the present research was to analyze children’s syntactic features, a segmenting procedure based on syntactic properties was determined to be more useful.

An alternative method for assessing the syntax of narratives is the communication unit (Loban, 1976). A communication unit (C-unit) is defined as an independent clause and all its modifiers; it is a syntactic unit that is based on a clausal structure (i.e., a subject-verb proposition). Because a C-unit is a measure of syntactically constructed units, it demonstrates the child’s ability to tell a linguistically coherent story, which provides a measure of syntactic coherence. In addition, C-units can provide a measure of syntactic complexity because they accurately measure the complexity of longer utterances produced by older children. Like the more traditional MLU, there is a significant correlation between average C-unit length and age (Craig et al., 1998). However, C-units are superior to the standard MLU because, the average length of C-unit can be used to measure syntactic complexity in longer utterances, whereas the relationship between syntactic complexity and MLU weakens once children’s utterances exceed 3 words (Scarborough, Rescorla, Tager-Flusberg, Fowler, & Sudhalter, 1991). Therefore, in the present study the syntactic features of children’s narratives, both coherence and complexity, will be examined using C-units.
A few studies have examined the association between narrative syntax and children’s theory of mind; however, these studies have either used older children or children with developmental disorders in their sample. Charman and Shmueli-Goetz (1998) investigated narrative and theory of mind skills in normally developing 7-year-olds and found that children’s false belief understanding was not associated with narrative complexity or coherence (i.e., subject-verb propositions). On the contrary, Tager-Flusberg and Sullivan (1995) found a correlation between autistic children’s use of subject-verb propositions and false belief performance. Hence, the literature on narrative syntax and false belief indicates coherence may be related to children’s false belief performance whereas complexity may not be. This study will provide further insight into the link between narrative syntactic skills and false belief understanding for typically developing preschoolers.

*Internal State Talk.* The bulk of the literature on narratives and theory of mind has examined children’s use of internal state talk. Theoretically, internal state talk is viewed as an important feature of narratives because this type of talk permits the narrator to create the meta-representational world of the character (Astoning, 1990). When studying low-income, European American kindergartners’ narrative production, Benson (1997) found that 68% of her sample used internal state talk as a source of psychological causation, and those who used psychological causation were more likely to attribute goals to the protagonist’s actions. Some research has even indicated that normally developing children were better at producing narratives that addressed the protagonist’s internal states than they were at producing narratives that did not (Baron-Cohen, Leslie, & Frith, 1986).

Marschark, Green, Hiadmarsch, and Walker (2000) suggest that the ability to attribute internal states in a narrative and the ability to pass a false belief task are not necessarily synonymous. Work by Charman and Shmueli-Goetz (1998) provided support for Marschak’s et al. claim: They found that normally developing children’s use of internal state terms was not correlated with their understanding of false belief. Contrarily, Tager-Flusberg and Sullivan’s (1995) research with children with autism and children with mental retardation showed a positive correlation between the ability to pass false belief tasks and the use of cognitive mental state terms in narratives. Likewise, Moore, Pure, and Furrow (1990) found a relationship between children’s false belief performance and comprehension of cognitive terms. The present study attempts to further investigate the link between internal state talk in narratives and false belief understanding.

*Quality.* Although all researchers have their own specific description of narrative quality, in general they all agree that children’s stories move from brief, non-causally linked descriptions, which are characteristic of young children, to longer, evaluative, causally linked stories, which are characteristic of older children (Applebee, 1978; McCabe, 1997; Stein & Glenn, 1979). Researchers concerned with narrative quality rarely examine the link between narrative quality and children’s social cognitive reasoning even though Bruner’s (1986) theory of narrative development clearly postulates a link between the two.

According to Bruner (1986), narratives have 2 landscapes—Action and Consciousness. The landscape of action addresses what happens during the story; for example, it provides information about the character’s actions and goals, the setting, and the situational plot. On the other hand, the landscape of consciousness addresses why things are happening; it provides information about the character’s psychological states. In order to truly understand a story,
one must comprehend both of the landscapes simultaneously. For instance, one cannot understand why something has happened in the story if he/she doesn't understand or remember what has happened. Both landscapes are important, interrelated aspects of narratives, but only the landscape of consciousness is meta-representational because it comprises the character's internal representations (or interpretation) of what is happening in the story. Therefore, only the landscape of consciousness contains information about the protagonist's social cognitive reasoning (i.e., the protagonist's conscious reasoning about why something has happened).

Astoning (1990) theorizes that once a child understands that people's beliefs represent their reality then he or she is able to synchronize the two narrative landscapes. Thus, the advancements in theory of mind preschoolers are making during early childhood can influence children's narrative ability. Despite Bruner's (1986) and Astoning's (1990) theoretical accounts of why narrative and social cognitive ability should be related, few empirical studies have answered the question of when children begin to produce stories with dual landscapes and how this relates to their general narrative and social cognitive skills. Bruner described a good narrative as one embodying both an action and consciousness landscape. His definition is similar to other oral narrative theorists, such as Labov and Waletzky (1967). In the present study, children's narrative quality is assessed using the theoretical definition of high quality narratives proposed by Bruner (1986); specifically, the quality ratings are based on whether children's stories combine the landscapes of action and consciousness.

The Present Study

The primary purpose of this study was to determine the relationship between theory of mind and oral narrative skills in low-income children. There were two aims for this research. The first aim was to compare African American and European American children's false belief performance. Based on previous work (Current, 2003; Holmes et al., 1996), it is hypothesized that African American children would have lower false belief scores than European American children. The second aim was to determine the association between children's false belief performance and their narrative skills. Children who passed the false belief task are expected to create narratives that are more linguistically and social cognitively advanced.

Method

Participants

Seventy-two children (36 African American, 36 European American) participated in the study. There were approximately equal numbers of African American and European American children in both types of preschools. The sample comprised 40 girls and 32 boys. Children were divided into three age groups: 3-year-olds (M = 43 months, SD = 3.33, n = 24), 4-year-olds (M = 53 months, SD = 3.18, n = 24), and 5-year-olds (M = 63 months, SD = 2.60, n = 24). All age groups contained equal numbers of African American and European American children.

Since the research examining false belief performance in African American children has employed samples from low-income backgrounds (Hughes & Dunn, 1998; Cutting et al., 1999; Holmes, Black, & Miller, 1996), the sample for the present study is also drawn
from a low-income population in order to compare this sample's performance to peers who are similar in socioeconomic status. Children from middle-income and low-income backgrounds often have vastly different language experiences (Whitehurst, 1997), and language skills are related to theory of mind. Therefore, by confining the sample to all low-income children, we are eliminating socioeconomic variation that could be confounded with verbal skills.

Forty-six percent of the children who participated in the study lived in households that met the federal poverty guidelines as evidenced by their enrollment in Head Start. The other 54% lived in households receiving childcare subsidies for low-income families, which enabled the parents to send their child to any local preschool at an income-based tuition rate. Parental permission forms were given to all parents, but parents with children enrolled in non-Head Start centers were only given permission forms if their family received child care subsidies. These permission forms asked for children's date of birth and race/ethnicity. Children were only selected to participate in the study if their parent described them as Black/African American or White/Caucasian/European American and if the parent's racial/ethnic identity matched the child's.

There were no significant differences between the number of African Americans versus European Americans ($X^2[1] = .50, p = ns$) or boys versus girls ($X^2[1] = .10, p = ns$) in the two types of preschools (viz., Head Start vs other local preschools). Additionally, there was no difference between the type of preschool and children's age ($F[1,71] = .78, p = ns$).

As part of a larger study on children's social cognitive and narrative development, children's language/cognitive skills were assessed using the Early Screening Inventory-Revised (Meisels, Mardson, Wiske, & Henderson, 1997). There was no effect for type of preschool and children's language/cognitive skills ($F[1,71] = 2.60, p = ns$). Additionally, a Race x Age analysis of variance (ANOVA) indicated that children's language/cognitive scores increased with age, $F(1,71) = 15.26, p = .00$. Three-year-olds had the lowest scores, but the 4- and 5-year-olds were not significantly different from each other. Age differences in children's performance on language/cognitive tests are commonly found in the literature and imply normal developmental progression. The main effect for race was not significant, indicating that there were no racial differences in terms of language/cognitive scores, $F(1,71) = 2.72, p = ns$.

**General Procedure**

Data for the present study were collected during a larger study examining low-income children's social cognitive and narrative skills. Children were presented with a battery of social perspective-taking tasks (e.g., narrative comprehension, emotion exploration, theory of mind) and language assessments (e.g., cognitive/language skills and narrative production). However, only a false belief prediction task and the children's narratives are discussed here.

One of 3 female experimenters tested children individually in a quiet area of their preschool. Testing sessions ranged from 30-40 minutes per child. The experimenters were all from different ethnic backgrounds (i.e., African American, Latino, and European American), and they all tested both African American and European American children.
False Belief Task. Children were presented with a modified version of a false belief location task (Wimmer & Perner, 1983). Children were asked to predict a puppet’s behavior based on the scenario the experimenters presented. The experimenter presented the scenario to each child only once; the scenario was not repeated if children failed to pass the control questions. The scenario is described in detail below:

[Experimenter randomly pulls out and places a miniature closet and toy box on the table. She shows puppet holding a small book.] “Mark is reading a book. He wants to finish reading it later. He’s going to put his book in the closet until later. Now he is going outside to play.” [Experimenter shows the puppet putting the book in closet, and then she places the puppet out of sight.] “Now where did Mark put his book (Control 1 question)?” [Experimenter brings in next puppet.] “This is James. Look, James has found Mark’s book. James starts to read the book. Now James wants to go outside to play. He’s going to put the book in the toy box. Then James goes outside to play.” [Experimenter shows puppet putting the book in toy box, then places the puppet out of sight.] “Where did James put the book (Control 2 question)?” [Experimenter shows Mark coming back.] “Mark wants to sit down and read his book. Where will Mark look first for his book (Prediction question)? Will he find his book there (Control 3)?”

Children were given 1 point for each control and test question they answered correctly. Children’s response to the test question was only scored as correct if they answered all of the corresponding control questions.

Narrative Task: Children were shown the wordless picture book, Frag. Where Are You? (Mayer, 1969). First, children were asked to view all of the pages in order to become familiar with the picture sequence because research has shown that children tell more coherent stories when they are permitted to view the stimuli before-hand (Shapiro & Hudson, 1991). After children had seen all the pictures, the experimenter asked them to make up a story using the pictures in the book. If children were hesitant, the experimenter probed them with a priori standard probes, viz. “Tell me about this page?” or “What about this page?” Children’s narratives were audiotaped.

Narrative Transcription

Deletion Procedures. Children’s narratives were first transcribed verbatim, including all experimenter and children’s remarks. All narratives were checked for accuracy by a second transcriber. Only the children’s spontaneous comments that were specifically related to the story were of interest; therefore, some of children’s utterances were deleted based on the deletion procedures outlined in Appendix A. The final transcript consisted of only children’s spontaneous remarks that were relevant to the story.

Communication Units. Two independent transcribers—one African American and one European American—who were blind to the children’s age, race, and theory of mind performance divided the narratives into C-units (Lohan, 1976). All C-units were required to adhere to a clausal structure by containing a subject-verb proposition. For example, “He looked in the hole” would be counted as one C-unit, but “A boy, a dog, and a frog” would not
because the statement does not contain a verb. C-units were parsed at coordinating conjunctions (e.g., and, or, but, so) and conjunctive adverbs (e.g., then) if they were preceded and followed by subject-verb propositions. For example the comment, "The reindeer picked him up and threw him in the water" was counted as two C-units: 1) "The reindeer picked him up" and 2) "And threw him in the water." Hence, it was possible for one utterance to be parsed into multiple C-units, if that statement contained two independent clauses. Subordinate clauses were not counted as separate C-units because subordinate clauses modify independent clauses. Subordinate clauses are preceded by subordinating conjunctions (e.g., because, if, when). For example, "The dog is licking him because he is mad and angry" was counted as one C-unit because the second subject-predicate proposition (viz., "he is mad and angry") was preceded by a subordinating conjunction (viz., "because").

Given that dialogue is an important and sophisticated component of narratives, special considerations were made regarding its inclusion and how it was counted. Fragments that were part of dialogue were not deleted. They were counted as C-units even if they failed to conform to a clausal structure. For example, the comment "The boy said, 'I want my frog back. I miss him. Frog, oh, frog!'" was counted as three C-units. One C-unit is "'The boy said, 'I want my frog back," the second is "I miss him," and the third is "Frog, oh, frog!'" These allowances were made in order to preserve the integrity of the dialogue.

Inter-rater reliability was conducted independently by two trained coders. Item-by-item comparisons were made to determine scoring agreement. An inter-rater agreement score was obtained by dividing the total number of agreements by the total number of item comparisons and multiplying by 100. For deletion procedures, 10% of transcripts were scored (n = 7); reliability was 98% ranging from 94-100%. For the C-unit segmentation procedures, 11% of transcripts were scored (n = 8); reliability was 99% ranging from 96-100%. Any disagreements were resolved through discussion.

Narrative Assessments

Four measures of narrative skill were analyzed. One measure was Coherence, as indicated by the number of C-units. Based on the deletion procedures, utterances that were irrelevant (i.e., those not specifically related to the story) or were not grammatically constructed (i.e., those without a subject-verb proposition) were deleted. Thus, the number of C-units represents the number of utterances that were syntactically constructed and relevant to the story. The number of C-units a child produced is not synonymous with narrative length because Coherence is not a measure of overall narrative talk. On the contrary, Coherence, by definition, is a measure of syntactically constructed units and indicates the child's ability to tell a grammatically structured, coherent story. The second measure of narrative skill was Complexity, as indicated by the mean length of C-unit, which is a measure of syntactic complexity. The third was Internal State Talk, which is a measure of genuine internal state language used during the narrative. Cognition words (e.g., think, understand, know), volition words (e.g., trying, want), and emotion words (e.g., angry, happy, etc.) were calculated. After CLAN generated a count of mental state words per transcript, each transcript was checked to ensure that the mental state words referred to genuine mental states. Children only received credit for genuine mention of mental states. Thus, responses such as, "You know what?" or "I don't know" were not counted. All three prior measures of narrative skill were analyzed using CLAN (MacWhinney, 1994).
The fourth measure of narrative skill was analyzed by two trained European American raters who individually assessed the transcripts for narrative Quality. Narratives were rated as Illogical (illogical stories with irrelevant descriptions), Action-based (stories with clear descriptions of the pictures and the character’s action but no mention of plot or internal states), or Consciousness-based (stories with clear descriptions of the pictures and interpretations of the plot and the character’s internal states). The Consciousness-based rating was the highest in quality because children who create this type of story are incorporating social cognitive reasoning. Appendix B describes the rating system for narrative quality and examples. The raters for narrative quality were blind to children’s demographic characteristics, other narrative skills, and false belief skills. Inter-rater reliability for 31 transcripts was 91%. Any disagreements were conferredenced.

Results

False Belief Performance

Children’s performance on the control questions was at ceiling, with an average of 96% across the questions. If children failed any of the control questions, they were given zero points for the corresponding false belief questions. As a result, correct false belief responses from 8 children were scored as incorrect because those children failed the last control question (i.e., “Will he find his book there?”). Of those children who failed the controls but passed the false belief question, 3 were African American 4-year-olds, 2 were African American 5-year-olds, 2 were European American 3-year-olds, and 1 was a European American 5-year-old.

Traditionally, children’s false belief performance is analyzed based on the number of children who pass the task. Table 1 lists the percentage of children by Age and Race who answer correctly. Logistic regression was used to evaluate whether Age and Race were significant predictors of children’s false belief performance. Logistic regression is used when the dependent variable is categorical, and there is more than one predictor variable. Both Age and Race were significant predictors of children’s false belief performance, \( \chi^2 (3) = 23.71, p < .01 \). European Americans were more likely to pass than African Americans, and 3-year-olds were less likely to pass than 4- and 5-year-olds.

<table>
<thead>
<tr>
<th></th>
<th>African American</th>
<th>European American</th>
<th>Overall Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-year-olds</td>
<td>17% (2/12)</td>
<td>42% (5/12)</td>
<td>29% (7/24)</td>
</tr>
<tr>
<td>4-year-olds</td>
<td>58% (7/12)</td>
<td>75% (9/12)</td>
<td>67% (16/24)</td>
</tr>
<tr>
<td>5-year-olds</td>
<td>75% (9/12)</td>
<td>100% (12/12)</td>
<td>88% (21/24)</td>
</tr>
<tr>
<td>Overall Race</td>
<td>50% (18/36)</td>
<td>72% (26/36)</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 lists the statistics for each predictor.

Table 2.
Logistic Regression Statistics for Race and Age Predicting False Belief Performance

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>SE $\beta$</th>
<th>Wald</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>-1.32*</td>
<td>.61</td>
<td>4.65</td>
<td>.27</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 vs. 4, 5</td>
<td>-3.08**</td>
<td>.82</td>
<td>14.23</td>
<td>.05</td>
</tr>
<tr>
<td>4 vs. 5</td>
<td>-1.34</td>
<td>.78</td>
<td>2.94</td>
<td>.26</td>
</tr>
</tbody>
</table>

** $p < .01$, * $p < .05$

Narrative Skills

Three African American children were excluded from all narrative analyses because they failed to produce any utterances that were relevant to the story. One child was a four-year-old who passed the control questions and the false belief question; the other two were 3-year-olds who passed control questions but failed the false belief questions.

A preliminary Race x Age multivariate analysis of variance (MANOVA) was conducted to examine children’s narrative skills—Complexity, Coherence, Internal State Talk, and Quality. Children’s narrative skills did not vary as a function of their race, Wilk’s $\lambda = .95$, $F(4,60) = .87$, $p = ns$. Table 3 displays the mean for these null results by racial group. There was, however, a significant multivariate Age effect. Older children had better narrative skills than younger children, Wilk’s $\lambda = .61$, $F(8,120) = 4.28$, $p = .00$, $\eta^2 = .22$. This multivariate effect was followed up by a series of analyses of variance (ANOVA). Results from these ANOVAs revealed age differences in terms of complexity ($F[2,63] = 6.73$, $p = .00$, $\eta^2 = .18$), coherence ($F[2,63] = 4.12$, $p = .02$, $\eta^2 = .12$), internal state talk ($F[2,63] =

Table 3.
Mean Score (and Standard Deviation) for Narrative Skills by Race

<table>
<thead>
<tr>
<th></th>
<th>African Americans ($n = 33$)</th>
<th>European Americans ($n = 36$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complexity</td>
<td>5.60 (1.52)</td>
<td>5.56 (1.10)</td>
</tr>
<tr>
<td>Coherence</td>
<td>20.94 (11.15)</td>
<td>25.22 (10.24)</td>
</tr>
<tr>
<td>Internal State Talk</td>
<td>1.79 (2.22)</td>
<td>2.06 (2.04)</td>
</tr>
<tr>
<td>Quality</td>
<td>1.21 (.74)</td>
<td>1.28 (.78)</td>
</tr>
</tbody>
</table>

Note: These means are not significantly different.
4.08, \( p = .02, \eta^2 = .12 \), and quality \( (F[2,63] = 18.07, p = .00, \eta^2 = .37) \). For instance, 3-year-olds' narratives were less complex and of lower quality than the 4- and 5-year-olds' narratives. In addition, the 3-year-olds' created narratives that were less coherent and contained less internal state talk than the narratives created by 5-year-olds. Table 4 displays the means for each narrative skill by age group.

**Table 4.**

Mean Score (and Standard Deviation) for Narrative Skills by Age Groups

<table>
<thead>
<tr>
<th></th>
<th>3-year-olds ( (n = 22) )</th>
<th>4-year-olds ( (n = 23) )</th>
<th>5-year-olds ( (n = 24) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complexity**</td>
<td>4.79 (1.20)^a</td>
<td>5.82 (1.30)^a</td>
<td>6.07 (1.12)^a</td>
</tr>
<tr>
<td>Coherence*</td>
<td>18.27 (10.89)^c</td>
<td>24.13 (10.20)</td>
<td>28.75 (10.07)^b</td>
</tr>
<tr>
<td>Internal State Talk*</td>
<td>1.10 (2.27)^e</td>
<td>1.91 (1.31)</td>
<td>2.71 (2.37)^e</td>
</tr>
<tr>
<td>Quality **</td>
<td>.59 (.59)^g</td>
<td>1.48 (.67)^h</td>
<td>1.63 (.58)^i</td>
</tr>
</tbody>
</table>

**\( p = .00; * \ p = .02 \)

**Note:** A < B; C < D; E < F; G < H

A cross-tabulation of Age (3) x Quality (3) provides descriptive data of the differences between the age groups in terms of narrative quality, \( \chi^2 (4) = 25.21, p = .00 \). Three-year-olds were more likely than older preschoolers to create stories that were rated as Incoherent, \( \chi^2 (2) = 11.23, p = .00 \), and they were less likely to create stories that were rated as Consciousness-based, \( \chi^2 (2) = 12.60, p = .00 \). Table 5 displays the percentage of children receiving each rating by age group.

**Table 5.**

Rating of Narrative Quality by Age

<table>
<thead>
<tr>
<th></th>
<th>Incoherent</th>
<th>Action</th>
<th>Consciousness</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-year-olds ( n = 22 )</td>
<td>45%</td>
<td>50%</td>
<td>5%</td>
</tr>
<tr>
<td>4-year-olds ( n = 23 )</td>
<td>9%</td>
<td>35%</td>
<td>56%</td>
</tr>
<tr>
<td>5-year-olds ( n = 24 )</td>
<td>4%</td>
<td>29%</td>
<td>67%</td>
</tr>
</tbody>
</table>

**Narratives and False Belief**

Table 6 shows the correlations for narrative and false belief skills across all children. Because the African American children were passing the false belief tasks at a lower rate
than the European Americans, MANOVAs were conducted separately for each group in order to highlight the unique patterns of development within each group. After controlling for children’s age, there were no differences in the narrative skills of those European Americans who passed a false belief task versus those who did not, Wilk’s $\lambda = .95, F(4,30) = .36, p = ns$. On the contrary, for African Americans the results indicated that even after controlling for children’s age, those children who passed the false belief task told better stories than those who did not, Wilk’s $\lambda = .62, F(4,27) = 4.088, p = .01, \eta^2 = .38$.

Table 6.

<table>
<thead>
<tr>
<th>Correlations Across Narrative Skills and False Belief</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>1. Age</td>
</tr>
<tr>
<td>2. False Belief</td>
</tr>
<tr>
<td>3. Complexity</td>
</tr>
<tr>
<td>4. Coherence</td>
</tr>
<tr>
<td>5. Internal State Talk</td>
</tr>
<tr>
<td>6. Quality</td>
</tr>
</tbody>
</table>

** $p < .01$, * $p < .05$

Follow-up ANOVAs indicated that African American children who passed the false belief task told stories that were more coherent, $F(1,30) = 6.76, p = .01, \eta^2 = .18$, and of better quality, $F(1,30) = 5.35, p = .03, \eta^2 = .15$, than those who did not pass. Of the African Americans who passed ($n = 17$), 35% had narrative Coherence scores that were at least ½ a standard deviation above the mean. On the contrary, of those who failed ($n = 16$), none had Coherence scores at least ½ a standard deviation above the mean. In fact, 56% of the children who failed had scores that were ½ standard deviation or more below the mean. Similarly, 65% of the African Americans who passed the false belief task created Consciousness-based narratives, whereas 44% of those who failed created Incoherent narratives. Figures 1 and 2, respectively, illustrate this distinction between Coherence and Quality for those preschoolers who passed or failed the false belief task by ethnic group.

---

1 The same analyses were conducted combining the two groups. The pattern of results were similar, but weaker, due to differences in the FB passing rate for African Americans versus European Americans. There was a trend for a FB multivariate effect, Wilk’s $\lambda = .88, F(4,63) = 1.98, p = .10$. Likewise, the follow-up tests revealed trends for Coherence, $F(1,66) = 4.27, p = .04$, and Quality, $F(1,66) = 3.81, p = .06$. By separating the racial groups, it becomes apparent that among groups who are having difficulty with false belief understanding, those individuals with social cognitive skills tell better narratives.
Discussion

This study investigated low-income preschoolers' narrative and theory of mind skills. First, it was hypothesized that European American children would outperform African American children. Secondly, it was hypothesized that those children who passed the false belief task would create more sophisticated oral narratives using a wordless picture book. For example, in comparison to those children who failed the false belief task, children who passed were expected to create stories that were more syntactically complex and coherent and that contained more internal state talk and higher quality.
Comparison of False Belief Performance

African American and European American children’s false belief performance was examined. Both African Americans’ and European Americans’ performance increased with age: The 4- and 5-year olds were more likely to pass than the 3-year-olds. These age-related findings support those of the meta-analysis (Wellman, Cross, & Watson, 2001), which indicates that a conceptual change at age 4 enables preschoolers to accurately reason about a puppet’s mistaken beliefs. Thus, as a whole this low-income sample demonstrated age-appropriate progression in false belief understanding.

Nevertheless, as hypothesized, African American children were less likely to pass the false belief task than European Americans were. This finding is consistent with Holmes, Black, and Miller’s (1996) work, which found that their low-income (primarily African American) sample lagged behind the age norms for false belief mastery (see Wellman, Cross, & Watson, 2001). Similarly, Curenton (2003) found that European American children outperformed African Americans on a false belief contents tasks even after controlling for children’s language and cognitive scores. Other studies including a large sample of Blacks reported overall passing rates for their samples that were lower than the established age norms (Hughes & Dunn, 1998; Viden, 1999). Interestingly, ethnic group disparities were only evident for the false belief task. There were no differences between the African Americans and European Americans in terms of any of the narrative skills, which suggests that differences between the groups were due to their performance on the false belief task specifically rather than the children’s overall language and social cognitive abilities.

The data from this present study highlight the point that children’s poor performance on a task does not necessarily indicate that a child does not understand the concept. African American children’s skills in using internal state talk and conscious-based narratives demonstrated that the child did indeed have a theory of mind. However, the false task was an unsuccessful method for testing their conception. These findings illustrate Greenfield’s (1997) explanation that children’s performance on tasks represents their cultural values, knowledge, and communication style. Standard false belief tasks ask children to reason about minds using propositional thought (see Churchland, 1984): “He wants X. He thinks X. Now what will he do?” These tasks require children to engage in a basic form of hypothetical-deductive reasoning. On the other hand, when reasoning about minds using narrative thought children are asked to engage in a contextualized, imaginative form of reasoning that requires them to use their understanding of human intentions, emotions, and interpersonal situations (see Astington, 1990 and Vitz, 1990). Given there was no difference between the African Americans and European Americans in terms of social cognitive reasoning measures within the narratives, one could assume that African American children are better at reasoning about minds using narrative thought (i.e., within the context of narratives) rather than propositional thought (i.e., within the context of false belief tasks).

This ethnic finding is intriguing because it forces one to question whether the false belief task can accurately measure theory of mind in disadvantaged, ethnic minority populations. Research has shown that when false belief tasks were given to Peruvian children living in an agricultural society, their performance did not improve with age (Viden, 1996). Similarly, Viden (1999) found that children of African-descent mastered false belief at a later age. The one exception to this finding is Avis and Harris’ (1991) work in which a “real-
life” version of the false belief task was administered to children from a hunter-gather tribe in Africa; in their study children were passing the false belief task according to the age appropriate norms. The discrepancy between these studies could be due to testing procedures and/or modes of thought. Avis and Harris’ participants were tested by familiar adults in a real-life context in which they actively participated, but Vinden’s (1996, 1999) participants were tested by strangers in a hypothetical situation using dolls. Both Vinden’s and the current work support the argument that perhaps puppet tasks administered by strangers is not the most effective method for testing disadvantaged, ethnic minority children’s theory of mind. Perhaps instead ethnic minority children would be better at demonstrating their skills in a task that tapped more into the narrative mode of thought rather than the propositional mode of thought.

Narrative Skills

Age-related narrative development was evident, demonstrating that 4- and 5-year-olds have more sophisticated narrative skills. Their narratives were more coherent and complex. Older children’s narratives were more social cognitively complex as evident by the amount of internal state talk and proportion of Consciousness-based narratives. Age differences in narrative skill are commonly found and other studies report similar results (Craig & Washington, 1994; Curenton & Justice, in press; Murray et al., 1999; Shapiro & Hudson, 1991). Although many researchers have cited Bruner’s (1986) theory regarding narrative landscapes, this is the only study to date to provide empirical evidence supporting the theory. The results of this study indicate 4- and 5-year-olds are more likely to create stories that merge the Action and Consciousness landscape. Furthermore, in support of Astington’s (1990) theory, the African American children who passed the false belief task demonstrate that children who possess an understanding of mental states are able to merge the story landscapes.

These results also highlight how various aspects of children’s narratives abilities are interrelated. The present results found that Coherence (i.e., the number of subject verb propositions) was correlated with children’s internal state talk, indicating that as children’s stories become more linguistically complex, they also become more social cognitively complex. Charnan and Shmueli-Goetz (1998) also found that internal state talk was correlated with the number of subject-verb propositions. Similar associations between narrative skills and internal state talk have been reported in work with other low-income children (Benson, 1997; Curenton & Justice, 2003).

Narrative Skills and False Belief

The second aim of this study was to investigate the association between false belief and narrative skills. After controlling for age, European American children’s false belief performance did not account for any variance in children’s narrative skills. On the contrary, African American children who passed the false belief task told better stories than those who did not. It could be argued that African Americans’ false belief performance predicted their narrative skills because they had more sophisticated narrative skills than European Americans. However, the results indicated no significant differences between the racial groups in terms of narrative skills.
The distinct associations for false belief and narrative skills between the racial groups both contradict and support previous literature. The European Americans' performance supports Charman and Shmuell-Goitze (1998) who found that the coherence and complexity of children's narratives was not related to false belief reasoning. On the other hand, the African American children's performance supports Tager-Flusberg and Sullivan (1995) who found that the number of subject-verb propositions (i.e., referred to as Coherence in the present study) autistic children produced was related to their theory of mind skills. In general, the African American children's results support Astington's (1990) theory that false belief mastery is related to narrative abilities.

Ethnographic research suggests that oral narratives are common in African American communities; adults in these communities tell stories to entertain one another, and adults help and encourage children to tell stories (Hedh, 1982; Sperry & Sperry, 1995, 1996). There is even research indicating that African American mothers attempt to socialize their children through narratives (Leslie, 1998; Strevy & Aldridge, 1994), which may explain why African American children's narrative skills predicted their false belief performance.

Another noteworthy finding regarding narrative skills and false belief is the relationship between false belief and internal state talk. Intuitively, it would seem that both internal state talk and false belief would be related indices of theory of mind, but this is not necessarily the case. Marschark et al. (2000) suggested that the ability to attribute internal states in a narrative requires that one understand the character's internal states and recognize that these internal states lead to behavior; on the other hand, the ability to pass a false belief task requires that one predict the protagonist's behavior. The results of the current study support Marschark et al.'s theory given that children's internal state talk was not a significant predictor of false belief understanding. Therefore, attempts to correlate internal state talk in narratives and false belief skills may prove unfruitful. Instead, internal state talk and false belief skills should be viewed as separate indices of theory of mind.

Limitations and Future Directions

The results of the present study are intriguing, however, there are limitations to this work. The first limitation was sample size. Because of the time required to collect, transcribe, and code narratives, studies that examine narrative production and theory of mind tend to consist of moderate sized samples. Nevertheless, the sample size of the current study was slightly greater than the sample sizes of comparable studies (Tager-Flusberg & Sullivan, 1995; Baron-Cohen et al., 1986; Charman & Shmuell-Goitze, 1998).

A second limitation was the utilization of only one false belief task. In the present study only a false belief locations task was used because prior research with this sample has indicated that this task was the most reliable of those administered (see Curenton, 2003). Charman and Campbell (1997) argued that false belief mastery is not "all or none", and that poor performance on theory of mind tasks does not necessarily equate to a nonexistent theory of mind. The present researcher does not make claims about children's overall false belief performance based on children's response to one task; instead, the task is used as an indicator variable that distinguished one group of children from another.

Despite these limitations, the study had several strengths. First, to my knowledge, it is the only study designed to investigate how false belief skills relate to narrative abilities.
Secondly, it was designed so that race and socioeconomic status were not confounded. Lastly, it added to the general knowledge about children's theory of mind by providing insight into how these abilities may develop across ethnic groups. These results suggest that social cognitive skills have important implications for African American children's narrative abilities. Future work should further explore the narrative skills of African Americans and how these skills relate to other areas of social cognitive competence.

Implications for Practitioners and Educators

Many literary theorists suggest that stories can promote social skills in children (see Lamme, Krogh, & Yachnetz, 1992; Norton, 1995). By introducing children to complex protagonists, adults may help foster children's perspective-taking abilities and social cognitive reasoning. Stories can be used to provide insight into others' minds and motivational states (Benson, 1997) and to enhance moral development (Kilpatrick, 1993). Therefore, work that demonstrates an association between at-risk children's storytelling skills and social cognitive reasoning has implications for educators' and practitioners' ability to promote children's development both on a therapeutic level and a classroom level.

In terms of the therapeutic level, practitioners can use stories to build a bond with their young clients and to help them articulate their feelings and thoughts. Smith and Celano (2000) present a clinical case study that demonstrates how joint oral storytelling between the therapist and her client facilitated a low-income, African American boy's treatment. They provide a compelling example of how storytelling can allow adults to see inside a child's mind and help the child reason about his/her social situation in a more productive or protective manner. The results from the present study indicate that some African American children may already possess the skills necessary for linking social cognitive reasoning and narrative skills. Therefore, these children are the very ones who might be able to benefit most from a storytelling form of therapy.

In terms of the classroom level, educators and practitioners can implement interventions designed to use stories to enhance children's social skills. Trepanier and Romatowski (1982) used stories to influence 5- to 7-year-old children's sharing behavior. At the end of their 3-week intervention, children who had been read stories about sharing were more likely to share than those who had not been read to. Similar results using stories told by puppets were found with preschoolers (Alvord & O'Leary, 1985). In addition, Bhavnagri and Samuels (1996) had two teachers read stories aloud to their respective classrooms. One classroom (the experimental class) was read stories involving peer-related themes (viz., sharing, taking turns, and empathy), and the other class (the control) was read books without peer-related themes (e.g., holiday and animal themes). Their results indicated that reading stories aloud to children and asking them questions emphasizing positive peer interactions had a positive effect on the children's knowledge about social situations. The results of these classroom interventions suggest that children's social skills are enhanced when they are told stories that have a moral or prosocial theme. The researchers who conducted these classroom interventions did not assess children's theory of mind or language skills before implementing the intervention. Yet still their results demonstrate that as a group children benefit from a story intervention regardless of their individual skills, which suggest that even those children who fail to link social cognitive reasoning and narrative skills on their own could still benefit from classroom level intervention.
References


Narratives and Theory of Mind


Appendix A.

Frog Story Transcript Deletions

1. The transcripts were modified to include only the child statements that were directly relevant to the story. All irrelevant remarks were deleted.

2. All experimenter statements were deleted.

3. Child statements that were responses to the experimenter’s questions or request for elaboration/clarification were excluded, except for those statements that were responses to the standard probes.

4. False starts and retraces were deleted.

5. Filler words (e.g., hmm, uhhuh, and huh) were deleted when they were the only words in the utterance. Additionally, untranscribable utterances that stood alone were deleted.

6. Children’s denials (“I don’t know”) and refusals to read were deleted.

7. Children’s questions and discussion about task procedures were deleted.

8. Noun fragments were deleted because they failed to adhere to the subject-predicate clause structure. For example, comments such as, "Reindeer" were excluded. However, fragments were not deleted if they were part of dialogue, such as "Frog, oh, frog!"
Appendix B.

Ratings of Narrative Quality

Illogical Narratives

Description: These stories seem illogical, and are hard to follow. When reading these stories it is difficult to determine to what page the child is referring. The child is not using the pictures to guide his story.

Example: That's a dog, and this a kid, and this a frog. This a dog, and this a kid. And the bumblebee come out. That's a dog. That's not a bumblebee.

Action-Based Narratives

Description: The descriptions of the pictures are clear and accurate. They are describing the actions and scenes from the pictures, but these descriptions are not linked. There is no evidence of a storyline; the child seems to be merely describing a sequence of pictures. These stories have no information about why the character is doing certain things (i.e., his internal states).

Example: it has a window. The dog has a glass on its head. The dog jumped out of the window. The boy jumped out of the window. It had [restart] . . . he's lost. It's raining. A bee come bited his nose. The boy's looking in the hole in the tree. The owl knocked him off the tree. He's on a rock. He's on a reindeer. He's still on the reindeer. He's falling into the water. The boy and the dog got on the log. There was frogs. He's holding the frog.

Consciousness-Based Narratives

Description: The descriptions of the pictures are clear and accurate. These stories reflect the basics of the plot: a) the frog is gone, and b) the boy is looking for his frog. There may be statements like, “The frog is gone,” or “The boy is looking for him.” These stories reflect the character’s internal states. There may be statements like, “He is trying to find his frog,” or “He looked in there, but the frog wasn’t there.” These stories may contain dialogue, such as “He said ‘Frog, where are you?’” or “Frog, oh, frog!” There is resolution at the end, such as “He went home with his frog,” or “He found his frog.”

Example: The frog is in the can. The dog is going to eat. Then the frog got out. Then the boy went to sleep. And the then the boy wake up, and he said, “Where’s the frog?” Then he looked in his food. And then he opened the window. Then his dog stick his head in the can. Then the dog broke the can. Then he went outside, called for the frog. The boy thought it was in there. He thought it was in there, but he was [restart] . . . it was a beaver. Then he wasn’t that, but it wasn’t in there. Then the boy called in there. Then the owl came out. Then the boy climbed down a rock. Then called for his dog and frog. Then a deer came and carried the boy. And then there was the dog, and that was his dog. Then the deer dropped them. Then they fell in the water. And he was doing to get out. He got on the log. And there was a frog. And there was his frog! Then his pants fell down.
Available Special Issues of

*Early Education and Development*

- Conflict Resolution in Early Social Development (10/95)
- Emotional Development & Early Education (1/96)
- Relationships in Early Childhood Programs (1/97)
- Children, Families, and Change: International Perspectives (7/97)
- Developmental Theory & Research: Applications to the Education of Young Children with Disabilities (10/98)
- Unresolved Issues in Early Childhood Programming (1/99)
- Childhood Resilience in School (4/99)
- Early Peer Relationships (7/99)
- Early Education for Moral Development (1/00)
- Mental Health and Head Start (5/00)
- Families and Exceptionality (7/00)
- Families and Early Childhood Education (10/00)
- Early Childhood Emotional Competence (1/01)
- Language Socialization and Children's Entry into Schooling (7/01)
- Cultural Perspectives on Social Competence (4/02)
- Global Perspectives on Children's Media (10/02)
- Vygotskian Perspectives in Early Childhood Education (7/03)

*Available at $30.00 per copy from:*

Wide Range, Inc.

P.O. Box 3410 • Wilmington, DE 19804

Phone: 800-221-9728 • Fax: 302-652-1644
Low-Income Preschoolers’ False-Belief Performance

STEPHANIE M. CURENTON
Policy Fellow
The Society for Research on Child Development

ABSTRACT. A group of 72 preschoolers (36 African Americans, 36 European Americans) enrolled in Head Start programs and other preschools serving low-income children were asked 3 variations of false-belief questions across 3 scenarios and given a language and cognition subtest. Children’s performance varied across the questions and tasks, but after covarying for children’s language and cognitive scores, those effects were no longer found to be significant. Age effects were still significant even after differences in children’s language and cognitive abilities had been accounted for. Although no language and cognitive differences were found among European Americans and African Americans, the European Americans still outperformed African Americans on 1 of the task scenarios. These results demonstrate (a) the importance of considering testing procedures and language and cognitive abilities when assessing children’s social cognitive skills and (b) that age-related changes in false-belief understanding are associated with social cognitive conceptual changes that are independent of language and cognitive skills.

Key words: African American, false belief, low income, social cognition

THEORY OF MIND (ToM) is the study of how mental states relate to behavior. On the basis of a meta-analysis, investigators now widely accept that most children develop a ToM between the ages of 3 to 5 years, with the vast majority of children acquiring that understanding at age 4 years (Wellman, Cross, & Watson, 2001). One of the most widely used methods for testing children’s ToM is the false-belief task (Wimmer & Perner, 1983). That task enables one to test children’s ability to predict another’s behavior in relation to that person’s beliefs. The goal is to assess whether children understand that people sometimes have
mistaken beliefs and that people's actions can be based on those mistaken beliefs. For example, if Joey wants a bowl of cereal and he thinks there is cereal in the cupboard, even though there is actually none there, he will still look in the cupboard because he thinks there is cereal there.

False-belief tasks have been used repeatedly with many samples of children, and researchers have found modest reliability for children's performance across false-belief testing procedures (Charman & Campbell, 1997; Mayes, Klein, Tercyak, Cicchetti, & Cohen, 1996). Thus, variation in testing procedures may be an important consideration when investigating children's ToM. Variation in testing procedures is one such consideration. Wellman et al. (2001) reported that when they examined variations in testing procedures across numerous studies in a meta-analysis, they found that testing procedures did not affect children's between-group age-related performance; nevertheless, they did report that testing procedures could increase children's performance overall. Researchers, whose individual studies were not included in the meta-analysis, reported variations in children's performance across testing procedures, and the results from those studies are particularly interesting when considered in light of children's language and cognitive skills. For example, younger preschoolers, whose language skills are typically poorer than their older counterparts, perform better on tasks that are embedded in sociodramatic play (Ritblatt, 2000; Szarkowicz, 1999) and affective contexts (Davis, 2001). In addition, task procedures affect the performance of children with cognitive delays, such as learning disabilities (Charman & Campbell). The findings from those studies lead one to speculate whether differences in task procedures will still be evident if children's language and cognitive skills are used as a covariate. In the meta-analysis, Wellman et al. did not consider children's language and cognitive skills in conjunction with variations in testing procedures. One of my purposes in this study, therefore, was to examine low-income children's false-belief performance by using a variety of testing procedures while controlling for their language and cognitive skills.

Research With Ethnic Minority and Low-Income Populations

Although Wellman et al. (2001) provided a thorough and insightful summary of children's false-belief performance in their meta-analysis, they did not include most studies examining the performances of children from low-income and ethnic-minority backgrounds (e.g., Cole & Mitchell, 1998; Cutting & Dunn, 1999; Dunn & Hughes, 1998; Holmes, Black, & Miller, 1996; Hughes & Dunn, 1998). Recently, there have been a few studies of the performances of children from low-income, racially diverse backgrounds. Some investigators have examined low-income children's performance by primarily using samples of African Americans (Holmes et al.). Others have examined low-income children's ToM performance by using racially diverse samples (Dunn & Hughes; Hughes & Dunn), but no comparisons were made between racial groups. In the present
study, equal numbers of African American and European Americans were included, and the differences between the two groups were compared. Regardless of the racial diversity of the low-income samples, the results of the studies and conclusions about children's performance were discouraging. Cole and Mitchell (1998) indicated that low socioeconomic status is negatively correlated with passing false-belief tasks; likewise, Cutting and Dunn (1998) found higher maternal education and occupation levels to be positively correlated with children's performance on a battery of ToM tasks. In this study, I addressed two of the possible explanations for low-income children's lower false-belief performance: (a) language and cognitive skills and (b) testing procedures.

Researchers have shown that language and cognitive skills are related to children's false-belief performance. In some studies, assessments of language and cognition were combined (e.g., see Hughes, Dunn, & White, 1999; Jenkins & Astington, 1996), but other researchers have reported that even as separate variables, language (Astington & Jenkins, 1999) and cognitive skills (Frye, Zelazo, & Palfai, 1995) are related to ToM skills. Thus, it may be argued that low-income children perform poorly because they have low language and cognitive skills. However, deficits in these skills cannot entirely explain children's performance. The performances of sample populations of low-income children who have advanced language skills (Hughes & Dunn, 1998) were still low. Moreover, in most studies examining false belief in disadvantaged populations, children's language and cognitive skills were not even assessed (Avis & Harris, 1991; Cole & Mitchell, 1998; Holmes et al., 1996; Vinden, 1996, 1999); therefore, no direct links between language and cognition and false belief can be established on the basis of these studies. In this study, I attempted to further explore the relationship between language and cognitive skills, testing procedures, and false-belief understanding by using children's language scores as a covariate when examining developmental changes in false-belief performance.

Another reason why low-income children may perform poorly is the testing procedures used. Sociocultural differences, such as social cognitive reasoning and communication styles, may make it difficult for low-income and ethnically diverse children to pass a task that was originally developed for use with a middle-class sample (see Wimmer & Perner, 1983). There are few studies in which sociocultural status was examined as a factor in the nature of mental-state understanding (e.g., what people talk about when they talk about mental states and how they talk about them). In some cultures, individuals explain and make predictions about people's behavior by using situational variables or resorting to supernatural forces (see Lillard, 1998; Miller, 1984). Therefore, even if all cultures have the innate capabilities to predict or explain behavior based on mental states (Scholl & Leslie, 1999), there is variation in how often people use those abilities (Lillard, 1999), and the cause of that variation is that people internalize the folk concepts of their culture (see Astington, 1996). In the present study, I investigated the extent to which a low-income, ethnically diverse sample of
preschoolers explained and predicted a character’s false belief in terms of mental states. To my knowledge, there is no work examining the way in which low-income children both predict and explain a character’s false beliefs. Perhaps low-income and ethnic minority children’s poor performance on ToM tasks can be explained by sociocultural differences in reasoning (i.e., perhaps those children are less likely to reason about behavior in terms of mental states).

In the present study, I examined developmental changes in ToM associated with testing procedures, after controlling for language and cognitive abilities. Two hypotheses were proposed: (a) When controlling for language and cognitive scores, older children will outperform younger children, and (b) children’s performance will vary across racial groups. In the third hypothesis, I postulated that children would be more likely to use situational explanations than mental-state explanations for behavior.

Method

Participants

The participants included 72 children from a Head Start program (n = 33) and other preschools serving low-income children (n = 39). All children who participated in the study lived in families that met the national standards for poverty, as evidenced by their enrollment in Head Start, or they lived in families receiving child-care subsidies for low-income families, which enabled the parents to send their child to any local preschool at a tuition rate that was based on their income. Parental permission forms were given to all parents with children attending Head Start programs, but parents with children enrolled in non-Head Start centers were given permission forms only if their family received child care subsidies. There were no significant differences between the number of African Americans versus European Americans, X²(1, N = 72) = .50, or boys versus girls, X²(1, N = 72) = .10, in the two types of preschools. In addition, there was no difference between the type of preschool and children’s age, F(1, 71) = .78, or the type of preschool and children’s language and cognitive skills, F(1, 71) = 2.60. The p values were not statistically significant for any of the prior analyses.

Children were divided into three age groups (n = 24 for all groups): 3-year-olds (M = 43 months, SD = 3.33, 14 girls and 10 boys), 4-year-olds (M = 53 months, SD = 3.18, 15 girls and 9 boys), and 5-year-olds (M = 63 months, SD = 2.60, 11 girls and 13 boys). Equal numbers of African Americans and European Americans were in each age group.

Language and Cognitive Skills

The language and cognition subscale of the Early Screening Inventory—Revised (Meisels, Marsden, Wiske, & Henderson, 1997) was administered by one of three female experimenters in a quiet area of the child’s preschool. The experi-
mentors were all from different ethnic backgrounds (i.e., African American, Latino, and European American). In the present study, this instrument was not used as a screening device. Instead, I used the subscale to gauge children’s language and cognitive skills.

The subscale contained questions designed to assess children’s open-ended descriptive expression and conceptual logic. The questions included activities such as counting blocks, describing objects, analytical verbal reasoning, and auditory sequencing. One of two versions of the test was administered: (a) the preschool version (ESI–P) designed for 3- to 4.5-year-olds or (b) the kindergarten version (ESI–K) for children 4.5 to 6 years old. I summed the children’s scores on the language and cognition subscale to obtain for the children a score for language and cognitive skills. A higher score indicated that children answered more questions correctly, and a lower score indicated that children answered fewer questions correctly (range: 1–12).

Theory of Mind Measures

Question types. In addition, one of the experimenters presented children with false-belief tasks. Within those tasks, children were asked three types of false-belief questions—prediction, explanation, and scaffolding. The prediction questions asked children to predict a character’s behavior based on the character’s false belief (viz., “Where is he going to look for his book?”), which essentially tested children’s understanding of what the puppet was going to do. For those questions, children were always presented with two choices, either the physical objects (i.e., a Band-Aid box versus a plain box and a toy box versus a closet) or the verbal choice (i.e., candle versus apple). The verbal and physical presentations of the answer choices were counterbalanced.

The explanation and scaffolding questions followed Bartsch and Wellman’s (1989) format. In their study, children received a point for correctly explaining the character’s action, but if children failed to answer the first question, they were asked a follow-up question about what the character was thinking. In my study, however, children’s responses to the two questions were scored separately and were classified as explanation or scaffolding. Explanation questions required the child to generate mental-state explanations, which are explanations that include mental state words, on their own, whereas scaffolding questions required that the child be able to describe what the character was thinking. All children were asked both types of questions.

The explanation questions assessed children’s ability to generate spontaneous behavior explanations that contain mental states (viz., “Why is he going to look in there?”). For those, the children were asked to explain why the puppet was going to do something. Responses to the three questions were open-ended, but children received a point only if their response contained information regarding the puppet’s cognition (e.g., thoughts, beliefs), a procedure that is con-
sistent with Bartsch and Wellman’s (1989) system. Children’s responses were also analyzed qualitatively.

Responses to children’s explanation questions were transcribed from the audiotapes of the testing session. The responses were then classified according to four content areas—cognitive, desire–emotional, behavioral–situational, or uncodable. Cognitive explanations referred to the puppet’s thoughts or beliefs (e.g., “She thinks Band-Aids are in there.”). Desire–emotional explanations referred to emotions, desires, and intentions (e.g., “He wants his book.”). Behavioral–situational explanations referred to the puppet’s behavior or to characteristics of the immediate situation (e.g., “because he’s looking for his book”). Children’s responses were classified as uncodable if they refused to give an explanation or gave an incoherent one (e.g., “His book is not there.”). Children’s responses also were classified as logical or illogical. Responses were categorized as logical if the child answered the question by using a plausible explanation that fit with the scenario (e.g., “because he wants to read”), responses were categorized as illogical if the child failed to accurately answer the question with a plausible explanation (e.g., “no book”). Responses from 31 children (93 responses total) were randomly selected and classified by a second rater. Interrater agreement was high for both classification systems—content (average $K = .87$) and illogical versus logical (average $K = .96$).

A third type of question, the scaffolding questions (viz., “What does he think is in there?”), essentially assessed children’s understanding of the reasoning behind the puppet’s actions. For those questions, the puppet’s thoughts were because they reduced the number of problem-solving steps. These questions did not require the child to decide between the situational reality versus the puppet’s mental states; instead, they only required the child to attune to and correctly describe what the puppet was thinking. Bartsch and Wellman (1989) explained that even though the term think appeared in those questions, the questions still revealed the child’s understanding of belief, because the correct answer did not reflect the situational reality or an action that would satisfy the puppet’s desire.

**Task Types**

For ease of test administration, the prediction, explanation, and scaffolding questions were all embedded in various puppet tasks. Tasks were presented in a fixed order (viz., Band-Aid, apple, and book task). Complete scripts for those scenarios follow.

*BAND-AID task:* The experimenter randomly set up two boxes equidistantly in front of the children. The boxes were identical in size, shape, and type, except that one box displayed the Band-Aid logo and the other was plain. Children were asked to pick the box they thought contained Band-Aids (Control 1). To receive a passing score, the children had to pick the Band-Aid box. Next, they were shown that
the Band-Aid box was empty and that the plain box contained Band-Aids. Next, they were introduced to a puppet that had a cut and wanted a Band-Aid. The experimenter asked, “Where do you think she will look first for a Band-Aid?” (prediction question). The correct response was that the puppet will look in the Band-Aid box. The experimenter asked, “Will she find Band-Aids there?” (Control 2). The puppet was shown walking toward the Band-Aid box, and the children were told, “Look, the puppet, Pam, is going to look inside this box. Why do you think Pam is going to look in there?” (explanation question). “What does Pam think is inside that box?” (scaffolding question). Finally, children were asked the third control question, “Are there really Band-Aids in that box?” This task is a modified version of a false-belief task originally developed by Bartsch and Wellman (1989). Other researchers who have tested low-income children have used similar procedures (Hughes & Dunn, 1998; Hughes et al., 1999).

Apple task. Children were shown a candle that looked like an apple and were asked, “Does this look like an apple to you?” (Control 1). Children received a passing score on this question if they answered yes. The experimenter then told them, “But, you know what? It’s really and truly a candle. So what does this look like to your eyes right now, a candle or an apple?” (Control 2). “What is this really and truly, an apple or a candle?” (Control 3). Next, children were introduced to a puppet, Debbie, who was hungry and wanted something to eat. Children were asked the prediction question, “When Debbie first sees this, what will she think this is, a candle or an apple?” All of the answer choices for this task were counterbalanced within the scenario and across all the children. Debbie then was shown hovering over the apple with her mouth open, “Look, Debbie is going to take a bite. Why do you think Debbie is going to take a bite?” (explanation). “What does Debbie think this is?” (scaffolding). This question is a modified version of tasks developed by Gopnik and Astington (1988).

Book task. The experimenter randomly placed a miniature toy box and closet equidistantly in front of the child. The children were then shown a puppet holding a small book and told, “Mark is reading a book. He wants to finish reading it later. He’s going to put his book in the closet until later. Now he is going outside to play.” Mark was placed out of sight, and children were asked, “Where did Mark put his book?” (Control 1). A second puppet, James, came onto the scene, and the children were told, “Look, James has found Mark’s book. James starts to read the book. Now James wants to go outside to play. He’s going to put the book in the toy box. James then goes outside to play.” James was placed out of sight, and the experimenter asked, “Where did James put the book?” (Control 2). Next, Mark came back and the children were told that he wanted to read his book. They were asked the prediction question, “Where will Mark look for his book? Will he find his book there?” (Control 3). Mark was shown heading toward the closet, “Look, Mark is going to look in the closet. Why do you think Mark is going to
look in there?" (explanation). "What does Mark think is in the closet?" (scaffolding). "Is his book really in the closet?" (Control 4). This task is a modified version of Wimmer and Perner's (1983) false-belief task.

Control questions were asked during each task scenario. If children failed any of the control questions within the scenario, they received no points for all false-belief questions within that scenario. Failing control questions indicated that a child was not able to follow the task scenario; therefore, their test answers were not considered reliable. Preliminary investigations indicated that children's performance on the control questions was at ceiling, with an average of 95% correct across all control questions.

Results

Preliminary Analyses

A preliminary Race × Age analysis of variance indicated that children's language and cognitive scores increased with age, $F(1, 71) = 15.26, p < .01$. Three-year-olds ($M = 5.83, SD = 2.16$) had lower scores than 4- ($M = 8.34, SD = 3.06$) and 5-year-olds ($M = 9.50, SD = 1.62$), but the 4- and 5-year-olds were not significantly different from each other. Neither the main effect for race nor the interaction term was significant, indicating that there were no racial differences in terms of language and cognitive scores. Age differences in children's performance on language and cognitive tests have been commonly found in the literature and might imply normal developmental progression.

I also conducted preliminary analyses to demonstrate that performance varied as a function of testing procedures. Table 1 illustrates the variations across tasks and questions. Performance was better on the book task ($M = .96, SD = .93$) than on the apple task ($M = .57, SD = .93$), $t(71) = -3.33, p < .01$, and on the book task than on the Band-Aid task ($M = .60, SD = .82$), $t(71) = -2.66, p < .01$. In terms of questions, children's performance on the explanation questions ($M = .27, SD = .56$) was lower than their performance on the scaffolding ($M = .86, SD = .91$), $t(71) = 5.64, p < .01$; similarly, their performance on explanation questions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Scaffolding</th>
<th>Explanation</th>
<th>Prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band-Aid</td>
<td>26% (19)</td>
<td>8% (6)</td>
<td>25% (18)</td>
</tr>
<tr>
<td>Apple</td>
<td>32% (23)</td>
<td>4% (3)</td>
<td>26% (19)</td>
</tr>
<tr>
<td>Book</td>
<td>31% (22)</td>
<td>14% (10)</td>
<td>53% (38)</td>
</tr>
</tbody>
</table>

*Note. N = 72.*
was poorer than their performance on prediction questions (M = 1.06, SD = .82), t(71) = -7.71, p < .01. Therefore, these results demonstrated that when variations in language and cognitive skill were not accounted for, there was wide variation in performance because of testing procedures.

**False-Belief Performance and Language and Cognitive Skills**

Table 2 shows significant correlations between children’s age, language and cognition skills, and false-belief performance. To test the first two hypotheses, I conducted a repeated measures analysis of covariance (ANCOVA). For that ANCOVA, language and cognitive skills were used as the covariate, task and question were used as within-group variables, and age and race were used as between-group variables. Results revealed a significant Task × Race interaction, F(2, 130) = 3.38, p < .05, in which the European Americans (M = .26, SD = .34) were more successful on the Band-Aid task than were the African Americans (M = .14, SD = .34), but there were no other effects because of testing procedures (i.e., the task and question variables). In addition, there was a between-group age effect, F(2, 65) = 3.22, p < .05, in which the 4-year-olds (M = .25, SD = .31) and 5-year-olds (M = .32, SD = .33) outperformed the 3-year-olds (M = .16, SD = .35). Those results confirmed two of the hypotheses by demonstrating that, even after controlling for language and cognitive differences, children’s performance increased with age, and children’s race affected their performance on specific tasks.

**False-Belief Explanations**

To test the third hypothesis, I conducted qualitative results to characterize children’s responses to explanation questions. Given the open-ended format of the explanation question, children could explain the puppet’s behavior by using cognitive, behavioral–situational, desire–emotional, or uncodeable types of explanations. The qualitative results indicated that the majority of the responses children gave were logical (57%), meaning that those responses were plausible explanations for the puppet’s behavior. Of those children who responded logically, 57%

| Table 2. Correlations Between Language/Cognition, Age, and False Belief |
|------------------------|----------------|----------------|
| Variable               | Age  | Language/cognition | False belief |
| Age                    | —    | .33**               | .37**        |
| Language/cognition     | —    | —                   | .45**        |
| False belief           | —    | —                   | —            |

**p < .01.**
used behavioral-situational explanations, 23% used desire-emotional explanations, and 20% used cognitive explanations. These results confirmed the hypothesis that low-income children would be more likely to provide a situational or behavioral explanation for the actions of the puppets.

Discussion

In this study, 1 investigated whether language and cognitive skills mediate the relationship between testing procedures and false-belief performance. The results of previous work had suggested that language and cognitive skills and ToM are correlated (e.g., Astington & Jenkins, 1999; Frye et al., 1995; Hughes, Dunn, & White, 1998; Jenkins & Astington, 1996; Taylor & Carlson, 1997), and the results from this study provided further evidence for the relationship between the two. Astington (2001) and Frye, Zelazo, and Burack (1998) postulated that language and cognitive skills may be important in children's ability to understand false beliefs. Specifically, Astington (2001) argued that age-related development in false beliefs might be a reflection of increasing language abilities, which can also be attributed to age-related development. However, the present results indicated that once differences in children's language and cognition skills are controlled for, age-related changes in false-belief understanding are still evident, suggesting that age-related maturation in social cognitive reasoning is distinct from age-related maturation in language and cognitive skills.

African American Children’s Performance

Although covarying for language and cognition skills failed to eliminate age differences, it eliminated nearly all of the differences across testing procedures. However, testing procedures still influenced African American children’s performance, even when language and cognitive scores were covaried. European Americans outperformed African Americans on the Band-Aid task. Similar versions of Band-Aid tasks have been used with socioeconomically and ethnically diverse populations (Bartsch & Wellman, 1989; Cutting & Dunn, 1999; Hughes & Dunn, 1998; Hughes, Dunn, & White, 1998; Watson, Nixon, Wilson, & Capage, 1999), but none of those investigators have reported a difference in children’s performance on the Band-Aid task in comparison with other tasks. However, in a study by Holmes, Black, and Miller (1996), the authors reported an average passing rate of 46% for contents tasks (i.e., tasks similar to the Band-Aid task used in the present study) in comparison with a 69% passing rate for location tasks (i.e., tasks similar to the Book task in the present study) across both of their experiments with African American children enrolled in Head Start programs. Therefore, my study supports those previous findings that contents tasks may be more difficult for African American children.

There are several reasons why African American children may experience
more difficulty with the contents task. Holmes, Black, and Miller (1996) argued that the children in their study performed better on the locations tasks because these tasks were embedded in a story context, whereas the contents tasks were not embedded. This explanation cannot explain the performance of the participants in this study because all of the tasks were presented in scenarios (stories) that described the puppet’s desires. Specifically, for the Band-Aid task, the children were told that the puppet was hurt and wanted a Band-Aid; for the Apple task, the children were told that the puppet was hungry and wanted something to eat; and for the Book task, the children were told that the puppet wanted to sit down and read his book. Instead, the other two explanations Holmes, Black, and Miller suggested (viz., that the contents task is arbitrary and unrealistic) are more likely to explain the performance in the present group. The African American children in this study may have experienced difficulty with this task because the switch in the contents in the boxes was arbitrary and was not explained during the scenario, or the children may have experienced difficulty because the situation is unlikely to occur in real life (i.e., it is unlikely that someone would remove all the Band-Aids from a perfectly good Band-Aid box and place them in a plain box). On the contrary, the apple and book tasks reflected real-world experiences more accurately. For example, it is common for children to see an object that looks like something else, and it is common for children to have their belongings moved by someone else. The performance of the African American students was equivalent to that of European Americans on those tasks with more real-world application. Other researchers have found that when the abilities of African American children are assessed in realistic contexts, their performance on language assessments improves to age-appropriate levels (see Laing & Kumbi, 2003). In future studies, investigators should examine false-belief performance in low-income, African American children and incorporate tasks that are more contextualized and applicable in real life. In addition, future researchers within this area should obtain information about the family and community socialization practices along with self-reports of ethnic identity so that sociocultural factors, such as ethnicity and race, can be seen as cultural process variables rather than merely descriptive variables.

Responses to Explanation Questions

Another interesting finding was the pattern of children’s responses on the explanation questions. In the original study assessing children’s false-belief explanations, Bartsch and Wellman (1989) found that one third of the children spontaneously produced a cognitive-based explanation to the question, “Why do you think he is looking in there?” The other two thirds of the sample responded correctly to, “What does he think?” (the scaffolding question). My findings are consistent with their results. Fewer children answered the explanation questions versus the scaffolding and prediction questions.
One possible reason why children’s scores were lower on the explanation question is that they had to generate an open-ended why response, and those forms of questions are more difficult to answer (see de Villers & Roepner, 1995). Following that argument, it would seem that most children would have given illogical responses. However, most of the children provided logical explanations for the character’s behavior, but those explanations did not refer to the character’s thoughts. For example, when asked why the puppet was going to look in the closet, 18 children gave situational and behavioral responses, such as, “to find his book,” whereas 11 children gave desire-based responses, such as, “He wants to read,” and 9 children made comments like, “He thinks his book is in there,” which is a cognitive-based response. Overall, the qualitative results indicated that most of the children who provided logical responses gave situational and behavioral explanations.

Children’s performance on the scaffolding and prediction questions indicated that those children understood the puppet’s mental state even though they may not have explained its behavior using mental-state explanations. In a study by Nelson, Pless, and Hensler (1998), 50% of adults from their socioeconomically diverse sample gave narrative–interpretative explanations of behavior, and these narrative–interpretative explanations focused on situations, emotions, and social norms, as well as mental states. Thus, when asked to explain behaviors, low-income children may focus more on situational or emotional factors because it is the norm of their social group to explain behavior in that way, even though they still understand people’s mental reasons for engaging in the behavior. These results support Lilard’s (1998) argument that the propensity to explain behavior in terms of mental states may be a middle-class, European and European American phenomenon. In future studies, diverse groups of low-income children’s explanations for behavior should be examined.

Limitations and Conclusions

These data provide new insight into how low-income African American and European American preschool children develop a theory of mind, but some researchers may criticize the children’s overall performance. Although the children demonstrated the appropriate age-related progression in false-belief performance, their performance was low because of the stringent passing criteria. To receive points for the test questions, children had to pass all of the control questions in a scenario. It is common in ToM studies for the experimenters to repeat the scenario if children fail the control questions, but in this study the experimenters did not repeat the scenario. Instead, if children failed any of the controls, they received zero points for all questions within that scenario. I used the multiple control questions and stringent passing criteria to guard against children randomly guessing the correct answer, which ultimately, resulted in lower—albeit more reliable—scores.
In summary, my results are consistent with those of literature in the field. The results both support and supplement Wellman et al. (2001). They are supportive in that they demonstrate that age-related conceptual changes in false-belief competence are not caused by testing procedures, and they are supplemental in that they demonstrate that conceptual changes are independent of language and cognitive skills. These results also support findings from false-belief literature on low-income children by demonstrating that even though those children have low performance levels, age-related developmental changes and correlations between false-belief understanding and language and cognitive skills are still evident in this socioeconomic group.

REFERENCES


Received June 17, 2003