

## Nursery Rhymes and the Early Communication, Language, and Literacy Development of Young Children with Disabilities

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The relationships between nursery rhyme knowledge and experiences and the early literacy (phonological awareness and print-related), language, and communication development of young children with disabilities was examined in 13 studies including 155 participants. The effect sizes (correlations) between the nursery rhyme and outcome measures were used to evaluate the strength of relationships between measures. Results showed that both types of nursery rhyme measures (knowledge and experiences) were related to four of the major categories of outcomes and all subcategories of outcome measures. Comparisons of the results with those found in studies of children without disabilities indicated that the strength of the relationships between the nursery rhyme and the two literacy outcomes were larger for children with disabilities compared to children without disabilities. Implications for practice are described.

The manner in which the nursery rhyme knowledge and experiences of young children with disabilities were related to the early communication, language, and literacy development of these children was the focus of this research synthesis. In a previous research synthesis of nursery rhyme knowledge and experiences of mostly young children without developmental disabilities or delays, variations in the nursery rhyme measures were related to variations in six different types of early and emergent literacy outcomes (Dunst, Meter, & Hamby, 2011). The average effect sizes (correlations) for the relationships between the nursery rhyme and study outcomes ranged between 0.34 and 0.43 for phonological awareness outcome measures and ranged between 0.17 and 0.45 for print-related outcome measures.

The research synthesis described in this *CELLreview* is both a replication and extension of the Dunst et al. (2011) meta-analysis. The coding and analyses of the studies in both syntheses were very similar or identical in order to determine if the relationships between the nursery rhyme and outcome measures were the same or different among children with or without disabilities or delays. This research synthesis differs from the Dunst et al. (2011) meta-analysis by: (a) including a wider range of nursery rhyme measures, (b) including communication and language outcome measures in addition to literacy outcomes, and (c) examining the influences of nursery rhyme knowledge and experiences on those outcomes among young children with different kinds of disabilities.

Nursery rhymes in the studies included in this research synthesis were investigated in terms of either nursery rhyme

knowledge or different kinds of nursery rhyme experiences. Nursery rhyme knowledge was measured in terms of the children's ability to recite popular and familiar rhymes (Maclean, Bryant, & Bradley, 1987). Nursery rhyme experiences were measured in terms of either the children's exposure to nursery rhymes or engagement in rhyming games or songs (e.g., Peeters, Verhoeven, van Balkom, & de Moor, 2009) or their choice/preference for listening to nursery rhymes compared to nonrhyming sounds or voices (e.g., Glenn & Cunningham, 1982).

The use of nursery rhymes as an intervention for promoting the development of literacy-related skills has been recommended for children with visual impairments (e.g., Blos, 1974), hearing impairments (e.g., Blondel & Miller, 2001), developmental disabilities (e.g., Glenn & Cunningham, 1984), speech and language impairments (e.g., Roth, Troia, Worthington, & Dow, 2002), physical disabilities (e.g., Peeters, Verhoeven, van Balkom, & de Moor, 2009), and multiple disabilities (e.g., Rogow, 1984). The extent to which these types of practices and experiences are empiri-

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cally related to the early literacy, language, and communication development of young children with disabilities in the manner hypothesized by these as well as other investigators was the focus of this research synthesis.

## SEARCH STRATEGY

Studies were located using “*nursery AND rhyme*” OR “*nursery rhyme*” OR “*nursery-rhyme*” AND “*deaf*” OR “*hard of hearing*” OR “*blind*” OR “*vision impair\**” OR “*mental retard\**” OR “*develop\* disab\**” OR “*Down syndrome*” OR “*language delay*” OR “*language impair\**” OR “*autism*” (plus other terms for different types of disabilities) 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, and Education Research Complete 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 participants were chronologically or developmentally six years of age or younger, a nursery rhyme measure was administered or used as a measure of nursery rhyme experiences, and the correlations or information needed to compute a correlation between the nursery rhyme measures and one or more literacy, language or communication outcomes were included in the research reports.

## SEARCH RESULTS

Thirteen studies including 155 children were located that met the inclusion criteria (Appendix A). The children's mean chronological ages ranged between 12 and 76 months (Median = 53 months). In those studies reporting child developmental ages (N = 9), the children's mean mental ages ranged between 9 and 71 months (Median = 16 months). Fifty-five percent of the children were male and 45% of the children were female. The children's disabilities included developmental disabilities (N = 6), speech and language impairments (N = 5), visual impairments (N = 2), and cerebral palsy (N = 1).

The nursery rhyme measures used in the studies are shown in Appendix B. Familiar nursery rhymes or songs were used in nine studies where the children were either asked to recite the rhymes or use some type of behavior to request or demonstrate preference for the nursery rhymes. Nonspecified nursery rhymes or nursery rhyme experiences were used in six studies where parents' ratings of nursery rhyme experiences or a child's preference for listening to nursery rhymes were related to the child outcomes.

The outcomes in the studies included two types of lit-

eracy measures (phonological awareness and print-related abilities) and both nonverbal communication and language measures. The phonological awareness outcomes included rhyme production, alliteration, and phonemic awareness. The print-related outcomes included alphabet knowledge and print concepts. The communication outcomes included nonverbal gestures (including vocalizations) and child behavioral initiations. The language outcomes included child verbalizations and a composite receptive and expressive language measure (Newcomer & Hammill, 1988).

## SYNTHESIS FINDINGS

The effect sizes (correlations) for the relationships between the nursery rhyme measures and the child outcomes in each of the studies are shown in Appendix C. Either Pearson's product-moment correlation or the point-biserial correlation were used as the effect sizes in the 13 studies. The average effect sizes and their 95% confidence intervals were used for substantive interpretation of the results. Unweighted average effect sizes and confidence intervals were used because of the small sample sizes in most studies and because several effect sizes were for only one participant per study (Chan & May, 1999; Glenn & Cunningham, 1982).

Table 1 shows the average effect sizes and 95% confidence intervals for the relationships between the two types of nursery rhyme measures and the four major categories of outcome measures. Both types of nursery rhyme measures were related to the phonological and communication outcomes. The average effect sizes were, respectively, 0.54 and 0.51 for the phonological awareness outcomes and 0.70 and 0.42 for the nonverbal communication outcomes. In addition, nursery rhyme experiences were related to the print-related and language outcomes as evidenced by average effect sizes of 0.44 and 0.61 respectively.

The relationships between both types of nursery rhyme measures and the phonological, print-related, communication, and language outcomes and the different measures in each major outcome category are shown in Table 2. The average effect sizes for the four major study outcomes (phonological, print, communication, and language) were 0.53, 0.46, 0.53, and 0.61 respectively. The confidence intervals for these four outcome categories all indicated that the average effect sizes differed significantly from zero as evidenced by the fact that the lower bounds of the average sizes of effect did not include zero. The average effect sizes for the outcome measures making up each of the four major outcome categories ranged between 0.41 and 0.67. (The confidence interval for the verbalization language outcome which includes zero is an artifact of being the only outcome having a negative effect size.)

The investigators in the different studies measured the nursery rhyme and study outcomes at either the same child age or at different child ages or both. Figure 1 shows the average effect sizes and 95% confidence intervals for the con-

Table 1  
Average Effect Sizes and 95% Confidence Intervals for the Relationships Between the Nursery Rhyme Measures and the Study Outcomes

Nursery Rhyme Measure	Outcome Category	Number		Average Effect Size	95% Confidence Interval
		Effect Size	Sample Size		
<i>Knowledge</i>	Phonological	9	28	.54	.34-.74
	Print-Related	1	1	.64	–
	Communication	4	41	.70	.46-.94
	Language	0	0	–	–
<i>Experiences</i>	Phonological	6	52	.51	.37-.65
	Print-Related	7	53	.44	.24-.64
	Communication	6	57	.42	.03-.81
	Language	18	46	.61	.52-.69

Table 2  
Average Effect Sizes and 95% Confidence Intervals for the Relationships Between the Nursery Rhyme Measures and the Different Literacy, Language and Communication Outcomes

Outcome Measure	Number		Average Effect Size	95% Confidence Interval
	Effect Size	Sample Size		
<i>Phonological</i>	15	80	.53	.41-.65
Rhyming	4	29	.67	.31-1.03
Alliteration	3	39	.60	.23-.98
Phoneme Awareness	8	76	.43	.26-.60
<i>Print-Related</i>	8	63	.46	.29-.64
Alphabet Knowledge	4	62	.52	.20-.83
Print Concepts	4	53	.41	.04-.79
<i>Communication</i>	10	98	.53	.30-.76
Nonverbal Gestures	6	15	.65	.45-.86
Behavioral Initiations	12	31	.59	.48-.69
<i>Language</i>	18	46	.61	.52-.69
Verbalizations	5	26	.47	-.10-1.04
Composite Language Measure	5	72	.59	.41-.77

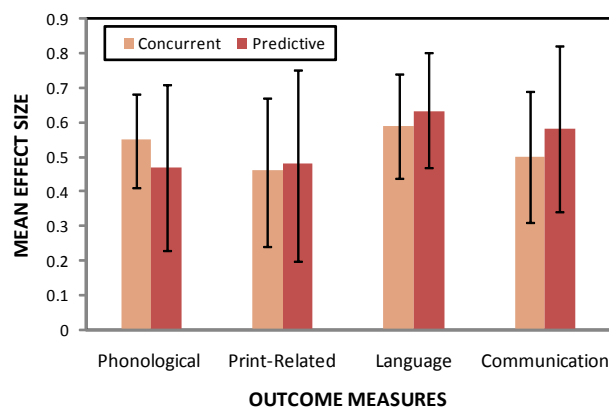


Figure 1. Average effect sizes and 95% confidence intervals for the concurrent and predictive relationships between the nursery rhyme measures and the four types of outcome measures.

current and predictive relationships between the nursery rhyme and child outcome measures. The results showed for all four major outcome categories that the strength of the relationship between the nursery rhyme measures and study outcomes were more similar than different whether the two measures were obtained at the same time or the outcome measures were administered at some time after the nursery rhyme measures were administered.

The extent to which the relationships between the nursery rhyme measures and the study outcomes were moderated by either study or child variables is shown in Table 3. Neither year of publication nor number of study participants influenced the relationships between the independent and dependent measures. Similarly, differences in child condition, child age, child gender, and the type of child outcome did not moderate the relationship between the nursery rhyme measures and the study outcomes. It is worth noting that the

Table 3

*Moderators of the Relationships Between Nursery Rhymes and the Study Outcomes*

Outcome Measure	Number		Average Effect Size	95% Confidence Interval
	Effect Size	Sample Size		
<i>Year of Publication</i>				
1982-1990	16	60	.58	.50-.67
1991-2005	35	95	.53	.44-.62
<i>Number of Study Participants</i>				
1-10	29	57	.59	.51-.67
11-35	22	98	.49	.39-.59
<i>Child Condition</i>				
Language Impairment	20	55	.51	.37-.64
Developmental Disability	25	86	.58	.50-.66
Visual Impairment	6	14	.55	.38-.71
<i>Mean Child Age (months)</i>				
12-25	15	35	.58	.49-.66
48-63	20	36	.49	.35-.63
66-76	15	65	.59	.49-.68
<i>Child Gender</i>				
Mostly Male	21	43	.49	.36-.62
Mostly Female	14	49	.54	.46-.61
Mixed	15	44	.63	.53-.73
<i>Child Behavioral Outcome</i>				
Recitation	14	57	.59	.46-.73
Engagement	22	63	.50	.38-.61
Auditory Preference	15	35	.58	.49-.66

influences of nursery rhyme knowledge and experiences on the outcomes for children with different kinds of disabilities were very much alike.

Both the research synthesis of young children with identified disabilities described in this *CELLreview* and the Dunst et al. (2011) research synthesis of children mostly without disabilities or delays included the same or very similar nursery rhyme knowledge and experience measures and the same or very similar measures of phonological awareness and print-related abilities. These particular measures were analyzed in both research syntheses to determine if the relationships between the nursery rhyme measures and the two literacy outcomes were similar or different for the two groups of children. Figure 2 shows the average effect sizes and 95% confidence intervals for the relationships between the measures in the two research syntheses. Whereas the relationships between the nursery rhyme and phonological awareness measures were very much alike, the size of effect between the nursery rhyme and print-related outcomes was larger for the children with developmental disabilities.

## DISCUSSION

Findings showed that the nursery rhyme knowledge and experiences measures were related to the participants'

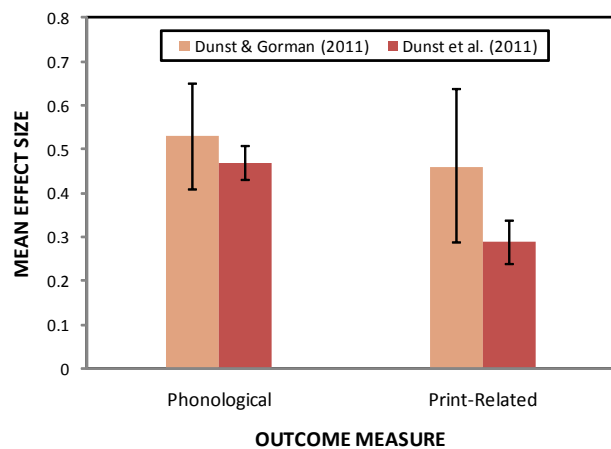


Figure 2. Average effect sizes and 95% confidence intervals for the relationships between nursery rhyme knowledge and the phonological and print-related outcomes in the Dunst et al. (2011) and Dunst and Gorman (present) research syntheses.

early communication, language, and literacy development, and that the relationships were much alike for children with different kinds of developmental disabilities. The results reported in this *CELLreview* and those in Dunst et al. (2011) research synthesis of studies of young children without dis-

abilities and delays were also very much alike for the same or similar nursery rhyme measures and the same or similar phonological awareness and print-related measures. The influences of nursery rhyme knowledge and experiences on literacy development therefore manifest themselves in the same way regardless of whether or not a child has a disability or delay.

### *Implications for Practice*

The use of nursery rhymes with young children with disabilities to promote and enhance their early literacy, language, and communication development has been a recommended practice for many years (e.g., Blos, 1974; Glenn & Cunningham, 1984; Rogow, 1983; Weintraub, 1984). Rogow (1983) noted that nursery rhymes are a particular type of social routine that provide a child the kind of experiences that are important for early and emergent communicative learning (e.g., Culatta, Hall, Kovarsky, & Theodore, 2007; Lee, Torrance, & Olson, 2001). Results reported in this *CELLreview* demonstrate that there is an empirical foundation for using nursery rhyme practices with young children with disabilities and that those practices are likely to have literacy, language, and communicative enhancing effects and consequences.

Social routines such as listening to or reciting nursery rhymes provide opportunities for joint-attention and turn-taking that are important contexts for early communication development. Nursery rhyme experiences that include “your turn-my turn” elements are most likely to be effective when they involve reciprocal interactions between a child and a communicative partner. Many of the *CELL* practice guides, and especially those that focus on lap games, fingerplays, nursery rhymes, and other singing and rhyming activities can be especially good starting points for selecting practices that a child is most likely to enjoy and benefit from ([www.earlyliteracylearning.org](http://www.earlyliteracylearning.org)).

One important feature of effective social routine activities is that they are interesting to a child and sustain their active engagement in the routines (e.g., Frijters, Barron, & Brunello, 2000; Laakso, Poikkeus, Eklund, & Lyytinen, 2004; Lonigan, Anthony, Arnold, & Whitehurst, 1994; Nwokah & Gulker, 2006). Research syntheses currently being completed at the *Center for Early Literacy Learning* on the role of interests in young children’s literacy and language learning and development indicates that different kinds of interest-based learning opportunities and experiences, including nursery rhyme experiences, have value-added effects on the outcomes associated with the learning opportunities.

Findings from this *CELLreview* as well as the Dunst et al. (2011) research synthesis of nursery rhyme studies indicate that nursery rhyme experiences are one important kind of learning opportunity for enhancing the early literacy and language development of young children with or without disabilities or delays. Nursery rhymes therefore are indicated as part of interventions designed to promote and enhance

the early literacy and language learning of young children including young children with developmental disabilities and delays.

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## Appendix A

### *Characteristics of Study Participants*

Study	Number	Child Age (Months)				Child Gender		Child Disability
		Mean CA <sup>a</sup>	CA Range	Mean MA <sup>b</sup>	MA Range	Male	Female	
Boudreau (2005)	17	63	55-68	Not reported	Not reported	15	2	Language delay and impairment
Chan & May (1999)	1	48	–	16	–	1	–	Severely multiply disabled
Fazio (1997a) (Study 1)	10	65	60-88	61	Not reported	6	4	Specific language delay and impairment
Fazio (1997a) (Study 2)	8	55	50-56	49	Not reported	6	2	Specific language delay and impairment
Fazio (1997b)	16	69	Not reported	65	Not reported	11	5	Specific language delay and impairment
Glenn & Cunningham (1982) (Sample 1)	9	12	9-16	9	8-13	5	4	Down syndrome
Glenn & Cunningham (1982) (Sample 2)	1	25	–	10	–	1	–	Severe intellectual disability
Glenn & Cunningham (1983)	10	12	Not reported	9	Not reported	5	5	Down syndrome
Glenn et al. (1981)	11	13	Not reported	9	Not reported	6	5	Down syndrome
Joffe & Shapiro (1991) Joffe (1998) (Study 1)	4	76	72-80	71	65-75	2	2	Specific speech and language impairment
Norgate et al. (1998)	4	17	15-19	Not reported	Not reported	1	3	Blind (2) Visual impairment (2)
Peeters et al. (2009)	35	72	Not reported	Not reported	Not reported	14	21	Cerebral palsy
Rogow (1982, 1983)	10	53	15-84	Not reported	Not reported	2	8	Visual impairment (1) Visual impairment plus other disabilities (9)
Rudolph (1990)	19	Not reported	66-76	Not reported	Not reported	Not reported	Not reported	Intellectual delay and disability

<sup>a</sup>Chronological age.

<sup>b</sup>Mental or language age.

Appendix B

*Types of Nursery Rhymes and the Characteristics of Child Engagement in the Rhyming Activities*

Study	Nursery Rhymes/Poems	Child Behavior	Nursery Rhyme Measure
Boudreau (2005)	Non-specified nursery rhyme experiences and rhyming games	Children's engagement in rhyming games and his/her ability to recite nursery rhymes	Parent ratings
Chan & May (1999)	Non-specified nursery rhymes	Child's repeated experiences with nursery rhymes and rhyming games	Investigator/mother provided experiences
Fazio (1997a) (Study 1)	<i>Ba Ba Black Sheep</i> <i>Little Miss Muffet</i> <i>London Bridge</i> <i>Ring Around the Rosie</i> <i>Hey, Diddle, Diddle</i>	Children's ability to recite five common nursery rhymes	Child recitation
Fazio (1997a) (Study 2) (Time 1)	<i>Hickory, Dickory, Dock</i> <i>Little Miss Muffet</i> <i>Jack and Jill</i> <i>Humpty Dumpty</i> <i>Little Boy Blue</i> Three other non-specified Mother Goose rhymes	Children's ability to recite eight common nursery rhymes	Child recitation
Fazio (1997a) (Study 2) (Time 2)	<i>Hickory, Dickory, Dock</i> <i>Little Miss Muffet</i> <i>Jack and Jill</i> <i>Humpty Dumpty</i> <i>Little Boy Blue</i>	Children's ability to recite five common nursery rhymes	Child recitation
Fazio (1997b)	<i>Mickey Mouse</i> poem	Children's ability to recite the targeted poem/rhyme from memory	Child recitation
Glenn & Cunningham (1982) (Sample 1 & 2)	Non-specified nursery rhymes	Children's choice/preference for listening to a familiar nursery rhyme compared to a nonsense rhyme	Child response choice
Glenn & Cunningham (1983) (Phase 1)	<i>Somebody Come and Play</i>	Children's choice/preference for listening to a nursery rhyme compared to a repetitive piano tone	Child response choice
Glenn et al. (1981) (Phase 1)	<i>Somebody Come and Play</i>	Children's choice/preference for listening to a nursery rhyme compared to a repetitive piano tone	Child response choice
Glenn et al. (1981) (Phase 2)	Non-specified nursery rhymes	Children's choice/preference for listening to a nursery rhyme compared to a the nursery rhyme played by a flute, guitar or trumpet	Child response choice
Joffe & Shapiro (1991) Joffe (1998) (Study 1)	<i>Humpty Dumpty</i> <i>Hickory Dickory Dock</i> <i>Jack and Jill</i> <i>Twinkle Twinkle Little Star</i> <i>Baa Baa Black Sheep</i>	Children's ability to recite five common nursery rhymes	Child recitation
Norgate et al. (1998)	<i>Pat-a-Cake</i> <i>Twinkle Twinkle Little Star</i> <i>Frere Jacques</i> <i>Round and Round the Garden</i> Other non-specified nursery rhymes	Children's use of nonverbal, vocal, and verbal behavior to request nursery rhymes and their ability to recite nursery rhymes or songs	Child response choice
Peeters et al. (2009)	Non-specified nursery rhyme experiences and rhyming games	Children's frequency of engagement in rhyming games and other non-specified literary activities	Parent ratings



Appendix B, continued

Study	Nursery Rhymes/Poems	Child Behavior	Nursery Rhyme Measure
Rogow (1982, 1983)	<i>London Bridges</i> <i>Hot Cross Buns</i> <i>Pease Porridge Hot</i> <i>Jack be Nimble</i> <i>Old King Cole</i> <i>Humpty Dumpty</i> <i>Jack and Jill</i> <i>See Saw Margery Daw</i> Other non-specified nursery rhymes	Children's engagement in parent/teacher mediated nursery rhyme routines and activities	Investigator ratings
Rudolph (1990)	Non-specified nursery rhymes	Children's listening to and reciting nursery rhymes containing targeted vocabulary words	Child recitation

Appendix C

*Effect Sizes for the Relationship Between the Nursery Rhyme Measures and the Child Outcomes*

Study	Nursery Rhyme Measure		Outcome Measure		
	Type of Measure	Child Age (Months)	Construct	Child Age (Months) <sup>b</sup>	Effect Size (r)
Boudreau (2009)	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 Task	63	-.29
Chan & May (1999)	Nursery Rhyme Experiences	48	Spontaneous Gestures	51	.83
			Spontaneous Signs/ Sign Approximations	51	.79
			Spontaneous Words/ Word Approximations	51	.84
			Spontaneous Compic Symbols	51	.11
Fazio (1997a) (Study 1)	Nursery Rhyme Knowledge	65	TOLD (Newcomer & Hammill, 1988) composite receptive and expressive language score	65	.81
			Alphabet Knowledge	65	.64
Fazio (1997a) (Study 2) (Time 1)	Nursery Rhyme Knowledge	55	Rhyme Detection	55	.19
			Rhyme Detection	57	.37
			Rhyme Completion	57	.35
			TOLD (Newcomer & Hammill, 1988) composite receptive and expressive language score	55	.50
Fazio (1997a) (Study 2) (Time 2)	Nursery Rhyme Knowledge	57	Rhyme Detection	57	.89
			Rhyme Completion	57	.80
Fazio (1997b)	Nursery Rhyme Knowledge	69	Rhyme Detection	70	.34
			Initial Sound Detection	70	.38
Glenn & Cunningham (1982) (Sample 1)	Nursery Rhyme Experiences	12	Response Duration	12	.39
			Response Frequency	12	.24
Glenn & Cunningham (1982) (Sample 2)	Nursery Rhyme Experiences	25	Response Duration	25	.74
			Response Frequency	25	.63
Glenn & Cunningham (1983) (Time 1)	Nursery Rhyme Experiences	12	Response Duration	12	.58
			Response Frequency	12	.58
Glenn & Cunningham (1983) (Time 2)	Nursery Rhyme Experiences	12	Response Duration	25	.58
			Response Frequency	25	.58
Glenn et al. (1981) (Phase 1)	Nursery Rhyme Experiences	13	Response Duration	13	.83
			Response Frequency	13	.77
Glenn et al. (1981) (Phase 2)	Nursery Rhyme Experiences	13	Response Duration	13	.62
			Response Frequency	13	.48
Joffe & Shapiro (1991) Joffe (1998) (Study 1)	Nursery Rhyme Knowledge	76	Rhyme Production	76	.85
			Alliteration Production	76	.69
			Sentence Completion	76	.82

Appendix C, continued

Study	Nursery Rhyme Measure		Outcome Measure		
	Type of Measure	Child Age (Months) <sup>a</sup>	Construct	Child Age (Months) <sup>b</sup>	Effect Size (r)
Norgate et al. (1998)	Nursery Rhyme Experiences	17	Verbal Communication	19	.51
			Verbal Language	19	.47
			Vocalization	19	.63
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
Rogow (1982, 1983)	Nursery Rhyme Experiences	53	Intentionality	57	.37
			Imitation	57	.82
			Social Behavior	57	.47
Rudolph (1990)	Nursery Rhyme Knowledge	71	Vocabulary	71	.67

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

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