

## Relationship Between Young Children's Nursery Rhyme Experiences and Knowledge and Phonological and Print-Related Abilities

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The relationships between nursery rhyme experiences, knowledge, and awareness and both phonological- and print-related skills were examined in 12 studies of 5,299 preschoolers. Fifteen different kinds of early literacy skills were measured in the studies. The pooled weighted correlations between nursery rhymes and the children's early literacy skills were used as the sizes of effect between measures. Results showed that the nursery rhyme measures were related to both phonological- and print-related literacy outcomes, and that nursery rhyme experiences and knowledge proved to be the best predictors of the study outcomes. The findings provide support for a relationship between young children's nursery rhyme abilities and their phonological- and print-related skills, including emergent reading. Implications for practice are described.

The extent to which young children's nursery rhyme experiences and knowledge are related to phonological- and print-related early literacy skills is the focus of this research synthesis. Nursery rhyme experiences and knowledge are considered important precursors and determinants of later literacy abilities (Sadlier-Oxford, 2000; Zuralski, 2005) and are often used to facilitate young children's phonological- and language-related abilities (e.g., Morris & Leavey, 2006; Neuman, 2004).

Maclean, Bryant, Bradley and colleagues (Bryant, Bradley, Maclean, & Crossland, 1989; Bryant, Maclean, & Bradley, 1990; Maclean, Bryant, & Bradley, 1987), in a prospective study of the relationship between nursery rhyme knowledge and phonological sensitivity, vocabulary, and both early and later reading abilities, found that young children's ability to recite familiar nursery rhymes was both directly and indirectly related to later literacy and language abilities. Whether the relationships reported by Maclean et al. were found in other investigations using the same as well as other measures of nursery rhymes and the same as well as other early literacy and language outcome measures was the focus of the analyses reported in this *CELLreview*.

### NURSERY RHYMES

The origins of nursery rhymes can be traced to the early 1700s (Zuralski, 2005). Nursery rhymes are short poems or songs that often are made up of trivial musical verse. Several

of the more popular nursery rhymes are *Twinkle, Twinkle Little Star*, *Jack and Jill*, *Hickory, Dickory Dock*, *Itsy, Bitsy Spider*, *Hey Diddle Diddle*, and *Rock-a-Bye Baby*.

The relationships between nursery rhymes and early literacy skills have been examined by investigating young children's nursery rhyme abilities in three different ways (Table 1). The first asks young children to recite popular nursery rhymes (e.g., Fernandez-Fein & Baker, 1997; Layton, Deeny, Tall, & Upton, 1996; Maclean et al., 1987; Murray, Smith, & Murray, 2000). The second uses parents' reports of young children's experiences with nursery rhymes and rhyming games as a measure of nursery rhyme capabilities (Boudreau, 2005; Peeters, Verhoeven, van Balkom, & van Leeuwe, 2009; Weigel, Martin, & Bennett, 2006). A third asks young children to supply the last word of familiar nursery rhymes (Terry, 2010; Townsend & Konold, 2010). The extent to

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Table 1  
Description of the Nursery Rhyme Measures

Nursery Rhyme Measure	Description	Sources
<i>Nursery Rhyme Knowledge</i>	Child's ability to recite Humpty Dumpty, Baa-Baa Black Sheep, Hickory Dickory Dock, Jack and Jill, and Twinkle Twinkle Little Star	MacLean et al. (1987)
<i>Nursery Rhyme Experiences</i>	Child's experience with common nursery rhymes, playing rhyming games, and producing rhymes himself or herself	Bennett et al. (2002); Boudreau (2005)
<i>Nursery Rhyme Awareness</i>	Child's ability to supply the final rhyming word of familiar nursery rhymes	Invernizzi et al. (2001)

which these different ways of measuring nursery rhyme experiences and knowledge were related to early literacy skills in the same or dissimilar manners was also examined in the research synthesis.

### SEARCH STRATEGY

Studies were identified using “*nursery*” and “*rhyme*” or “*nursery rhyme*” or “*nursery-rhyme*” or “*nursery*” and “*rime*” AND *knowledge* or *experience* or *awareness* or *completion* as search terms. Both controlled vocabulary and natural language searches were conducted (Lucas & Cutspec, 2007).

Psychological Abstracts (PsychInfo), Educational Resource Information Center (ERIC), MEDLINE, Academic Search Premier, Education Research Complete, and Dissertation Abstracts International were searched. These were supplemented by Google Scholar and Ingenta searches and a search of an extensive EndNote Library maintained by our Institute. Hand searches of the reference sections of all identified journal articles, book chapters, and books were also examined to locate additional studies.

Studies were included if the majority of the study participants were six years of age or younger, a nursery rhyme experience, knowledge or awareness measure (Table 1) was used, and the nursery rhyme measure was correlated with one or more early literacy and language measures. Studies that used rhyming tasks that asked a child to say a word that sounded the same as one orally presented by an investigator were excluded because they did not include traditional nursery rhymes as part of the rhyming tasks.

### SEARCH RESULTS

Twelve studies were located that included 14 samples of children (Appendix A). The 14 samples included 5,299 children (Range = 17 to 2260). Fifty three percent of the children were female and 47% were male. The average age of the children at the time the nursery rhyme measures were administered was 59 months (range 40 to 75). Seven samples of children had no developmental delays nor were they considered at-risk for poor outcomes (typically developing), five samples included a mix of typically developing children and children considered at-risk for poor outcomes, and two sam-

ples of children had identified disabilities (language impairments or cerebral palsy). In those studies where ethnicity was reported, most of the study participants were either African American (48%) or Caucasian (39%). The other participants were Latino or Hispanic (5%), Asian American (3%) or had other ethnicities (5%).

A nursery rhyme knowledge measure was used in six studies, a nursery rhyme experiences measure was used in five studies, and a nursery rhyme awareness measure was used in two studies (Table 1). Fifteen different kinds of phonological- and print-related literacy outcome measures were administered to the study participants (Table 2). The phonological-related outcome measures included rhyming tasks (production, detection, oddity), phoneme tasks (awareness, detection), and alliteration tasks (production, detection, oddity). The particular phonological-related measures used in the studies constitute a subset of skills considered indices of phonological awareness (Anthony et al., 2002; Blachman, 2000) and are considered important precursors of later reading competence (Whitehurst & Lonigan, 1998). The print-related outcome measures included alphabet tasks (knowledge, letter sound awareness, name writing), print-related tasks (concepts, knowledge), and early reading tasks (vocabulary, emergent reading, story retelling). The print-related measures included the kinds of skills that are considered important for emergent writing and reading (Treiman & Rodriguez, 1999).

### SYNTHESIS FINDINGS

Appendix B includes the effect sizes (correlations) between the nursery rhyme measures and the literacy-related outcomes in each study. The pooled weighted correlations between the nursery rhyme and outcome measures were used as the sizes of effect because of the large differences in the sample sizes in the individual studies (Shadish & Haddock, 2009). The 95% confidence interval of the pooled weighted average correlations was used for substantive interpretation. A confidence interval with a lower bound not including zero indicates that the average weighted correlation is statistically significant at the 0.05 level (Shadish & Haddock, 2009). The average weighted effect sizes between the nursery rhyme

Table 2  
*Definitions of the Phonological and Print-Related Literacy Measures*

Literacy Measures	Definitions	Sources
<i>Phonological Measures</i>		
Rhyme Production	Child's ability to produce words that rhyme with target words	Maclean et al. (1987)
Rhyme Detection	Child's ability to identify among a group of words or pictures which two rhyme	Bryant et al. (1990)
Rhyme Oddity	Child's ability to identify among a group of three or four words the one that does not rhyme with the other words	Sadlier-Oxford (2000)
Phoneme Awareness	Child's ability to understand that spoken words are composed of individual sounds	Snow et al. (1998)
Phoneme Detection	Child's ability to identify the onset, middle, or ending sounds of words that sound like those from other words	Murray et al. (2000)
Alliteration Production/ Detection	Child's ability to produce or identify a sound or word that begins with the target sound or word presented in text, as a picture or object, or orally	Maclean et al. (1987)
Alliteration Oddity	Child's ability to identify words that have a different beginning sound than other words or a target word	Sadlier-Oxford (2000)
<i>Print-Related Measures</i>		
Alphabet Knowledge	Child's ability to recognize or produce the forms and names associated with written letters of the alphabet	Townsend & Konold (2010)
Letter Sound Awareness	Child's ability to recognize or produce the sound corresponding to each letter	Clay (1979)
Name and Age Writing	Child's ability to write his or her name and age	Weigel et al. (2006)
Print Concepts	Child's ability to answer questions related to knowledge about print such as book orientation, word orientation, and print conventions (e.g.: text moving from left to right).	Clay (1979)
Print Knowledge	Child's ability to identify or understand common logos/labels	Clay (1979)
Vocabulary	Child's ability to identify a picture that best matches an orally described word or choose the word that best matches a presented picture	Dunn & Dunn (2007)
Reading Competence	Child's ability to match words with pictures or sounds of a word or to read a short sentence correctly	Yopp (1995)
Story Retelling	Child's ability to retell a story using a wordless picture book	Clay (1979)

measures and the 15 different categories of literacy outcome measures are included in Appendix C. The effect sizes were examined in a number of ways to identify the nature of the relationships among measures.

Table 3 shows the average effect sizes and 95% confidence intervals between the three different nursery rhyme measures and both the phonological- and print-related outcomes. All three nursery rhyme measures were related to both categories of literacy outcomes as evidenced by confidence intervals not including zero. In all three sets of analyses, however, the nursery rhyme measures were more strongly related to the phonological-related outcomes compared to

the print-related outcomes. The sizes of effect between the nursery rhyme measures and the two categories of literacy-related outcomes were larger for nursery rhyme knowledge and experiences compared to nursery rhyme awareness.

The average effect sizes for the relationships between all three nursery rhyme measures and the different phonological- and print-related outcomes are shown in Table 4. For all three types of phonological- outcome measures combined, the average effect size was 0.39 (95% CI = 0.37 – 0.41). The nursery rhyme measures were similarly related to both the rhyming and alliteration outcomes, but somewhat less related to the phoneme outcomes. For all three types of print-

Table 3

*Average Effect Sizes and 95% Confidence Intervals for the Relationships Between the Nursery Rhyme Measures and the Phonological and Print-Related Literacy Outcomes*

Nursery Rhyme Measure	Outcome Category	Number		Average Effect Size	95% Confidence Interval
		Effect Sizes	Sample Size		
<i>Knowledge</i>	Phonological	22	546	0.46	0.42 – 0.51
	Print-Related	6	208	0.30	0.22 – 0.38
<i>Experiences</i>	Phonological	8	72	0.50	0.38 – 0.62
	Print-Related	21	202	0.28	0.22 – 0.35
<i>Awareness</i>	Phonological	6	4551	0.37	0.35 – 0.39
	Print-Related	16	4551	0.21	0.20 – 0.23

Table 4

*Average Effect Sizes and 95% Confidence Intervals for the Relationships Between the Nursery Rhyme Measures and Different Phonological and Print-Related Outcomes*

Outcome Measures	Number		Average Effect Size	95% Confidence Interval
	Effect Sizes	Sample Size		
<i>Phonological-Related Outcomes</i>	36	5169	0.39	0.37 – 0.41
Rhyming	19	5169	0.43	0.41 – 0.45
Alliteration	9	439	0.41	0.34 – 0.48
Phoneme	8	4759	0.34	0.32 – 0.37
<i>Print-Related Outcomes</i>	43	4961	0.22	0.21 – 0.23
Reading	10	313	0.45	0.37 – 0.53
Print	11	4718	0.36	0.33 – 0.39
Alphabet	22	4850	0.17	0.16 – 0.18

related outcome measures combined, the average effect size for the relationship between the nursery rhyme measures and the outcomes was 0.22 (95% CI = 0.21 – 0.23). The nursery rhyme measures were most strongly related to the early reading-related measures, followed by the print measures, and then the alphabet measures.

In most studies, the nursery rhyme and literacy outcome measures were obtained when the children were the same age. In a number of studies, the nursery rhyme measures were obtained at one age and the literacy outcome measures were administered when the children were older (see Appendix B). Figure 1 shows the average effect sizes and 95% confidence intervals for the concurrent and predictive relationships between the nursery rhyme measures and both the phonological- and print-related outcomes. In both sets of analyses, the nursery rhyme measures were more strongly related to the outcomes when they were administered at a later time than when the nursery rhyme and outcome measures were administered concurrently.

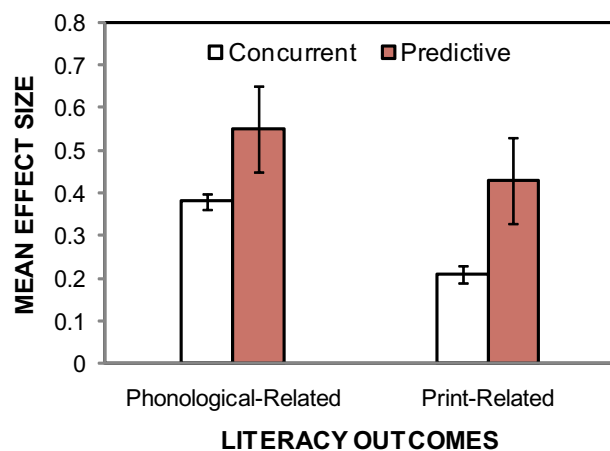


Figure 1. Average effect sizes and 95% confidence intervals for the concurrent and predictive relationships between the nursery rhyme measures and phonological and print-related literacy outcomes.

Table 5  
*Moderator Analyses of the Relationships Between the Nursery Rhyme Measures and the Phonological and Print-Related Outcomes*

Moderators	Phonological Outcomes			Print-Related Outcomes		
	Number of Effect Sizes	Average Effect Size	95% of Confidence Interval	Number of Effect Sizes	Average Effect Size	95% of Confidence Interval
<i>Year of Publication</i>						
1987 - 2005	24	0.48	0.44 – 0.52	19	0.23	0.17 – 0.29
2006 - 2010	12	0.37	0.36 – 0.39	24	0.22	0.20 – 0.23
<i>Study Sample Size</i>						
< 50	16	0.43	0.36 – 0.51	24	0.42	0.35 – 0.48
50 - 100	14	0.53	0.47 – 0.58	9	0.25	0.19 – 0.32
> 100	6	0.37	0.35 – 0.39	10	0.21	0.20 – 0.22
<i>Child Mean Age (months)</i>						
39 - 54	13	0.48	0.43 – 0.53	9	0.28	0.20 – 0.35
55 - 63	12	0.37	0.36 – 0.39	21	0.21	0.20 – 0.23
64 - 75	11	0.45	0.38 – 0.52	13	0.30	0.22 – 0.37
<i>Child Gender</i>						
Mostly Male	4	0.47	0.27 – 0.67	13	0.18	0.07 – 0.28
Mostly Female	11	0.47	0.40 – 0.54	14	0.43	0.36 – 0.49
Mixed	15	0.39	0.37 – 0.40	16	0.21	0.20 – 0.22
<i>Ethnicity</i>						
Mostly Caucasian	15	0.46	0.41 – 0.51	14	0.35	0.29 – 0.42
Mostly African American	6	0.37	0.35 – 0.39	16	0.21	0.20 – 0.23
Mixed	11	0.48	0.42 – 0.55	3	0.20	0.09 – 0.30
<i>Child Condition</i>						
Typically Developing	18	0.47	0.42 – 0.51	21	0.31	0.26 – 0.36
Typical/At-Risk	12	0.38	0.36 – 0.39	13	0.21	0.20 – 0.22
Disability	6	0.53	0.40 – 0.66	9	0.50	0.39 – 0.61

The extent to which the relationships between the nursery rhyme measures and the literacy outcomes were moderated by either study or child variables is shown in Table 5. The differences in the sizes of effects between the nursery rhyme and outcome measures for both year of publication and study sample size are partly confounded by the nursery rhyme measure. This is the case because nursery rhyme awareness (Invernizzi, Sullivan, & Meier, 2001) was used only in studies published after 2005 and in one study using this measure there were more than 4000 study participants (Townsend & Konold, 2010) and, as already noted, nurs-

ery rhyme awareness was not as strongly related to the literacy outcomes compared to nursery rhyme experiences and knowledge.

The nursery rhyme measures were related to both the phonological- and print-related literacy outcomes regardless of the child moderator variables as evidenced by confidence intervals not including zero for all the moderator subgroups. There were however several noteworthy findings. First, the average effect sizes for the relationships between nursery rhymes and both the phonological- and print-related outcomes were larger for children with identified disabilities.



Second, the average effect sizes between nursery rhymes and both categories of literacy outcomes were relatively similar regardless of the age of the children when the nursery rhyme measures were administered. Third, the effect sizes for the nursery rhyme measures and the print-related outcomes were larger for studies that included more female than male participants.

## DISCUSSION

Findings showed that the different measures of young children's nursery rhyme experiences, knowledge, and awareness were related to the different early literacy outcome measures in the studies included in the research synthesis. The results showed that the nursery rhyme measures were more strongly related to the phonological-related measures compared to the print-related measures, although the children's nursery rhyme experiences and knowledge were related to the three different emergent print-related outcomes (Table 4).

The fact that the nursery rhyme experiences and knowledge measures proved better predictors of the literacy outcomes compared to the nursery rhyme awareness measure deserves comment. Nursery rhyme knowledge was a *direct measure* of the children's nursery rhyme abilities inasmuch as the children were asked to recite familiar nursery rhymes. Nursery rhyme experiences was a *proxy measure* of children's nursery rhyme abilities based on parents' reports of their children's rhyming abilities. In contrast, nursery rhyme awareness was an *indirect measure* of the children's nursery rhyme abilities since the children were only asked to provide the last word of familiar rhymes and this proved not to be as good a predictor of the literacy outcomes.

The fact that the nursery rhyme measures were related to both the phonological- and print-related literacy outcomes regardless of child age or developmental condition (Table 5) indicates that introducing nursery rhymes to young children early in the preschool years can influence later literacy-related abilities and that nursery rhyme experiences benefit both children with and without disabilities. Especially noteworthy is the fact that nursery rhyme experiences and knowledge were most strongly related to the literacy outcomes among children with identified disabilities (Boudreau, 2005 [Sample 2]; Peeters et al., 2009).

### Implications for Practice

The findings from the studies examined in this research synthesis were the basis for a number of *Center for Early Literacy Learning* practice guides for both parents ([www.carlyliteracylearning.org/pgparents.php](http://www.carlyliteracylearning.org/pgparents.php)) and early childhood practitioners ([www.earlyliteracylearning.org/pgpract.php](http://www.earlyliteracylearning.org/pgpract.php)). There are eight infant, eight toddler, and three preschooler practice guides that include ideas, games, fingerplays, and other activities that use rhymes to promote young children's sound awareness and early phonological sensitivity skills.

In addition to lap games, fingerplays, and nursery rhymes, shared book reading that include rhyming stories (e.g., Hayes, 2001) or repetitious rhyming verse (e.g., Mertens & Robertson, 2005; Neuman, 2004) are other ways of using rhymes as part of early literacy learning activities to support the acquisition of phonological-related skills. Singing rhyming songs is also an activity that can promote young children's phonological-related abilities (e.g., Custodero, Britto, & Brooks-Gunn, 2003). Many of the lap games parents play with their infants and toddlers include the kinds of repetitious rhymes that children find highly engaging and enjoyable (e.g., Fernald & O'Neill, 1993; van Hoorn, 1987).

The extent to which nursery rhymes, rhyming games, and activities are both engaging and beneficial is likely to be influenced by how interesting the rhymes are to a child (e.g., Frijters, Barron, & Brunello, 2000; Gardner, 1991; Laakso, Poikkeus, Eklund, & Lyytinen, 2004). Young children delight in hearing rhymes and stories over and over when they are either personally or situationally interesting (Arnold, 2005; Lewman, 1999; Martinez & Roser, 1985). The best advice is to identify nursery rhymes and rhyming games that a young child especially enjoys and actively engage the child in the activities as part of routine play (e.g., Pruden, Hirsh-Pasek, Golinkoff, & Hennon, 2006; Renninger, 1990).

Nursery rhyme games and activities are likely to be beneficial to most children but are especially important for young children with disabilities as described in this *CELL-review*. Intervention studies of young children with disabilities indicate, regardless of a child's particular disability, that rhyme-related interventions are associated with a host of positive literacy outcomes (e.g., Blondel & Miller, 2001; Glenn & Cunningham, 1984; Rogow, 1982). Traditional nursery rhymes and rhyming games have long been a part of early childhood intervention with young children with disabilities (e.g., Blos, 1974).

Recent surveys (Booktrust, 2009), studies (e.g., Libenson, 2007), 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 either because they do not consider them to have educational value or that they believe nursery rhymes are "old fashioned" or find them embarrassing to recite to their children. More disconcerting is the fact that only about 50% of the youngest generation of parents know all the words to traditional nursery rhymes (Booktrust, 2009). An important role early childhood practitioners can play as part of early literacy learning interventions for young children with disabilities is to promote parents' understanding of the importance of nursery rhymes for their children's emergent reading and writing competence.

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Appendix A  
Background Characteristics of the Study Participants

Study	Number	Child Age (Months)		Child Gender		Family		Child Condition
		Mean	Range	Male	Female	Ethnicity	Percent	
Boudreau (2005) (Sample 1)	20	64	57-70	15	5	NR <sup>a</sup>		Typically Developing
Boudreau (2005) (Sample 2)	17	63	55-68	15	2	NR		Language Impaired
Bryant et al. (1989); Maclean et al. (1987)	66	40	34-45	32	34	NR		Typically Developing
Curenton & Justice (2008)	45	53	37-62	27	18	Caucasian Native American	95 5	Typically Developing, At-Risk
Fernandez-Fein & Baker (1997)	59	54	48-58	32	27	African American Caucasian	42 58	Typically Developing, At-Risk
Layton et al. (1996)	240	53	NR	NR	NR	NR		Typically Developing
Libenson (2007)	45	67	NR	19	26	NR		Typically Developing
Murray et al. (2000)	97	75	65-80	43	54	African American Asian American Caucasian	36 6 58	Typically Developing
Peeters et al. (2009)	35	72	NR	14	21	NR	NR	Cerebral Palsy
Sonnenschein et al. (1996)	39	58	NR	NR	NR	African American Caucasian Mixed Ethnicity	25 29 46	Typically Developing; At-Risk
Terry (2010)	33	55	48-60	13	20	African American Asian American Caucasian Mixed Ethnicity	58 9 27 6	Typically Developing
Townsend & Konold (2010) (Sample 1)	2258	62	37-87	1061	1197	African American Asian Caucasian Hispanic Other	49 3 37 5 5	Typically Developing, At-Risk
Townsend & Konold (2010) (Sample 2)	2260	62	37-87	1062	1198	African American Asian Caucasian Hispanic Other	49 3 37 5 5	Typically Developing, At-Risk
Weigel et al. (2005; 2006; 2010)	85	50	NR	45	40	Asian American Caucasian Hispanic Mixed Ethnicity Other	1 93 2 1 2	Typically Developing

<sup>a</sup>Not reported.

Appendix B  
*Effect Sizes for the Relationship Between the Nursery Rhyme Measures and Study Outcomes*

Study	Nursery Rhyme Measure		Outcome Measure		Effect Size (r)
	Type of Measure	Child Age (Months) <sup>a</sup>	Construct	Child Age (Months) <sup>b</sup>	
Boudreau (2005) (Sample 1)	Nursery Rhyme Experiences	64	Rhyme Production	64	.49
			Rhyme Oddity	64	.17
			Alphabet Knowledge	64	.25
			Letter Sound Awareness	64	.32
			Print Concepts	64	.15
			Print Knowledge	64	-.56
			Story Retelling	64	-.01
Boudreau (2005) (Sample 2)	Nursery Rhyme Experiences	63	Rhyme Production	63	.67
			Rhyme Oddity	63	.46
			Alphabet Knowledge	63	.26
			Letter Sound Awareness	63	.46
			Print Concepts	63	.58
			Print Knowledge	63	.34
			Story Retelling	63	-.29
Bryant et al. (1989); Maclean et al. (1987)	Nursery Rhyme Knowledge	40	Rhyme Oddity	40	.46
			Rhyme Oddity	48	.57
			Rhyme Oddity	55	.64
			Phoneme Detection	67	.61
			Phoneme Detection	75	.50
			Alliteration Oddity	44	.48
			Alliteration Oddity	55	.52
			Vocabulary	40	.30
			Reading Competence	75	.59
Curenton & Justice (2008)	Nursery Rhyme Experiences	53	Alphabet Knowledge	53	.21
			Print Concepts	53	.30
			Print Knowledge	53	.18
Fernandez-Fein & Baker (1997)	Nursery Rhyme Knowledge	54	Rhyme Production	54	.67
			Rhyme Detection	54	.60
			Alliteration Production/ Detection	54	.26
Layton et al. (1996)	Nursery Rhyme Knowledge	53	Rhyme Detection	53	.45
			Alliteration Production/ Detection	53	.34
Libenson (2007)	Nursery Rhyme Knowledge	67	Rhyme Oddity	67	.19
			Phoneme Awareness	67	.03
			Vocabulary	67	.40

Appendix B, continued

Study	Nursery Rhyme Measure		Outcome Measure		Effect Size (r)
	Type of Measure	Child Age (Months) <sup>a</sup>	Construct	Child Age (Months) <sup>b</sup>	
Murray et al. (2000)	Nursery Rhyme Knowledge	75	Phoneme Awareness	75	.50
			Phoneme Awareness	75	.49
			Phoneme Detection	75	.53
			Alphabet Knowledge	75	.34
			Alphabet Knowledge	75	-.28
			Reading Competence	75	.47
Peeters et al. (2009)	Nursery Rhyme Experiences	72	Rhyme Detection	72	.36
			Rhyme Detection	84	.47
			Alliteration Production/ Detection	72	.43
			Alliteration Production/ Detection	84	.69
			Letter Sound Awareness	84	.70
			Vocabulary	72	.49
			Vocabulary	84	.49
			Reading Competence	84	.62
Sonnenschein et al. (1996)	Nursery Rhyme Knowledge	58	Rhyme Production	58	.56
			Rhyme Production	70	.22
			Alliteration Production/ Detection	58	.24
			Alliteration Production/ Detection	70	.49
Terry (2010)	Nursery Rhyme Awareness	55	Rhyme Detection	55	.71
			Alliteration Production/ Detection	55	.36
			Alphabet Knowledge	55	.62
			Alphabet Knowledge	55	.48
			Letter Sound Awareness	55	.45
			Name/Age Writing	55	.49
			Print Concepts	55	.73
			Vocabulary	55	.60
Townsend & Konold (2010) (Sample 1)	Nursery Rhyme Awareness	62	Rhyme Detection	62	.41
			Alliteration Production/ Detection	62	.35
			Alphabet Knowledge	62	.07
			Alphabet Knowledge	62	.12
			Letter Sound Awareness	62	.20
			Name/Age Writing	62	.23
			Print Concepts	62	.35

Appendix B, continued

Study	Nursery Rhyme Measure		Outcome Measure		Effect Size ( $r$ )
	Type of Measure	Child Age (Months) <sup>a</sup>	Construct	Child Age (Months) <sup>b</sup>	
Townsend & Konold (2010) (Sample 2)	Nursery Rhyme Awareness	62	Rhyme Detection	62	.41
			Alliteration Production/ Detection	62	.31
			Alphabet Knowledge	62	.08
			Alphabet Knowledge	62	.12
			Letter Sound Awareness	62	.21
			Name/Age Writing	62	.28
			Print Concepts	62	.38
Weigel et al. (2005; 2006; 2010)	Nursery Rhyme Experiences	50	Name/Age Writing	50	.20
			Name/Age Writing	62	.02
			Print Concepts	50	.26
			Print Concepts	62	.31

<sup>a</sup> Average age of the children when the nursery rhyme measure was administered.

<sup>b</sup> Average age of the children when the outcome measures were administered.