

Citation

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Nursery Rhyme Knowledge and Phonological Awareness in Preschool Children

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Phonological awareness is an important precursor in learning to read. This awareness of phonemes fosters a child's ability to hear and blend sounds, encode and decode words, and to spell phonetically. This quantitative study assessed pre-K children's existing Euro-American nursery rhyme knowledge and phonological awareness literacy, provided phonological awareness training with an experimental group of children and investigated the effects of explicit nursery rhyme instruction on participants' phonemic skill levels. These data reveal that children exposed to the intervention consisting of explicit Euro-American nursery rhyme instruction significantly outperformed the children in the control group on rhyme awareness and completion statement measures. Results of this research suggest that knowledge of nursery rhymes enhances children's phonological awareness and sensitivity to individual phonemes and rhyme, and stimulates phonemic skill development.

Keywords: phonological awareness, pre-k, kindergarten, and emergent literacy

Introduction

A growing body of research affirms the link between children's early language skills and later reading abilities (Bryant, Maclean, & Bradley, 1990; Bryant, Maclean, Bradley, & Crossland, 1990; Strickland & Shanahan, 2004; Yopp & Yopp, 2000). The critical role of phonological awareness in the development of learning to read has long been established as a precursor to the acquisition of the alphabetic principle—the understanding that the letters of the alphabet represent phonemes in speech (Dickinson & Tabors, 2001). This awareness and understanding of phonemes fosters a child's ability to hear sounds, blend sounds, encode and decode words, and to spell phonetically. One important aspect of literacy preparation is teaching children phonological awareness. Children entering kindergarten are expected to have an understanding of the sound-based system of our language, including rhyming skills and beginning letter sounds (Lonigan, Burgess, & Anthony, 2000; Snow, Burns, & Griffin, 1998). Many educators believe that before children begin reading instruction, they need to become explicitly aware that spoken words are composed of sounds; children therefore must develop the ability to consciously and analytically hear, identify, and manipulate those sounds (IRA & NAEYC, 1998; National Reading Panel, 1990; Sadlier-Oxford, 2000; Yop & Yop, 2002).

Research reveals that there is a link between nursery rhyme knowledge of preschool children and their future success in reading, writing, and spelling. Bradley and Bryant (1983, 1985) report that sensitivity to rhyme and alliteration prior to a child's entry to formal schooling plays a causal role in their reading success several years later. Furthermore, in their research the authors reported that receiving explicit instruction and training in the areas of alphabetic principles, rhyming, identification of words and alliteration strongly and positively affected children's reading ability. In a subsequent longitudinal study (MacLean *et. al.* 1987), authors provided systematic evidence that knowledge of nursery rhymes played a role in children's phonological development. Covering a 15-month period, beginning when children were age 3.4, data was collected to measure children's knowledge and growth of five common nursery rhymes. Findings reported that children's initial nursery rhyme knowledge was a powerful predictor of their growing skill in rhyme and alliteration detection tasks over the next year and a quarter. Bryant and *et. al.* (1989) reported further longitudinal data from a group of 64 children ranging from ages 3.4 to 6, covering a three year period supporting the hypotheses that acquaintance with nursery rhymes positively affects children's reading ability. Data report a strong relation between early knowledge of nursery rhymes and success in reading and spelling, despite differences in social background, intelligence quotient, and beginning phonological skills. Torgesen (2002) reviewed research-based practices in early reading instruction and found that phonological awareness is a valid predictor for the identification of children at risk for reading problems. In a recent study, Vloedgraven and Verhoeven (2007) found that rhyming performance; and the skills of phoneme identification, blending and segmentation are vital aspects of phonological awareness. These authors also revealed that the most informative, yet most difficult and discriminating task of children's phonological awareness ability is phoneme segmentation, while rhyming performance appears to be the easiest.

Additional research which investigates the relationship between a child's nursery rhyme knowledge and their levels of phonological awareness skills is needed. This paper reports an investigation of the relationship between knowledge of nursery rhymes and phonemic skill development in 20 three-year old pre-K children. The effect of explicit nursery rhyme

instruction on children's phonological awareness and phonemic skill development in nursery rhyme recall, rhyme identification, and beginning sound awareness was assessed.

Purpose of Study

This quantitative study assessed pre-K children's existing Euro-American nursery rhyme knowledge and phonological awareness literacy, provided phonological awareness training with an experimental group of children and investigated the effects of explicit nursery rhyme instruction on participants' phonemic skill levels. Two questions were addressed:

1. How much knowledge of nursery rhymes do pre-K children have, and
2. Does explicit instruction of nursery rhymes combined with kinesthetic and hands-on activities increase a preschool child's phonological awareness? More precisely, does it increase a child's ability to recall nursery rhymes, identify rhymes, identify beginning sounds, and become more phonologically aware of the sounds of the English language?

Methods

Participants

Study participants consisted of 20 three-year old pre-K children and their teachers from a lower middle class inclusive preschool in the Northeastern United States. Of the preschool participants 11 were female and nine were male; 18 were Caucasian, one child was African-American, and one child was Asian-American. Although all of the children's primary and native language used in the home was English, four children were classified with minor disabilities in speech and language delays. Both teachers were female, Caucasian, and highly experienced with 23 and 17 years teaching experience. The 20 participants in this study were previously assigned to two separate classrooms during the previous August by school personnel. This inclusive pre-school setting strives to maintain classroom heterogeneity determined by gender, ability and socio-economic status. The assignment of a group as experimental or control in this study was determined randomly (by the flip of a coin). The control group had nine participants and the experimental group had 11 participants.

Measures

Two measures were administered individually to all study children in the context of their pre-K classroom at the beginning and end of the study. Measures used to assess participants existing nursery rhyme knowledge and phonological knowledge included Nursery Rhyme Completion Statements (Harper, 2008) and a revised Phonological Awareness Literacy Screening for Preschool (PALS Pre-K, often referred to as pre-K PALS) (University of Virginia, 2004).

Nursery rhyme completion statements. A completion statement tool composed of visual and auditory cues in PowerPoint format was designed to assess children's existing knowledge of ten common nursery rhymes. Nursery rhymes included Humpty Dumpty, Twinkle Twinkle Little Star, Itsy Bitsy Spider, Jack and Jill, Hey Diddle Diddle, Hickory Dickory Dock, Mary Had a Little Lamb, Baa-Baa Black Sheep, Little Boy Blue, and Little Miss Muffet. Participants were shown a series of PowerPoint slides of the ten nursery rhymes listed above and asked if they knew who the pictures represented (Figure 1). Participants were given two prompts if they were unable to answer. The child's answer was recorded as correct given the initial statement, prompt #1, or prompt # 2. If the child answered correctly, s/he was given one point; if s/he was not able

to recall the nursery rhyme the child did not receive a point. Additionally, children were asked where they learned these nursery rhymes. Their responses were recorded along with additional information concerning their nursery rhyme knowledge and their ability to respond to the completion statement task.

Phonological awareness literacy screening for preschool (PALS-Pre-K). PALS-Pre-K is a scientifically-based phonological awareness and literacy screening tool that measures preschoolers' developing knowledge of important literacy fundamentals. This assessment reflects skills that are predictive of future reading success and measure young children's knowledge of fundamental aspects of phonological awareness and print knowledge. This assessment tool is valid, reliable, and standardized on very large samples of children (Invernizzi, Sullivan, Swank & Meier, 2004).

Select segments of the Pre-K-Pals phonological test were revised and administered to all study children in an individual format using oral assessment procedures to determine a baseline score of phonological awareness and individual levels of phonemic skill development. Although the Pre-K-Pals test tasks include: (a) name writing, (b) alphabet recognition and letter sounds, (c) beginning sound awareness, (d) print and word awareness, (e) rhyme awareness, and (f) knowledge of nursery rhymes, only the tasks in beginning sound awareness, rhyme awareness, and knowledge of nursery rhymes were administered to study children since all study participants were only three years old and had no prior formal school experiences.

Beginning sound awareness. This task required children to detect beginning sounds or phonemes. Children were asked to listen to a given word (e.g. *milk*) and asked to repeat it and state the beginning sound (e.g. *mmmmm*). This test consisted of two practice trials and then ten experimental trials. Corrective feedback was given to the child in the two practice trials only.

Rhyme awareness. This rhyme oddity task required children to detect rhyme when given a series of three words, two of which ended with the vowel-consonant combination (e.g. *mop—top*). This test consisted of two practice trials and then ten experimental trials. In each trial the child was given three words, two of which rhymed while the third did not (e.g. *cat, bat, rap*). The child's task was to state the pair of words that rhymed. Corrective feedback was given to the child in the two practice trials only.

Nursery rhyme awareness. This test used a cloze format in which the test administrator read a section of a nursery rhyme and then paused so the child could supply the correct ending word of the nursery rhyme. For instance, the child was read the stanza, Jack and Jill went up the _____ (*hill*).

Phonological Awareness Training

Phonological awareness training was conducted with the experimental group of children (N=11). These children were given explicit instruction on ten nursery rhymes. Instruction focused on diverse learning styles including visual and auditory, oral language, tactile-kinesthetic and hands-on activities designed to enhance children's recall of nursery rhymes (Figure 2). Visual activities included use of nursery rhyme posters and small books containing rebus cues in select nursery rhymes. Auditory and oral language activities included hearing, reciting and singing

nursery rhymes each session. Kinesthetic activities consisted of role play, reader's theatre and dramatization of nursery rhymes using props, puppets and simple costumes. Hands on activities included use of prop boxes, felt pieces and felt boards to prompt recall and retelling of a nursery rhyme. Sample activities are illustrated in Figure 3. The phonological awareness training was conducted for 15-20 minutes once per week over a period of ten weeks. Following the completion of the phonological awareness training the experimental and control groups were retested using the same completion statement and pre-K PALS measures.

Statistical Tests

The pre- and post-test scores of the experimental and control groups were compared using the Wilcoxon signed-ranks test to determine if the intervention administered to the experimental group resulted in scores different from those of the control group. The null hypothesis states that there would be no difference in pre- and post-test scores between the two groups for each of the two measures (completion statement and pre-K PALS).

Figure 1: Sample Nursery Rhyme Completion Statement



	<p>Do you know who this is? Prompt # 1: _____ sat on a wall and had a great fall. Prompt # 2 : All the kings horses and all the kings men couldn't put _____ back again.</p>
	<p>Can you tell me about this picture? What nursery rhyme could it be? Prompt # 1: The itsy bitsy _____ went up the _____. Prompt # 2: Down came the _____ and washed the _____ out.</p>

Figure 2: Nursery Rhyme Curriculum Grid

Nursery Rhyme Introduced	Teaching Approach/ Strategy	Activity Description
Humpty Dumpty	Tactile-Kinesthetic Felt Board	Children recite the rhyme placing felt pieces on the felt board in sequential order.
Twinkle, Twinkle Little Star	Visual & Tactile Prop Box & Rebus Poster	Children recite the rhyme using the rebus poster and prop box items to aid recall of the lyrics.
Itsy, Bitsy Spider	Visual & Tactile Craft & Rebus Poster	Children create a spider from pompoms and pipe cleaners. Using a hollow tube children recreate the spider crawling up the water spout as they chant the rhyme.
Jack and Jill	Tactile -Kinesthetic Story Board	Children sequence the rhyme using the story board pieces to aid recall.
Hey Diddle Diddle	Visual & Tactile Prop box & Rebus Poster	Children recite the rhyme using the rebus poster and prop box items to aid recall of the lyrics.
Hickory Dickory Dock	Role Play & Drama Readers' Theater	Children use clock props, a costume and a mouse puppet to reenact the mouse running up the clock as it strikes each hour.
Mary Had a Little Lamb	Tactile-Kinesthetic Craft & Role Play	Tracing their hand as a template, children attach cotton and assemble a lamb head to create a sheep. Then children reenact Mary's lamb following her to school.
Baa Baa Black Sheep	Tactile -Kinesthetic Prop Box	Using prop box items to aid recall of lyrics, children recite the rhyme.
Little Miss Muffet	Tactile-Kinesthetic Crafts	Children color and assemble finger-puppets. As they recite the lyrics, children dramatize the rhyme.
Little Boy Blue	Role Play & Drama Readers' Theater	Children use costumes, props and movement to dramatize the rhyme.

Figure 3: Kinesthetic Nursery Rhyme Activities



Prop Box



Flannel/ Story Board



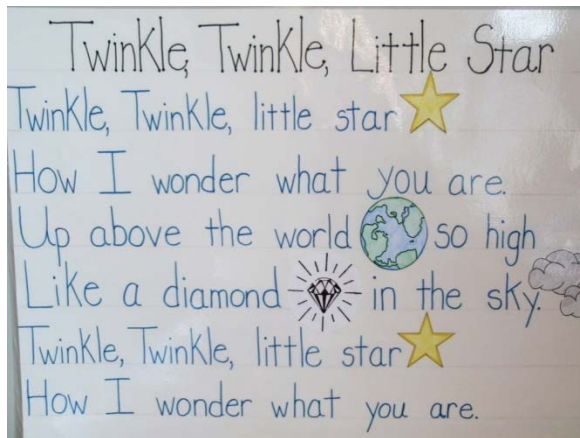
Prop Box



Drama



Readers Theater



Rebus Poster

Results

Control Group

Completion task. The mean score for the control group completion task pretest was 3.33 (STD 3.536, range 0-9) (Table 1, Figure 4). The mean score for the control group completion task posttest was 3.89 (STD 3.586; range 0-9) (Table 1, Figure 4). The pre- and post-test completion task scores for the control group were not significantly different (Wilcoxon Signed Rank Test, two-tailed, $Z=-1.089$, $P=0.276$).

Pre-K PALS. The mean score for the control group pre-K PALS task pretest was 7.00 (STD 8.775, range 0-26) (Table 2, Figure 5). The mean score for the control group pre-K PALS task posttest was 8.22 (STD 8.657; range 0-27) (Table 2, Figure 5). The pre- and post-test pre-K PALS scores for the control group were not significantly different (Wilcoxon Signed Rank Test, two-tailed, $Z=-0.768$, $P=0.443$).

Experimental Group

Completion task. The mean score for the experimental group completion task pretest was 5.64 (STD 3.139, range 1-10) (Table 3, Figure 6). The mean score for the experimental group completion task posttest was 9.45 (STD 0.688; range 8-10) (Table 3, Figure 6). The pre- and post-test completion task scores for the experimental group were significantly different (Wilcoxon Signed Rank Test, two-tailed, $Z=-2.670$, $P=0.008$).

Pre-K PALS. The mean score for the experimental group pre-K PALS task pretest was 11.45 (STD 9.883, range 2-28) (Table 4, Figure 7). The mean score for the experimental group pre-K PALS task posttest was 16.55 (STD 9.136; range 6-30) (Table 4, Figure 7). The pre-test and post-test pre-K PALS scores for the experimental group were significantly different (Wilcoxon Signed Rank Test, two-tailed, $Z=-2.943$, $P=0.003$).

Table 1: Control group completion task scores

Test	N	Mean	Standard Deviation	Minimum	Maximum
Completion Pretest	9	3.33	3.536	0	9
Completion Posttest	9	3.89	3.586	0	9

Wilcoxon Signed Rank Test two-tailed, $Z= -1.089$, $P=0.276$

Table 2: Control group Pre-K PALS task scores

Test	N	Mean	Standard Deviation	Minimum	Maximum
Completion Pretest	9	7.00	8.775	0	26
Completion Posttest	9	8.22	8.657	0	27

Wilcoxon Signed Rank Test two-tailed, $Z= -0.768$, $P=0.443$

Table 3: Experimental group completion task scores

Test	N	Mean	Standard Deviation	Minimum	Maximum
Completion Pretest	11	5.64	3.139	1	10
Completion Posttest	11	9.45**	0.688	8	10

Wilcoxon Signed Rank Test two-tailed, $Z = -2.670$, $P = .008$

Table 4. Experimental group Pre-K PALS task scores

Test	N	Mean	Standard Deviation	Minimum	Maximum
Completion Pretest	11	11.45	9.883	2	28
Completion Posttest	11	16.55**	9.136	6	30

Wilcoxon Signed Rank Test two-tailed, $Z = -2.943$, $P = .003$

Figure 4: Control Group Completion Statement Scores

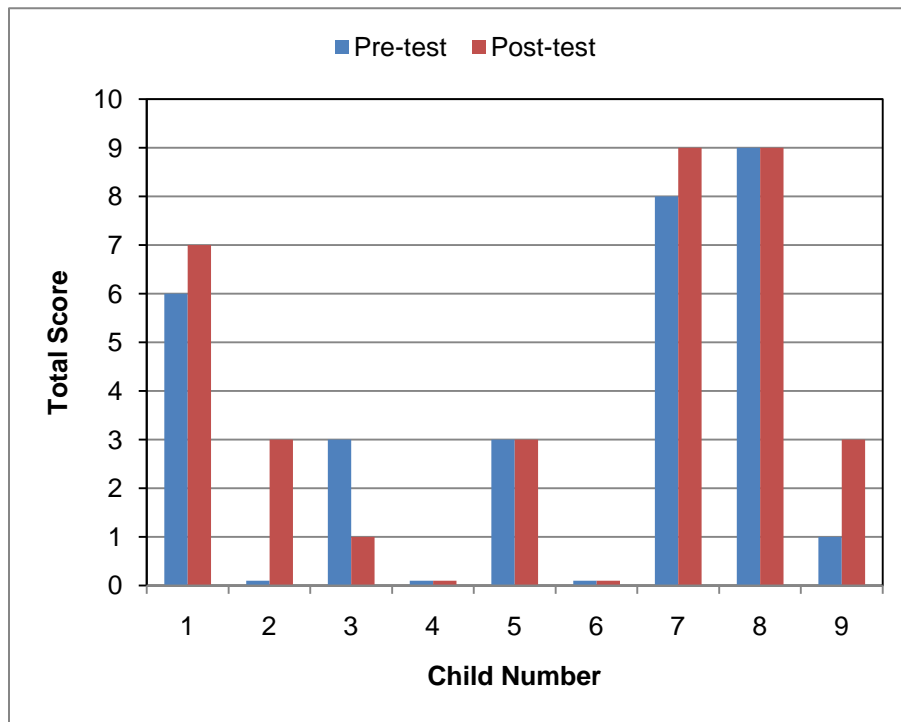


Figure 5: Control Group Pre-K PALS Scores

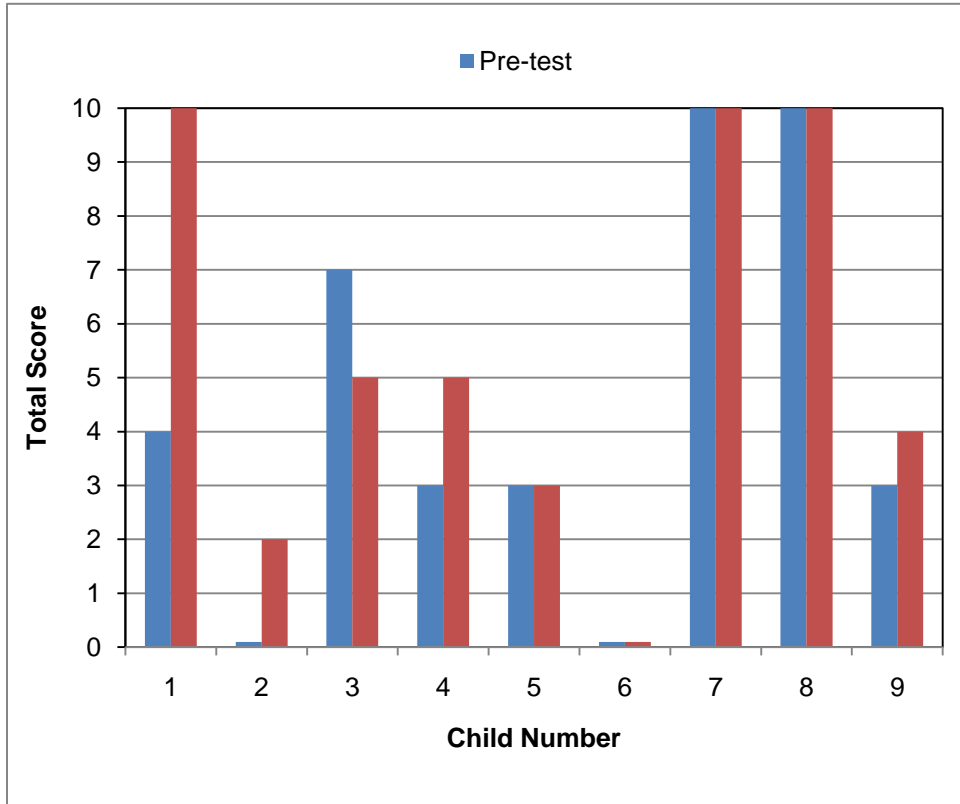


Figure 6: Experimental Group Completion Statement Scores

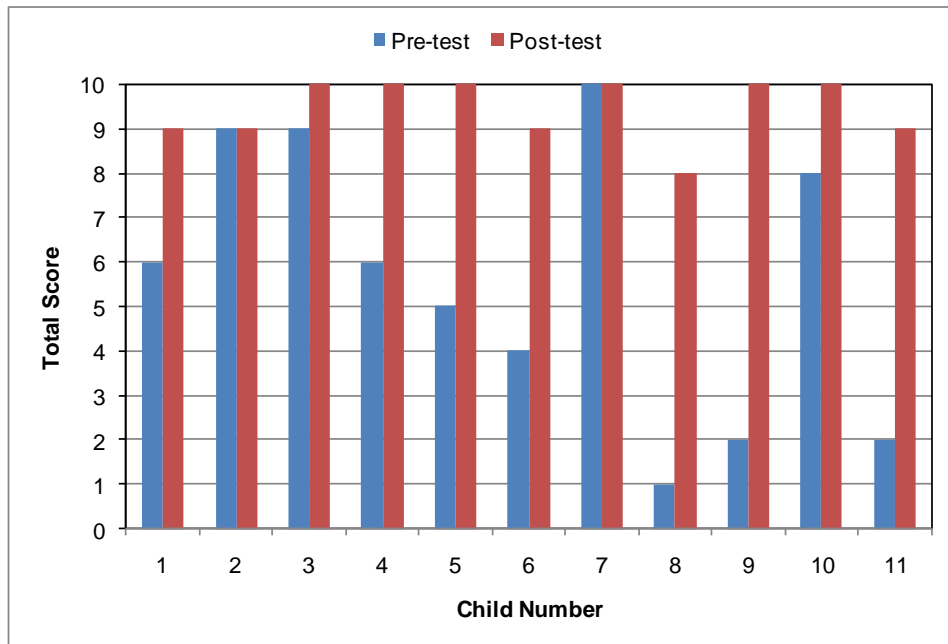
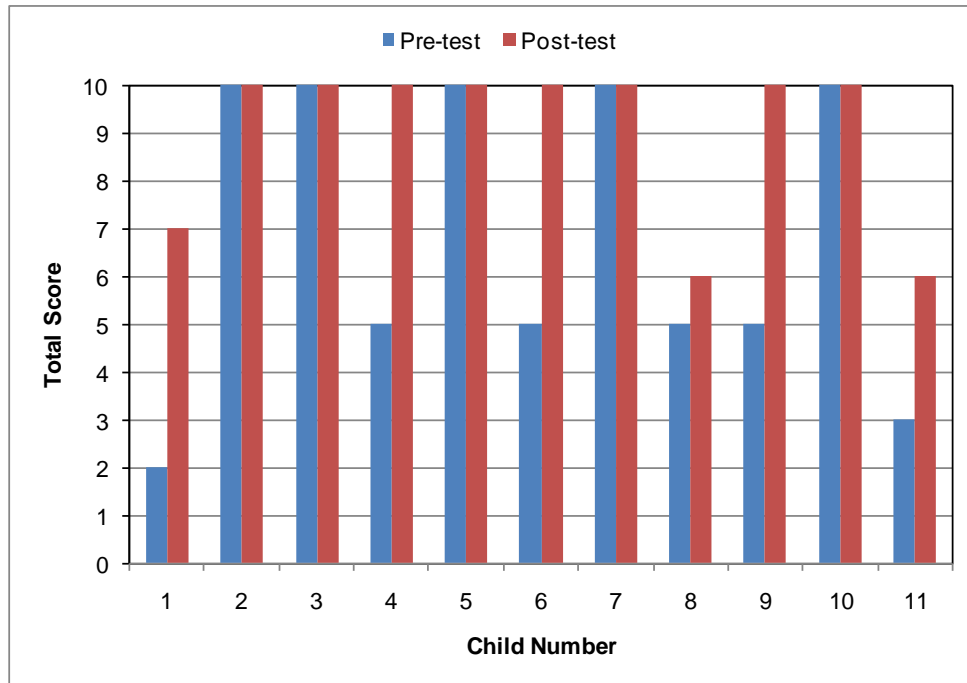


Figure 7: Experimental Group Pre-K PALS Scores



Discussion

Posttest results indicate that the experimental group scored significantly higher after the phonological awareness training on both the Completion Statement task and on the Pre-K PALS task. The control group post-test scores increased as well, but not significantly so, on both the Completion Statement task and the Pre-K PALS task. This increase in scores may have been due to maturational factors experienced by children over the 10 week investigation period. In pre-test scores, the control group scored lower than the experimental group; the experimental group initially scored higher on both the Completion Statement task and on the Pre-K PALS tasks. The differences between the two groups in the pre-test scores may be due to greater exposure to language and literacy activities such as reading, singing and word play mediated by families in the home.

Although the experimental group scored significantly higher on the pre-K PALS following the phonological awareness training, the greatest gains were made in rhyme awareness, and the least gains in beginning sound awareness. Tasks which involve detection of single phonemes are usually too difficult for children to complete accurately who have not yet learned to read (Bryant & Goswami, 1987).

This study makes it clear that early knowledge of nursery rhymes helps children to build awareness of sound patterns of language and plays an important role in a child’s linguistic and early literacy development. While hearing and reciting nursery rhymes, children are developing critical early literacy skills. One of the most important skills is phonemic awareness, or the awareness of individual sounds called phonemes that make up spoken words. Teaching and reciting nursery rhymes to young children may affect the development of phonological sensitivity; conditioning children to become more sensitive to phonemes and rhyme. At some level, a child becomes aware that different words and different syllables have a segment of sound

or phoneme in common. For example, *cat* and *bat* share the common ending rhyme sound *at* and therefore rhyme. Children sensitive to rhyme begin to expand this common sound knowledge to other words in different contexts which eventually contributes to their ability to read, write, and spell (Bryant et. al, 1989).

Although the results of this study are informative, a few limitations exist. First, the sample size of study participants was small. A future study in which early nursery rhyme knowledge is examined with a larger population would be beneficial in understanding how nursery rhyme knowledge contributes to the development of phonological awareness, sensitivity and skill development. Second, the measure used to assess children's existing nursery rhyme knowledge consisted only of Euro-American nursery rhymes. Other cultures may use different rhymes than those represented in this study. For example, the completion statement prompts used in the rhyme Humpty Dumpty are paraphrased and do not appear verbatim to the Euro-American nursery rhyme. This could be confusing for three year olds who have learned the rhyme in its exact form. Therefore, cultural and language differences were not taken into account. Third, all of the children in this study were previously exposed to nursery rhymes either at home or during preschool. How nursery rhyme knowledge was disseminated to children or shared among families and how knowledge of nursery rhymes may have influenced children's performance on phonological awareness screening tasks was not examined.

Conclusion

Speaking, singing, and reading aloud simulate a child's understanding and use of spoken and written language. Some researchers suggest that the roots of phonemic awareness are found in traditional rhyming and word games (Bryant, Maclean, Bradley & Crossland, 1997). The use of nursery rhymes with young children promotes positive attitudes toward language learning and helps children to build awareness of sound patterns of language. Language and literacy development is facilitated when children have many opportunities to use language in interactions with adults; to listen and respond to rhymes, chants and stories; and to experiment with the sounds of language (IRA & NAEYC, 1998; NAEYC 2008).

Nursery rhymes are a socially engaging, playful, and developmentally appropriate way for young children to hear, identify, manipulate, and experiment with the sounds of language. Integrating nursery rhymes, jingles and chants, and other traditional literature into the early childhood curriculum contributes to a linguistically rich environment in which young children are exposed to the rich vocabulary, syntactic complexity, and decontextualized language contained within the English language. Combining tactile- kinesthetic activities in which language is intentionally explored, manipulated, and experimented within the context of nursery rhymes and literature enhances children's phonological awareness, sensitivity to rhyme and phonemes, and may stimulate phonemic skill development. This skill development contributes to the ability to read and has positive effects on reading and spelling as demonstrated by Bradley and Bryant (1991). Furthermore, as children develop sensitivity to individual phonemes, build their awareness of sound patterns of language, and combine phonemes leading them to recognize new words in written texts, their reading ability improves (Bradley & Bryant, 1985) which may lead to improved writing and spelling (Strickland & Schickedanz, 2004).

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