

Development of Nursery Rhyme Knowledge in Preschool Children

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Data from six studies including 538 preschool age children were used to investigate the age-related development of nursery rhyme knowledge. Nursery rhyme knowledge was measured by asking the children to recite or complete familiar and popular nursery rhymes (e.g., *Hickory, Dickory Dock*). Both correlational and regression analyses were used to discern patterns of changes in the dependent variable. Results showed that children from middle socioeconomic status (SES) families were more knowledgeable about nursery rhymes compared to children from low SES backgrounds, and that the rates of age-related change in children from middle SES families were more pronounced compared to children from low SES backgrounds. Implications for research are described.

Nursery rhymes are short tales, poems or songs made up of trivial or nonsensical musical verse. The origins of nursery rhymes can be traced to children's lullabies intended to help a child fall asleep (Opie & Opie, 1997). Many of the earliest nursery rhymes such as *Three Blind Mice* can be traced to the late 1600s and early 1700s (Opie & Opie, 1997; Zuralski, 2005). According to Alchin (2010), the first published nursery rhyme appeared in England in 1570 in what was known as a *chapbook* (Alchin, 2009). Some of the most popular and well known nursery rhymes include *Twinkle, Twinkle, Little Star*; *Hickory, Dickory Dock*; and *Jack and Jill*.

Despite the fact that young children have sung or been taught nursery rhymes for more than three centuries, it was not until the 1980s that researchers began investigating nursery rhymes. Maclean, Bryant, and Bradley (1987) investigated young children's nursery rhyme knowledge by asking children to recite five familiar English nursery rhymes. The children in their study were between 34 and 45 months of age. Since the Maclean et al. (1987) study, five other studies have investigated nursery rhyme knowledge of children between 53 and 87 months of age (Fernandez-Fein & Baker, 1997; Layton, Deeny, Tall, & Upton, 1996; Libenson, 2007; Murray, Smith, & Murray, 2000; Sonnenschein et al., 1996).

The primary purpose of this *CELLpaper* was to discern the age-related changes in the nursery rhyme knowledge of preschool children and to determine if these changes were similar or different as a function of child and family characteristics. A secondary purpose was to determine if children from different generations have been differentially exposed to nursery rhymes. A recent survey (Booktrust, 2009) and both the educational (Scholastic Education PLUS, 2009) and popular (Syson, 2009) media report that fewer parents nowadays engage their children in nursery rhyme activities because they do not believe they have educational value, consider them "old fashioned," or find themselves embarrassed reciting rhymes to their children. A third purpose was to identify gaps in knowledge and the kinds of research needed to further an understanding of the development of nursery rhyme knowledge in young children.

The need for a better understanding of the development of nursery rhyme knowledge is based on the fact that young children's rhyming experiences and knowledge are related to the phonological and print-related literacy development of preschoolers either with or without developmental disabilities or delays (Dunst & Gorman, 2011; Dunst, Meter, & Hamby, 2011). In both of these research syntheses, the nursery rhyme measures administered to children at different ages during the preschool years were related to the children's early literacy outcomes.

METHOD

Sources of Data

Six studies located as part of a research synthesis of the relationships between different measures of nursery rhymes and early literacy learning (Dunst et al., 2011) that included the same or very similar measures of nursery rhyme

CELLpapers are a publication of the Center for Early Literacy Learning (CELL) funded by the U.S. Department of Education, Office of Special Education Programs (Grant #H326B060010). CELL is a collaboration among the Orelena Hawks Puckett Institute, the American Institutes for Research, and the PACER Center. Copyright © 2011. Orelena Hawks Puckett Institute. All rights reserved.

knowledge administered to preschool aged children were the sources of data for this paper (Fernandez-Fein & Baker, 1997; Layton et al., 1996; Libenson, 2007; Maclean et al., 1987; Murray et al., 2000; Sonnenschein et al., 1996). The six studies included 13 samples of children. (One study investigated nursery rhyme knowledge of the same group of children at two different ages, and for purposes of this paper, were considered separate samples; Sonnenchein et al., 1996.)

Participants

Table 1 shows selected characteristics of the children in the studies. The six studies included 538 children. The children's mean ages ranged from 40 to 75 months. In those studies reporting child gender (N = 5), 47% were male and 53% were female. Three samples of children were from families with low socioeconomic backgrounds, seven samples of children were from families with middle socioeconomic backgrounds, and three samples of children were from families with mixed socioeconomic backgrounds. The studies were all conducted with English speaking children in the United States (N = 3), the United Kingdom (N = 2), and Canada (N = 1).

Nursery Rhyme Knowledge

The nursery rhymes that the children were asked to re-

cite and the ways in which nursery rhyme knowledge was measured are shown in Table 2. All of the studies included *Humpty Dumpty*; *Baa-ba Black Sheep*; *Hickory Dickory Dock*; *Jack and Jill*; and *Twinkle Twinkle Little Star* as the rhymes the children were asked to recite. Murray et al. (2000) included five additional nursery rhymes in their study (*Hey Diddle, Diddle*; *Little Miss Muffet*; *Mary Had a Little Lamb*; *Pease Porridge Hot*; and *Old Mother Hubbard*). The investigators of the different studies all noted that the nursery rhymes they used were familiar and popular in their countries.

The children's knowledge of each nursery rhyme was coded using a 0-2, 0-3, or 0-4 scoring system. Because the scoring procedures in the six studies differed, they resulted in total scores ranging from zero to 10, zero to 15, or zero to 20. The ways in which the investigators scored and coded each of the nursery rhymes are described in Table 2. The descriptions are essentially verbatim from those in the original research reports. Maclean et al. (1987) and Layton et al. (1996) used the same 10 point scoring system. Murray et al. (2000) used the Maclean et al. (1987) scoring system but asked the children to recite 10 rather than five nursery rhymes. Fernandez-Fein and Baker (1997) and Sonnenschein et al. (1996) used a modified version of the Maclean et al. (1987) scoring system that gave a child additional credit for completing more than half but not all of a nursery rhyme. Libenson (2007) did the same but used a 4-point scoring system for each rhyme.

Table 1
Selected Characteristics of the Nursery Rhyme Knowledge Study Participants

Study	Sample Size	Child Age (Months)		Child Gender		Family Socioeconomic Status	Country
		Mean	Range	Male	Female		
Fernandez-Fein & Baker (1997)							
Sample 1	15	58	NR	5	10	Low	United States
Sample 2	14	58	NR	8	6	Low	United States
Sample 3	19	58	NR	14	5	Middle	United States
Sample 4	11	58	NR	6	5	Middle	United States
Layton et al. (1996)							
Sample 1	131	53	NR	NR	NR	Middle	United Kingdom
Sample 2	90	53	NR	NR	NR	Middle	United Kingdom
Sample 3	19	53	NR	NR	NR	Middle	United Kingdom
Libenson (2007)	49	67	NR	20	29	Middle	Canada
Maclean et al. (1987)							
Sample 2	27	40	34-45	13	14	Low	United Kingdom
Sample 1	33	40	34-45	16	17	Middle	United Kingdom
Murray et al. (2000)	97	75	65-87	43	54	Low-Middle	United States
Sonnenchein et al. (1996)							
Time 1	33	58	NR	15	18	Low-Middle	United States
Time 2	33	70	NR	15	18	Low-Middle	United States

NOTES. NR = Not reported. Gender in the Maclean et al. (1987) study was reported in Bryant et al. (1990) and gender in the Sonnenchein et al. (1996) study was obtained from Baker et al. (1994).

Table 2
Nursery Rhymes Used to Measure the Children's Nursery Rhyme Knowledge

Study	Nursery Rhymes	Child Rhyming Measure	Possible Range
Fernandez–Fein & Baker (1997)	<i>Humpty Dumpty</i> <i>Baa-baa Black Sheep</i> <i>Hickory Dickory Dock</i> <i>Jack and Jill</i> <i>Twinkle Twinkle Little Star</i>	Child asked to recite (nursery rhyme). Zero if child recited none of the rhyme, 1 if the child had some knowledge of the rhyme, 2 if the child had more knowledge of the rhyme, and 3 if the child had knowledge of most of the rhyme.	0-15
Layton et al. (1996)	<i>Humpty Dumpty</i> <i>Baa-baa Black Sheep</i> <i>Hickory Dickory Dock</i> <i>Jack and Jill</i> <i>Twinkle Twinkle Little Star</i>	Child asked to recite (nursery rhyme.) Zero if child recited none of the rhyme, 1 of the child recited part of the rhyme, and 2 of the child recited all of the rhyme.	0-10
Libenson (2007)	<i>Humpty Dumpty</i> <i>Baa-baa Black Sheep</i> <i>Hickory Dickory Dock</i> <i>Jack and Jill</i> <i>Twinkle Twinkle Little Star</i>	Child asked to recite (nursery rhyme) and prompted by the first several words if necessary. Zero if child recited none of the rhyme, 1 if the child completed the first line of the rhyme, 2 if the child recited the first couplet of the rhyme, 3 if the child recited nearly all of the rhyme, and 4 if the child recited the rhyme perfectly.	0-20
Maclean et al. (1987)	<i>Humpty Dumpty</i> <i>Baa-baa Black Sheep</i> <i>Hickory Dickory Dock</i> <i>Jack and Jill</i> <i>Twinkle Twinkle Little Star</i>	Child asked to recite (nursery rhyme.) Zero if child recited none of the rhyme, 1 of the child recited part of the rhyme, and 2 of the child recited all of the rhyme.	0-10
Murray et al. (2000)	<i>Humpty Dumpty</i> <i>Baa-baa Black Sheep</i> <i>Hickory Dickory Dock</i> <i>Jack and Jill</i> <i>Twinkle Twinkle Little Star</i> <i>Hey Diddle, Diddle</i> <i>Little Miss Muffet</i> <i>Mary Had a Little Lamb</i> <i>Pease Porridge Hot</i> <i>Old Mother Hubbard</i>	Child was told the first line of the nursery rhyme and asked to complete the (nursery rhyme). Zero if the child recited none of the rhyme, 1 if the child recited the second line of the rhyme, 2 if the child recited any part of the remainder of the rhyme.	0-20
Sonnenschein et al. (1996)	<i>Humpty Dumpty</i> <i>Baa-baa Black Sheep</i> <i>Hickory Dickory Dock</i> <i>Jack and Jill</i> <i>Twinkle Twinkle Little Star</i>	Child was given the name of each nursery rhyme and asked to recite (nursery rhyme). Zero if the child recited none of the rhyme, 1 if the child had some knowledge of the rhyme, 2 if the child had more knowledge of the rhyme, and 3 if the child had knowledge of most of the rhyme.	0-15

Data Coding and Analysis

Data coding and analysis was performed in a number of steps. First, the average nursery rhyme scores were recoded (adjusted) so that the possible range of scores in each study varied between 0 and 10. The standard deviations for the re-

coded mean scores were also adjusted. This permitted direct comparisons between the findings in the different studies as a function of differences in child age. Second, descriptive analyses were performed to discern patterns of similarities and differences in the average nursery rhyme knowledge

scores in terms of both child age and family socioeconomic status (SES). Third, Pearson product correlational analyses (Cohen, Cohen, West, & Aiken, 2003) were performed to determine if child age, family SES, and year of publication were related to differences in the children's nursery rhyme knowledge scores. Fourth, exploratory linear and curvilinear regression analyses (Cohen et al., 2003) were performed to ascertain if there were age-related patterns of change in the children's development of nursery rhyme knowledge.

RESULTS

Descriptive Findings

Table 3 shows the mean nursery rhyme knowledge scores and standard deviations for the 13 samples of children. The data are first arranged according to child age and then by family SES (lowest to highest) within the studies to portray similarities and differences in nursery rhyme knowledge. A number of noteworthy findings can be discerned from the results. First, the mean nursery rhyme scores in the Layton et al. (1996) study were highly skewed and the children's scores were exceedingly high especially in light of the fact that the children were some of the youngest in the different studies. Repeated attempts to find reasonable explanations for the inflated scores failed, and it was decided not to include the data from this study in any further analyses since the mean scores for the three samples all constituted outliers. Second,

in those studies including children having either low SES or middle SES backgrounds, the children from families with middle SES backgrounds had higher nursery rhyme knowledge scores compared to the children from families with low SES backgrounds which was confirmed in both the correlation and regression analyses.

Correlational Analyses

The correlations between child age, year of publication, family socioeconomic status (SES), and nursery rhyme knowledge are shown in Table 4. Two correlations in particular are worth noting. The first is the correlation between child age and year of publication ($r = 0.83$). Whereas the first study of nursery rhyme knowledge was conducted with the youngest children a quarter of a century ago (Maclean et al., 1987), the more recently conducted studies all included much older children (e.g., Libenson, 2007; Sonnenschein et al., 1996). This pattern of results precluded any attempt to test the hypothesis that young children of today are less knowledgeable in terms of reciting nursery rhymes compared to children who were preschoolers in the late 1980s or early 1990s. The second noteworthy finding is the correlation between SES and nursery rhyme knowledge ($r = 0.64$). The result showed that the children from middle SES background families scored higher on the nursery rhyme knowledge measures compared to the children from low SES background families.

Table 3
Adjusted Means and Standard Deviations for the Nursery Rhyme Knowledge Scores

Study	Child Age (Months)	Family SES	Nursery Rhyme Knowledge	
			Mean ^a	Standard Deviation ^b
Maclean et al. (1987)				
Sample 2	40	Low	3.67	1.82
Sample 1	40	Middle	5.33	2.55
Layton et al. (1996)				
Sample 1	53	Middle	7.11	2.69
Sample 2	53	Middle	7.66	2.80
Sample 3	53	Middle	8.05	4.22
Fernandez-Fein & Baker (1997)				
Sample 1	58	Low	5.39	2.10
Sample 2	58	Low	2.45	1.73
Sample 3	58	Middle	6.91	2.10
Sample 4	58	Middle	6.70	2.90
Sonnenschein et al. (1996) Time 1	58	Low-Middle	4.79	2.53
Libenson (2007)	67	Middle	5.35	2.90
Sonnenschein et al. (1996) Time 2	70	Low-Middle	7.17	1.23
Murray et al. (2000)	75	Low-Middle	3.97	2.68

^a The average scores in each study were adjusted so the possible range of scores were 0 to 10.

^b Estimated standard deviations.

Table 4
Correlations Between the Study Measures

Study Variables	Child Age	Year of Publication	Family Socioeconomic Status	Nursery Rhyme Knowledge
Child Age (months)	—	.83**	.10	.20
Year of Publication		—	.24	.13
Family Socioeconomic Status ^a			—	.64*
Nursery Rhyme Knowledge				—

^a 1 = Low SES, 2 = Low-Middle SES, 3 = Middle SES.

* $p < .01$. ** $p < .001$.

The relationship between SES and nursery rhyme knowledge was explored further by computing the correlations between child age and nursery rhyme knowledge separately for samples of children from low SES family backgrounds and samples of children from middle SES backgrounds. The correlations were, respectively, $r_s = 0.38$ and 0.41 . These sizes of effect indicate a moderate relationship between child age and nursery rhyme knowledge in each subsample of children. Whereas there was no covariation between child age and nursery rhyme knowledge for all samples of children taken together, there were age-related variations in the children's nursery rhyme knowledge when the two samples of children were examined separately.

Regression Analyses

Examination of the scatter plots of the relationships between child age and nursery rhyme knowledge for the low and middle SES background children indicated that the pattern of changes in nursery rhyme knowledge differed among the two subsamples of children. Visual inspection of the data suggested that there were age-related linear trends for children from both low SES and high SES families but an upward curvilinear trend in nursery rhyme scores for the children from high SES but not low SES families. This was confirmed by exploratory linear and curvilinear regression analyses predicting nursery rhyme knowledge scores from child age separately for the low and middle SES background children.

The findings are shown in Figure 1. The linear regression analyses (top panel) showed that both samples of children demonstrated age-related increases in nursery rhyme knowledge from 40 to 70 months of age and that the middle SES background participants continued to demonstrate better nursery rhyme knowledge throughout the preschool years compared to the low SES background participant. The curvilinear regression analyses (bottom panel) showed progressively larger increases in nursery rhyme knowledge among the children from middle SES but not low SES families as the children became older. This indicates that the differences in nursery rhyme knowledge between the two groups became incrementally larger as the children became older.

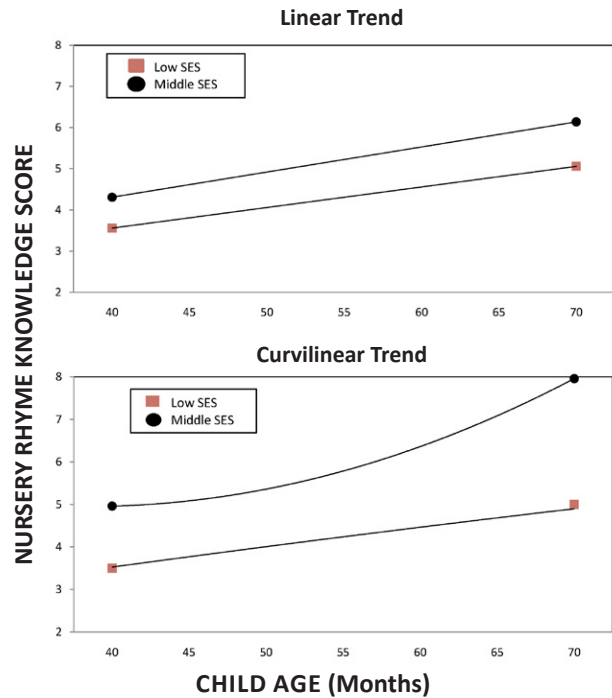


Figure 1. Linear and curvilinear trends in the development of preschool children's nursery rhyme knowledge.

DISCUSSION

The study reported in this *CELLpaper* was considered exploratory. Nonetheless it was possible to use data from 5 of the 6 studies to investigate patterns and correlates of age-related changes in young children's nursery rhyme knowledge. Findings showed that the study participants demonstrated increased nursery rhyme knowledge from 40 to 70 months of age but that the rates of change were more pronounced among children from middle SES backgrounds as evidenced by the curvilinear increases in their nursery rhyme knowledge scores. That is, children from middle SES families continued to learn nursery rhymes at a faster rate compared to the children from low SES families. The results supported the hypothesis that there would be differences in nursery rhyme knowledge as a function of child age but that the patterns of age-related changes were

different among children from low SES and middle SES backgrounds.

The hypothesis that fewer parents nowadays provide their children nursery rhyme experiences (Booktrust, 2009) compared to parents 2, 3 or more generations ago could not be tested because child age was highly correlated with year of publication. As a result, the relationship between child age and nursery rhyme knowledge is confounded by the fact that more recent studies included mostly older children whereas earlier studies included the youngest children, not making it possible to evaluate generation differences.

A number of observations can be made based on the findings reported in this paper. First, it is surprising that so few studies of young children's nursery rhyme knowledge have been conducted given the fact that nursery rhymes have been such an important part of children's upbringings for centuries (Opie & Opie, 1997). Second, in those studies that have investigated nursery rhyme knowledge, it was surprising as well to find so little information about the children and their families included in the research reports to be able to evaluate similarities and differences in the nursery rhyme knowledge of the different samples of children. Third, only a single study, an honor's thesis (Libenson, 2007), was conducted in the past 10 years. (Presumably the study published by Murray et al. (2000) was conducted in the late 1990s.)

The strengths and limitations of both the original studies as well as the study described in this *CELL* paper highlight the need for additional research on the development of young children's nursery rhyme knowledge. First, there is a need for more nursery rhyme studies of children who vary considerably in their ages throughout the preschool years to be able to better determine age-related changes in nursery rhyme knowledge. Second, it would be worthwhile to model changes in the development of the knowledge of individual nursery rhymes that vary in their length or complexity (e.g., Fazio, 1997) to determine if patterns of change are similar or different. Third, there is a need to include more and better defined child, parent, family, and environmental variables in nursery rhyme studies to be able to determine the correlates and determinants of changes in nursery rhyme knowledge. Fourth, these kinds of studies should include different early literacy, language, and communication outcomes to be able to relate variations in nursery rhyme knowledge to variations in these outcomes.

Our knowledge of the development of nursery rhyme knowledge in young children is quite limited despite the fact that it has been established that nursery rhyme experiences, awareness, and knowledge are related to young children's early and emergent literacy learning (Dunst et al., 2011). Further investigation of young children's nursery rhyme knowledge should increase our understanding of its development and its relationship to the emergence of early literacy competence.

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