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The effects of rhyming stories on a picture pointing task

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THE EFFECTS OF RHYMING STORIES ON A PICTURE POINTING TASK

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by

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ABSTRACT

THE EFFECTS OF RHYMING STORIES ON A PICTURE POINTING TASK

by Sara E. Carriere

Eighteen preschoolers were given a baseline test to determine their phonological receptive vocabulary: picture recognition of words with many rhymes, and pictures with few rhyming words. Participants were read to for one hour five days a week for 12 weeks, after which they were tested again on the same measures. The Control Group was read books with no rhymes, and the Experimental Group was read books containing rhymes. It was hypothesized that from pretest to posttest, the Experimental Group would point to more pictures that have Many Rhymes associated with them, than pictures that have Few Rhymes, when compared to the Control Group. At 12 weeks there were no significant differences between the Control Group and the Experimental Group in picture pointing for Many and Few Rhymes. When the two groups were combined, significantly more pictures of Many Rhymes were pointed to than Few Rhymes.

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Introduction

Rhyme, language, and children's reading readiness have been a topic of debate for a long time (Bryant, MacLean & Bradley, 1990; Hayes, 2001; Walton, 2002; Layton, Deeny, Tall & Upton, 1996; Bradley & Bryant, 1983). Is phonological awareness and rhyme analogy an effective predictor of later reading success, and is it a useful tool when learning how to read? Exposure to language in children begins phonologically, that is, they learn by hearing the pronunciation of words and associating it with an object or command. When parents read or talk to their children, it serves to strengthen the child's phonological, or auditory recognition of language. As they get older phonological recognition of language develops into orthographical recognition, which develops when the child begins to associate the sounds of the letters with the written letters. Being able to successfully associate the phonological and orthographical aspects of language is important for reading readiness. Studies suggest that rhyme plays an important role in the development of this association and that there is a connection between rhyming ability and later success in learning to read (Bryant et al., 1990; Hayes, 2001; Walton, 1995).

Layton et al. (1996) looked at the phonological judgments made by preschool children. They hypothesized that the ability to identify words that rhyme (rhyme detection), the level of familiarity with nursery rhymes (knowledge of nursery rhymes) and the ability to detect alliteration in words (alliteration detection), would be good indicators of phonological awareness. Using three measures, Knowledge of Nursery Rhymes, Rhyme Detection, and Alliteration Detection, they tested the phonological

awareness of the preschoolers. In measuring Rhyme Detection, they gave the children three words that rhymed and one that did not. They asked the children to identify the word that did not rhyme with the others (e.g., FOX, BOX, SOCKS, COW). To measure Knowledge of Nursery Rhymes, they read passages from various nursery rhymes, and asked the children to complete the rhyme (e.g., "Little Miss Muffet sat on her __"). To measure awareness of alliteration, they performed a picture-pointing task, but used words with the same sound in close succession (e.g., PIN, PIG, PLAY, PAY). The children were asked to point to the word that did not fit in with the other words (e.g., PIN, PIG, TREE). They reported that all three measures were good indicators of phonological awareness, but the Alliteration Detection measure was less of a predictor than the Rhyme Detection measure. The children identified as having problems received one-on-one training. Layton et al. demonstrated the importance of rhyme detection as an indicator of phonological awareness; it plays an intricate part in the development of the skills needed for preschoolers to become successful readers. Since rhyme awareness and detection have been identified as a good indicator of phonological awareness, which has been identified as a good indicator of reading readiness, it would be useful to look at rhyme analogy as a way to understand how children best process language (Layton et al., 1995).

It has been proposed that awareness of rhyme and rhyme analogy helps children learn how to read and process language, because knowledge of the rhyming relationship between words makes it possible for children to form spelling categories and recognize

many words that rhyme with each other. The knowledge that LIGHT, FIGHT, and MIGHT rhyme could help children realize that words that share common rhymes may also share common spellings. To examine this relationship, Bryant et al. (1990) conducted a longitudinal study with children at age 3-4, and then at age 6-7. In the first four sessions they measured the children's rhyme and alliteration abilities. To measure rhyming, the children were given three words with pictures, two rhymed and one did not (e.g., BOY, TOY, BAT). The children were asked to point to the picture that did not rhyme with the other pictures. They found children's scores in rhyme and alliteration tests given to them at four years predicted their reading and spelling levels at six years of age. That is, the 3-4 year olds who scored high in the rhyme and alliteration tasks also scored high at 6-7 years in reading and spelling tasks. They concluded that they were measuring preschoolers' ability to form categories based on rhyme, and illustrating the importance of rhyme and rhyme awareness in reading readiness. Since the preschoolers are preliterate, the research team was able to get a pure measure of their ability to categorize words by sounds. They do not have the same skill set as children with reading skills who may have used existing knowledge about reading to complete the tasks within each measure. The results of the study suggest the preschoolers relied on the awareness of rhyme and alliteration to complete the tasks.

Walton (2002) suggests that phonology based rhyme analogy strategies are effective in children's success in learning how to read. Similar to Bryant et al's. (1990) study, rhyme analogy uses knowledge that words that sound the same, will probably have the same rhyme ending, and therefore be spelled similarly (e.g., CAT, HAT, MAT).

The initial phonemes are identified (C AT), then the rhyme (H AT), and finally the letter sounds that make the new word (MAT). According to Walton, most pre-readers can rhyme but few have strong phonemic skills; therefore the rhyme analogy strategy may be easier for pre-readers to learn than a letter recoding reading strategy. Letter recoding strategy requires that the child know the sound of every letter, and be able to connect the sounds to form a word (e.g., C A T). They conducted a study with 99 children from six different kindergarten classrooms. The research team divided the children into six treatment conditions, and found that children who learned to read by rhyme analogy were just as successful reading words in the three other assessment tests (rhyming, initial phoneme identity, and letter sounds), as they were in reading the words they had been specifically taught to learn. This suggests that the children were able to generalize the use of rhyme analogy strategy to other words they had not been taught with unfamiliar rhyme spellings. Overall these findings suggest that the specific reading strategies used by children learning to read are heavily influenced by the instruction they receive, and therefore the use of rhyme in instruction may be an important part of learning to read later in life.

Although there is support for the contribution of rhyme and the use of rhyme analogies in learning to read (Bryant et al., 1990; Hayes, 2001; Walton, 2002; Layton et al., 1996), there are researchers who have found conflicting results (Duncan, Seymour, & Hill, 1997; Muter, Hulme, Snowling, & Taylor, 1997). There has been a long-standing debate as to whether segmentation or rhyme analogy is the strongest predictor of later

reading success. Segmentation is defined by measures of phoneme deletion, which is the removal of one letter to produce a new word, (e.g., drop the S in STOP and the word becomes TOP) and phoneme identification, which entails recognizing and sounding out each individual letter (C-A-T = CAT). Rhyming is defined by measures of rhyme detection and production, which is the recognition that the endings of some words sound the same (e.g., knowing that CAT and HAT sound the same). In a longitudinal study of letter-recoding versus rhyming in early progress in learning how to read, Muter et al. (1997) looked at preliterate children, and then their first two years of learning how to read. The children were given tests of Rhyme Detection, Rhyme Production, Phoneme Identification, and Phoneme Deletion. They found that the rhyming tasks failed to predict both early reading and spelling skills because the tests for phoneme identification and phoneme deletion are too hard for preliterate children. Muter et al. found phoneme segmentation abilities were highly predictive of both reading and spelling development. They suggest that rhyming tasks are not good predictors for preliterate development, but because one can not be sure how the preschool children are completing the rhyming tasks, they may be good for predicting reading and spelling achievement by grades three or four. This data goes against the findings reported by others (Bryant et al., 1990; Walton, 2002; Layton et al., 1996), which suggest that early rhyme analogy strategies are a good predictor of reading readiness.

Duncan, Seymour and Hill (1997) also found results conflicting with Bryant et al. (1990); Walton (2002); and Layton et al. (1996). They examined letter-recoding, which is sounding out each letter of the word, (e.g., C-A-T) and rhyme analogy, which is

the idea that words that sound the same, will be spelled similarly (e.g., CAT, HAT, SAT), and be easily identified. They hypothesized that letter-recoding would be used by beginning readers rather than rhyme analogy strategies to decode nonwords, because children must first learn the sound associated with the letters, not the rhyming properties of the word or nonword. To test their hypothesis, they used Simple Nonword Naming (e.g., BLARP, GAT, KRALE), Blending (e.g., SM-ELL, BA-KER-Y), Letter-Recoding (e.g., C-A-T) and Rhyme Production (e.g., what rhymes with CAT?). They reported that children in their first year of learning to read performed the best in the Letter-Recoding task, and the Blending task, which uses letter-recoding rather than rhyme analogy strategies. If rhyme analogy strategies were being used, Duncan et al. (1997) would have expected to see an advantage for those nonwords that shared rhyme units with real words in children's reading vocabularies (e.g., KRALE, SAIL; GAT, BAT), in this case they did not see a significant improvement when compared to the Letter-Recoding and Blending tasks. Is it letter-recoding, or rhyming analogy, or both that is helpful in a child's development in learning how to read?

Hayes (2001) conducted a study looking at preschoolers abilities to make phonological discriminations after hearing rhyming or nonrhyming versions of the same story. Forty children between 3 and 5 years of age participated in the study. The children were taken aside individually and read a book with rhymes, or without rhymes. Immediately after reading the story, the participants were administered a rhyme detection task, alliteration detection task, and a phoneme deletion task. For the rhyme detection task each child was shown pairs of pictures and asked to indicate whether the

names of each pair sounded alike or sounded different (e.g., "Here is a picture of a CAT and a HAT, do they sound alike"?). The same thing was done for the alliteration task (e.g., "Here is a picture of a PIG and a PEN, do these words sound alike"?). For the phoneme deletion task, a hand puppet was used and the child was told that the puppet "talked funny". The puppet would say words dropping the first consonant of each word (e.g., the word ROCK would be pronounced OCK). Then the children were asked how the puppet would say the following words: TACK, TIME, SOAP, and KICK. The two tasks, rhyme and alliteration and phoneme deletion looked at recognition of phonetic similarities and differences and the ability to segment phonemes. Hayes found that compared with the children who heard the nonrhyming story, the children who listened to the rhyming story were able to distinguish significantly more similar versus dissimilar sounding words. These findings suggest that exposure to rhyme during the preschool years increases a child's phonological awareness, thus arguably assisting in the development of prereading skills during preschool.

Since rhyme has been shown to increase a child's sensitivity to phonological recognition and awareness (Hayes, 2001), then it may be possible that children also use orthographic analogies, which is the ability to make reading judgments about the spelling of a word based on the way it sounds. Rhyme has been shown to tap into the relationship between words that share many letters with other words, or few letters with other words (Walton, 1995). Laxon, Colheart and Keating (1988), conducted a study examining the relationship between the naming and spelling of words that were classified as being either friendly or unfriendly. The friendliness of a word is determined

by how many letters are shared, either in the beginning or the end of the word, with other words. For example, the word LYNX does not share letters with many other words (e.g., LYE, LARYNX), but TRAIN does (e.g., STRAIN, RAIN, GRAIN, TRAM, TRAVEL). Therefore, LYNX would be considered unfriendly and TRAIN would be friendly. They hypothesized that children would be more likely to name and spell friendly words with fewer errors than unfriendly words. As hypothesized, the researchers found that children were able to name and spell friendly words with fewer errors, than unfriendly words. They also found friendly words were easier for children to work with because they had similar spelling, length and letters, which gave them a larger pool of words to work with.

Walton (1995) also examined the relationship between the naming and spelling of words that shared rhyme endings and letter strings. It was hypothesized that the children would be able to read more words using an orthographic analogy than when using letter-sound recoding. Sixty-six kindergarteners participated in the study, and were placed randomly in one of the three teaching treatment conditions: Intact-spelling, Phonological, and Letter-recoding spelling. Each condition, or teaching technique, was created to see if prereaders would be able to read new words using orthographic analogies after exposure to rhyming words (Intact-spelling), and if it would be additionally beneficial to use phonological teaching with rhyme (Phonological), or by using words with the spelling segmented (Letter-recoding spelling). The Intact-spelling condition consisted of children being introduced to puppets and then taught to read two pairs of rhyming words. The researcher would name the word, and ask the child to repeat it several times. The Phonological condition was the same as the Intact-spelling

condition, but with the addition of phonological teaching with onset and rhyme. A puppet operated by the researcher pointed to the letter representing the onset of the teaching word and said the sound (e.g., F_), and the child, operating the other puppet imitated the researcher. Then the researcher pointed to the rhyme of the word (e.g., _AT), and asked the child to repeat the sound through the puppet, followed by the child repeating back the blending of the rhyme and the onset (e.g., F-AT). The Letter-recoding spelling condition was the same as the two previous conditions, but instead of using rhyme, the researcher broke the words down into segments for letter-recoding (e.g., F-A-T).

Following each teaching technique, two types of reading test words were given to the children. The first type of test word could be read by making an orthographic analogy, and the second type of test word could only be read using individual letter-sound recoding. The orthographic analogy-reading test words (e.g., BAT and RED) shared a rhyme ending with one of the teaching words (e.g., FAT and BED). The letter-sound recoding words (e.g., SAD and LAG) did not share ending rhyme or spelling sequences with the teaching words (e.g., FAT and BED) and thus the participants could not use orthographic analogy to read the new words. As was hypothesized, Walton (1995) found that the children were able to read significantly more of the analogy-reading test words, than the letter-sound reading test words. The children were able to read more words because they rhymed with the teaching words, had more orthographic neighbors, and more sound endings in common with the analogy test words than the letter-sound test words.

In 1997, Greaney, Tunmer and Chapman expanded their studies on the effects of orthographic analogy training and the use of words with many orthographic neighbors to children with reading disabilities. They hypothesized that dyslexic children receiving rhyme-based orthographic analogy training would be able to identify more words than children in the item-specific training group. Greaney et al. (1997) suggested that starting off with teaching orthographic analogies that correspond to rhymes might be a useful technique for children with reading disabilities. Fifty-seven disabled readers participated in the study and were divided into two intervention treatment conditions: rhyme-based orthographic analogy training and item-specific training. The rhyme-based orthographic analogy training consisted of a three-day training program that lasted 30 minutes per day, each child had 12 training cycles of the three-day program. Each training cycle emphasized target words with the same rhyme ending and words with many orthographic neighbors (e.g., MEAT, SEAT, HEAT, SEAT, EAT, TREAT). They were asked to perform tasks identifying target words that shared the same rhyme endings (e.g., the letters E A T). They were also asked to spell words that had been primed by groups of words with the same rhyme ending (e.g., primed by SEAT, HEAT and MEAT, then asked to spell NEAT). The item-specific training was the same as the rhyme-based training, but the words did not have the same rhyme endings, and the target word was primed in a sentence (e.g., The girl's room was not NEAT, it was messy.). It is called item-specific because the training focuses on the word as a whole, and its context within a sentence. Greaney et al. reported that the children in the rhyme-based orthographic analogy training group accurately read more pseudowords, and words with and without

common rhyme endings, than the item-specific training group. It was suggested that rhyme-based orthographic analogy is an effective reading strategy for children with reading disabilities. It allows them to make inferences regarding spelling and reading based on how a word and its orthographic neighbors sounds. According to Greaney et al. rhyme-based orthographic analogy is thought to be easier because to read or spell words the reading disabled children do not have to use strategies such as letter-to-sound recoding, or sentence context.

Phonological awareness (Bryant et al., 1990, Layton et al., 1996), exposure to rhyme, the use of rhyme and orthographic analogy (Hayes, 2001; Walton, 1995, Walton, 2002, Greaney et al., 1997) and words with many orthographic neighbors (Laxon, Colheart, & Keating, 1988) have been found to contribute to the development of skills necessary to become a successful reader. Rhyme analogy states that words that sound the same will probably have the same rhyme ending, and therefore be spelled similarly. Orthographic analogy states that words that share the same rhyme ending and letters will be easier to identify. Rhyme awareness states that knowledge of rhyming relationships between words make it possible for children to form spelling categories and recognize many words that rhyme with each other. Words with many orthographic neighbors (friendly words) trigger the recognition of many other words and are easier to identify. Based on these theories, words that have many rhymes associated with them should be more easily identifiable than words that have few rhymes associated with them.
If a word has many rhymes associated with it, chances are the child will have been exposed to many of its rhyming words (e.g., BAT: HAT, MAT, SAT, FAT, CAT, RAT,

GNAT, SCAT, etc.), thus helping to increase their receptive vocabulary. A word that has few rhymes associated with it (e.g., BUS: US, FUSS, PUSS) does not provide exposure to many other words that sound the same, and may not be as easy to identify.

The purpose of this study is to test the theory that phonology plays an important role in early recognition of spoken words. Phonological rhyme awareness can be presented in different forms, in this study it will be looked at in terms of identifying pictures of words that have many or few rhymes associated with them. It is hypothesized that pictures of words that have many rhymes associated with them will be more easily identifiable than pictures of words that have few rhyming words associated with them. It is also hypothesized that constant exposure to rhyme will assist preschoolers in identifying words with many rhymes associated with them. Phonological identification of words with many rhymes would be evidence in support of the idea that pre-reading children do learn by phonological association.

Method

Participants

Informed consent was obtained for 24 three to four year-old preschool children, of mixed gender and ethnicity, attending San Jose Day Nursery. Age was the only criteria used to select the children. The teachers at the preschool previously divided the children into two groups, based on pre-determined school policies. The teachers had no knowledge beforehand which group was the Experimental Group or the Control Group. Within each group, the children were given the option to sit and listen to stories read aloud by a designated Reader, or play as usual. The children self-selected themselves to participate in the reading hour, but were encouraged by the teacher to participate. All children were preliterate. At the end of the study, the children were given a book of their own.

Items

The English words were selected using the MRC Psycholinguistic Database (Wilson, 1988), which is a standardized database that finds words based on specific criteria. The rhyming words were chosen by their auditory properties. That is, they were chosen based on how they sound, not how they were spelled, because the participants were preliterate. As can be seen in Table 1, the words were yoked into 2 categories, Many Rhymes (with a range of 25-53 rhymes associated with the target picture), and Few Rhymes (with a range of 3-13 rhymes associated with the target picture), and sounded as close to a true rhyme as possible. For example, the word CAT has many rhymes associated with it (e.g., BAT, HAT, MAT, SAT, FAT, RAT), whereas

Table 1

Important Characteristics of Words Used for the Picture Pointing Task

Many Rhymes	Number of Rhymes	Freq.	String Length	Few Rhymes	Number of Rhymes	Freq.	String Length
cat	28	23	3	bib	8	45	3
clock	37	20	5	pen	13	18	3
brick	26	18	5	boy	6	242	3
toes	37	19	4	mouse	7	10	5
shoe	53	14	4	swim	5	5	4
bear	39	57	4	web	3	6	3
ball	34	110	4	leg	4	58	3
bone	29	33	4	grass	10	53	5
cake	25	13	4	paint	10	37	5
bat	28	18	3	tape	10	10	4
tail	37	24	4	pool	13	111	4
kite	34	1	4	comb	8	6	4
bed	25	127	3	kiss	6	17	4
tree	28	59	4	bird	5	31	4
feet	29	283	4	knife	5	76	5
thumb	24	10	5	leaf	8	12	4
lip	29	18	3	dress	12	67	5
eyes	32	122	4	barn	3	29	4
ax	27	10	2	cup	3	45	3
cheese	33	9	6	arm	4	94	3
Mean	30	49	3.85		7	49	3.75

the word BIB has only a few words associated with it (e.g., FIB, GLIB). Each word list was matched on string length (3.9 letter per word) and number of syllables (1). The words were of relatively high frequency as determined by the Kucera and Francis Norms (1967), which is a scale that was developed to rate words on how often they appear per million words of text. The frequency of the Many Rhymes and Few Rhymes averaged 49.

Procedure and Design

Participants in this study were asked to take a baseline measurement that assessed their initial receptive vocabulary: picture recognition of Many Rhyming words (20), and Few Rhyming words (20). For the picture recognition task, the participants were scored on accuracy for each picture correctly identified as the target word. The target words and pictures were presented mixed, in a random order for each child. For example, the researcher said the word "BALL", the child was then asked to point to the picture of the ball. Each picture correctly identified counted as one, and the final score was x number out of 20. The pictures were presented as a panel of four (See Appendix C for example). These tests assessed their familiarity of rhyming and non-rhyming words, and set a baseline.

The designated Readers, who read to both groups, read aloud approximately eight books per one hour session, five days a week, for 12 weeks. There were two groups, the first group was read books that contain rhymes (Experimental Group), and the second group was read books that did not contained rhymes (Control Group). The books selected for both groups were age appropriate, and had the same target words, but were

in a rhyme setting for the Experimental Group, and a non-rhyme setting for the Control Group. The children were divided into two groups by the preschool, and were labeled as Experimental or Control on the first day of reading by the designated Reader. For the Experimental Group, the children were encouraged to participate by identifying objects that rhyme in the stories (e.g., "Here is a HAT, can you find the CAT"?). The children in the Control Group were also asked to participate (e.g., "How many apples are on this tree?"). After 12 weeks, the two measures were taken again using 20 Many Rhyming words presented in a panel of four pictures, and 20 Few Rhyming words presented in a panel of four pictures.

Results

In Table 2 the results are given for all participants in both groups, pretest and posttest. It was found that when combining Many Rhymes and Few Rhymes, from pretest ($\underline{M}$ = 19.33) to posttest ($\underline{M}$ = 20.00), the Experimental Group improved in total rhyming picture identification. The Control Group also improved from pretest (M = 19.11) to posttest ($\underline{M}$ = 19.83), when combining and averaging Many Rhymes and Few Rhymes identification scores. Table 3 shows that overall, more Many Rhyme pictures (pretest $\underline{M}$ = 19.44, posttest $\underline{M}$ = 20.00) were identified than Few Rhyme pictures (pretest $\underline{M}$ = 19.00, posttest $\underline{M}$ = 19.83).

Table 4 shows the means for the number of rhyming pictures identified for pretest and posttest for the Experimental Group and the Control Group. It shows that for the pretest, the Experimental Group and the Control Group correctly identified the same number of Many Rhyme pictures ($\underline{M}$ = 19.44). However, the Experimental Group ($\underline{M}$ = 19.22) identified more pictures with Few Rhymes, than the Control Group ($\underline{M}$ = 18.78). For the posttest, the Experimental Group ($\underline{M}$ = 20.00) identified the same number of pictures with Many Rhymes, as the Control Group ($\underline{M}$ = 20.00). The Experimental Group identified more pictures of Few Rhymes ($\underline{M}$ = 20.00), than the Control Group ($\underline{M}$ = 19.66).

There was no significant difference in the posttest for correctly identifying Many Rhyme pictures between the Control Group ($\underline{M}$ = 20.00) and the Experimental Group ($\underline{M}$ = 20.00), $\underline{F}$ (1, 16) = .00, $\underline{p} > .05$ (Please see Figure 1). There was also no significant difference in the posttest for correctly identifying Few Rhyme pictures between the

Table 2

Raw Scores for Experimental Group and Control Group for Pretest and Posttest

	Condition			
	Pretest		Posttest	
Groups	Many Rhymes	Few Rhymes	Many Rhymes	Few Rhymes
Experimental	20	19	20	20
	19	19	20	20
	20	20	20	20
	20	19	20	20
	19	19	20	20
	20	19	20	20
	19	20	20	20
	19	19	20	20
	19	19	20	20
Mean	19.44	19.22	20.00	20.00
Control	19	19	20	20
	19	20	20	20
	20	19	20	20
	19	19	20	20
	19	18	20	19
	20	19	20	19
	20	20	20	20
	19	17	20	19
	20	18	20	20
Mean	19.44	18.78	20.00	19.67

Table 3

Means for the Number of Rhyming Pictures Identified for Groups Combined for Pretest and Posttest

	Rhymes		
Time	Many	Few	Mean
Pretest	19.44	19.00	19.00
Posttest	20.00	19.84	19.84
Mean	19.72	19.42	

Table 4

Means for the Number of Rhyming Pictures Identified for the Experimental Group and the Control Group for the Pretest and Posttest

	Rhymes	
Groups	Many	Few
Experimental		
Pretest	19.44	19.22
Posttest	20.00	20.00
Control		
Pretest	19.44	18.78
Posttest	20.00	19.67

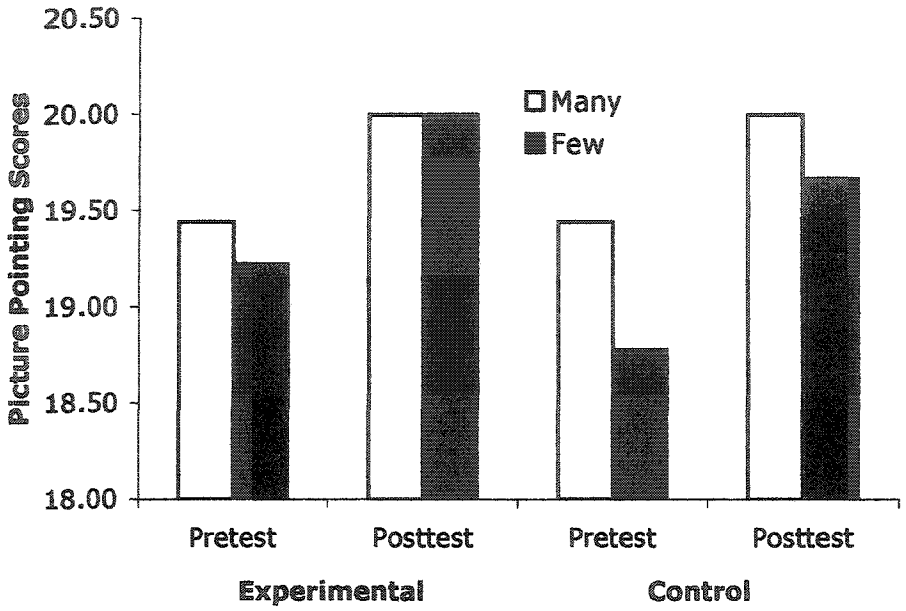

Figure 1.

Mean Pretest and Posttest picture pointing scores for the Experimental Group and the Control Group for Many Rhymes and Few Rhymes.

Control Group (M = 19.66) and the Experimental Group (M = 20.00), F (1, 16) = 1.36, p > .05.

As can be seen in Figure 2, there was not a significant difference overall for the number of correctly identified pictures for Many Rhymes and Few Rhymes combined between the Control Group (M = 19.47) and the Experimental Group (M = 19.67), F (1, 35) = 1.33, p > .05. When combined across groups and testing times, there was a significant difference between the mean score for Many Rhyme pictures (M = 19.72), and the mean score for the Few Rhyme pictures (M = 19.41), F (1, 35) = 7.52, p < .01 (Figure 3). A significant difference for pictures with Many Rhymes from pretest (M = 19.44) to posttest (M = 20.00), for the Experimental Group and the Control Group combined, F (1, 35) = 20.00, p < .05 can be seen in Figure 4. There was also a significant difference for pictures of Few Rhymes from pretest (M = 19.00) to posttest (M = 19.84), F (1, 35) = 31.03, p < .01, for the Experimental Group and the Control Group combined.

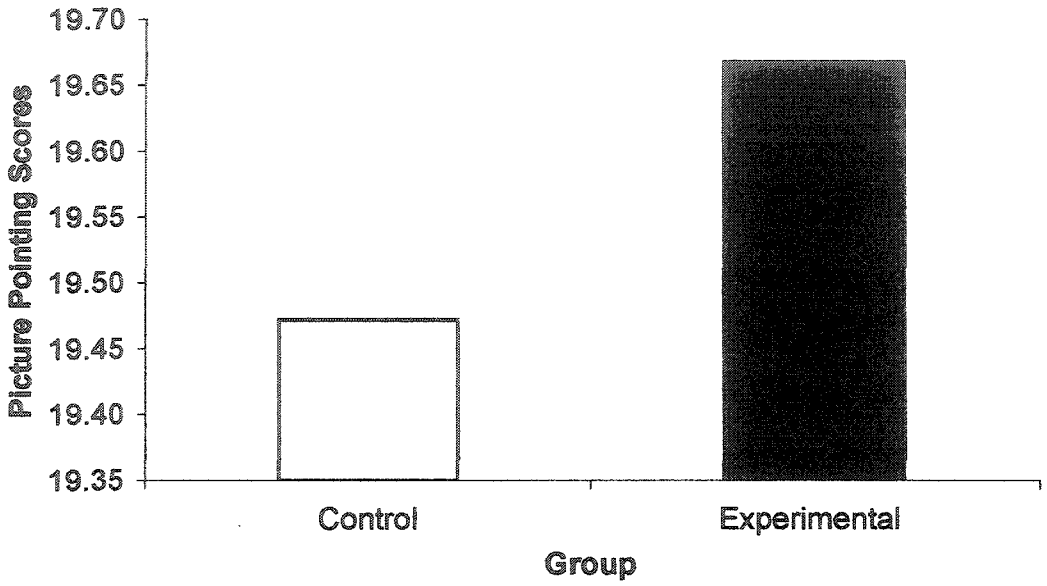

Figure 2.

Mean score for Many Rhymes and Few Rhymes combined, and Pretest and Posttest combined for the Experimental Group and the Control Group.

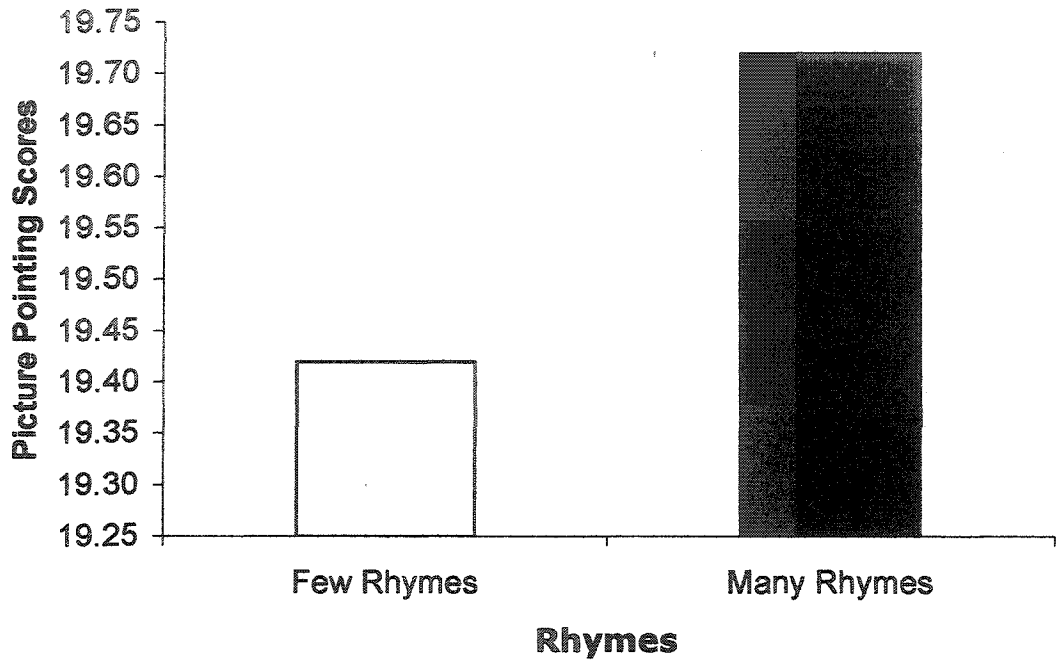

Figure 3.

Means for all scores for Many Rhyme pictures and Few Rhyme pictures, for Pretest and Posttest combined and the Experimental Group and Control Group combined.

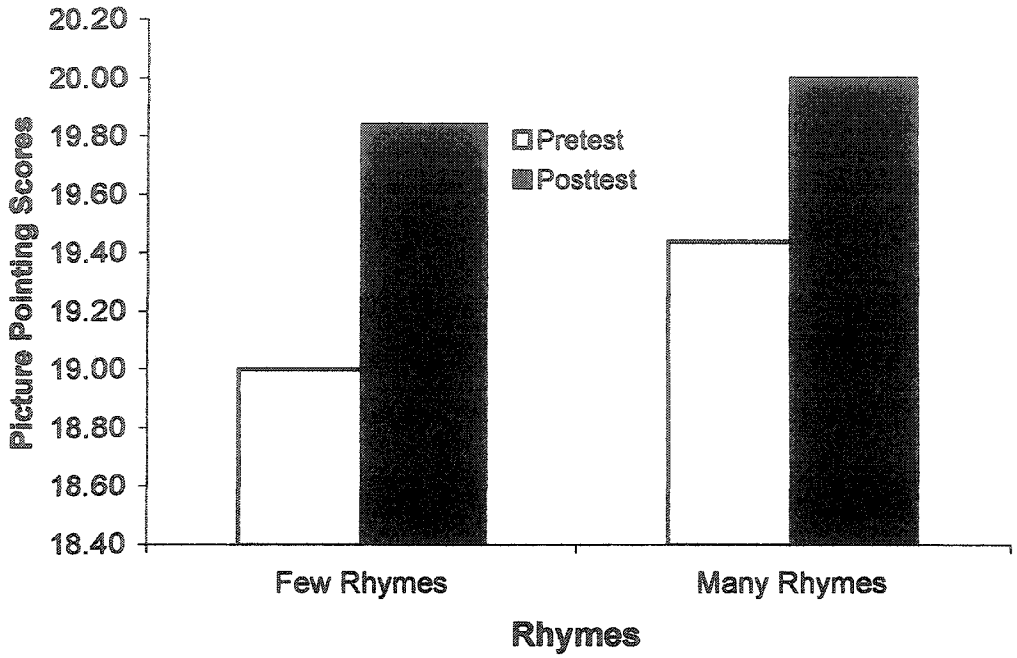

Figure 4.

Means of all scores for the Experimental Group and the Control Group combined for Many Rhymes and Few Rhymes for Pretest and Posttest.

Discussion

The results of the current effort partially support the original notion presented that the Experimental Group, who were continuously exposed to rhyme through oral reading, would be able to identify overall more pictures of words with Few Rhymes and Many Rhymes from pretest to posttest, than preschoolers in the Control Group. It was also hypothesized that pictures of words with Many Rhymes would be easier to identify overall than pictures of words with Few Rhymes associated with them.

The results of the study did not support the first hypothesis, as there were no significant differences between the Experimental Group and the Control Group for identifying pictures with Few Rhymes and Many Rhymes. Furthermore, preschoolers within the Experimental Group did not significantly identify more pictures of Many Rhymes than Few Rhymes, indicating that exposure to rhyme did not significantly contribute to the identification of pictures of words with Many Rhymes. As was expected, there were no differences between the two groups during pretest, as both groups performed the same for identifying pictures of Many Rhymes and Few Rhymes.

The results of the study did however support the second hypothesis, as it was found that when the Control Group and the Experimental Group were combined for pretest and posttest comparisons, overall more pictures of words with Many Rhymes were identified than pictures of words with Few Rhymes. Additionally, when the Control Group and the Experimental Group were combined there was a significant improvement from pretest to posttest for both Many and Few Rhymes.

In this study, it was found that the Experimental Group did not point to more pictures of words with Many Rhymes associated with them than the Control Group. There were no differences between the Control Group and the Experimental Group, indicating that regular exposure to short stories that rhyme did not assist in increasing the identification of the pictures of words. Though the findings were not significant, it is worth noting that the Experimental Group did identify more pictures of Few Rhymes for the posttest than the Control Group. It seems that the preschoolers were not able to take their phonological knowledge of rhyme and use it as a trigger for identifying a word that has many rhyming neighbors.

These results may also be explained by an observed ceiling effect in the picture pointing pretest, leaving little room for improvement in the posttest. Many children in both groups were able to identify at least 80% of the pictures presented for pretest, and all of the children were able to identify 100% of the pictures for posttest. It was hoped that this study would provide evidence that supports the theory that phonology, by way of rhyme, plays a role in early recognition of spoken words. It is possible that the observed ceiling effect may have obscured phonological effects.

In contrast to Hayes' (2001) findings regarding preschoolers' abilities to make phonological discriminations after hearing rhyming or non-rhyming versions of the same story, the Experimental Group did not perform significantly better than the Control Group at correctly pointing to pictures of words with Many Rhymes associated with them. Also, within both groups, neither were able to identify more pictures of Many Rhymes than Few Rhymes. Yet it is worth noting that both groups identified more

pictures of words with Many Rhymes than pictures of words with Few Rhymes, but neither group did significantly better than the other. For the posttest, the Experimental Group achieved perfect scores for both Many Rhymes and Few Rhymes, which was a slight increase from pretest. The exposure to rhyming stories on a regular basis did not appear to increase their ability to identify pictures of Few Rhymes or Many Rhymes. Because both groups were read to, and the group exposed to rhyme did not excel beyond the non-rhyme group, we cannot attribute their success to regular exposure to rhyme.

Although there were no differences between the groups, there was a significant difference between the number of pictures of Many and Few rhymes correctly identified. It was found that when combining the two groups into one, there was a significant difference between the total number of pictures of Many Rhymes and Few Rhymes. As was hypothesized, the children were able to identify more pictures of words with many rhymes associated with it than pictures with few rhymes. This is consistent with Phonological properties playing a role in word recognition. Because they rely only on what they hear, we can attribute the differences in recognition to phonological association. While phonological association may have been used to identify the pictures, constant exposure to rhyme does not appear to enhance this effect. With the only difference between the groups being rhyme exposure, it was encouraging to see that at least the exposure to reading was beneficial to their receptive vocabulary. Unless spontaneous learning occurred, the act of reading aloud 5 days a week appeared to help improve receptive vocabulary through picture identification. These findings are consistent with prior literacy research stating the positive effects of oral reading to

preschoolers on a regular basis, such as quicker language acquisition, and increased receptive vocabulary (Wells, 1985; Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Valdez-Menchacaca & Caulfield, 1988).

The picture pointing task may have been too easy for the preschool children. Many preschoolers were able to identify many of the pictures during pretest, resulting in a ceiling effect. This left little room for improvement during posttest, making it difficult to observe any effects reading rhyme stories may have had on the Experimental Group. Also, the same words and pictures were used for both pretest and posttest, and may have yielded a practice effect. Although, the words were age appropriate, with the same average frequency, and the pictures were clear representations of the words.

In the future, it may be more appropriate to use participants that are younger, with the presumed greater room for improvement from pretest to posttest, resulting in a more robust experiment. If the participants are younger, the pictures will not be as easily identified, and there will be more room to improve and demonstrate phonetic awareness by exposure to rhyme. A control group was used in this study to truly see the effect of exposure to rhyme versus no exposure to rhyme, in hopes that any improvement would then be attributed to rhyme exposure, and not maturation or exposure to oral reading. It would have also been beneficial to see more preschoolers in the study, because it would help in getting a sample of a wider population, as well as reveal any small existing effects. A duplication of the current study, with the inclusion of a younger, but bigger, population, may prove to yield the positive effects of stories with rhyme on preschooler's receptive vocabulary.

More research is needed to continue looking at the connection between the rhyming and phonological properties of words used in children's literature. The theory itself has been supported many times over, and will continue to be an important aspect of reading readiness and later reading success in preschoolers and early readers (Hayes, 2001; Walton, 1995; Walton, 2002; Greaney et al., 1997). The potential for findings that support the importance of phonetic awareness and rhyme are certainly evident when looking at the improvements in picture pointing scores. Future research should focus on rhyme awareness and rhyming relationships between words to help make it possible for children to form spelling categories and recognize words that rhyme with each other. In this case it seems that the type of book that was read did not matter, as long as the preschoolers were actively participating and listening to the stories being read.

References

Bradley, L., & Bryant, P. E. (1983). Categorizing sounds and learning to read - a causal connection. *Nature, 301*, 419-521.

Bryant, P., MacLean, M., & Bradley, L. (1990). Rhyme language and children's reading. *Applied Psycholinguistics, 11*, 237-252.

Duncan, L. G., Seymor, H. K., & Hill, S. (1997). How important are rhyme and analogy in beginning reading? *Cognition, 63*, 171-208.

Greaney, K. T., Tunmer, W. E., & Chapman, J. W. (1997). Effects of rime-based orthographic analogy training on the word recognition skills of children with reading disability. *Journal of Educational Psychology, 89*, 645-651.

Hayes, D. (2001). Young children's phonological sensitivity after exposure to a rhyming or nonrhyming story. *The Journal of Genetic Psychology. 162*, 253-259.

Kucera, H. and Francis, W. (1967). *Computational Analysis of Present-Day American English.* Brown University Press, Providence, RI.

Layton, L., Deeny, K., Tall, G., & Upton, G. (1996). Researching and promoting phonological awareness in the nursery class. *Journal of Research in Reading, 19*, 1-13.

Laxon, V. J., Colheart, V., & Keating, C. (1988). Children find friendly words friendly too: words with many orthographic neighbours are easier to read and spell. *British Journal of Educational Psychology, 58*, 103-119.

Muter, V., Hulme, C., Snowling, M., & Taylor, S. (1997). Segmentation, not rhyming predicts early progress in learning to read. *Journal of Experimental Child Psychology, 65*, 370-369.

Walton, P. (1995). Rhyming ability, phoneme identity, letter sound knowledge and the use of orthographic analogy by pre-readers. *Journal of Educational Psychology, 87*, 587-597.

Walton, P. (2002). Beginning reading by teaching in rime analogy: effects on phonological skills, letter-sound knowledge, working memory, and word-reading strategies. *Scientific Studies of Reading, 6*, 79-115.

Wells, G. (1985). Preschool literacy-related activities and success in school. In D. R.

Olson, N. Torrance, & A. Hildyard (Eds.), *Literacy, language, and learning: the nature of consequences of reading and writing* (pp. 229-255). New York: Cambridge University Press.

Wilson, M. D. (1988). The MRC Psycholinguistic Database: Machine Readable Dictionary, v.2, *Behavioural Research Methods, Instruments And Computers, 20,* 6-11.

Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchacaca, M. C., & Caulfield, M. (1988). Accelerating language development through picture book reading. *Developmental Psychology, 24,* 552-559.

Appendix A

Human Subject Approval

San José State
UNIVERSITY

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Academic Vice President Graduate Studies and Research
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http://www.sjsu.edu

To: Sara E. Carriere
572 Leland Ave.
San Jose, CA 95128

From: Pam Stacks,
Interim AVP, Graduate Studies & Research

Date: December 22, 2003

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

"The Effects of Rhyming Stories on a Picture Pointing Task."

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Pam Stacks, Ph.D. immediately. Injury includes but is not limited to bodily harm, psychological trauma, and release of potentially damaging personal information. This approval for the human subjects portion of your project is in effect for one year and data collection beyond December 22, 2004 requires an extension request.

Please also be advised that all subjects need to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services that the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

cc: Dr. Laree A. Huntsman

Appendix B

Human Subject Consent Forms English and Spanish

San José State
UNIVERSITY

College of Social Sciences
Department of Psychology
One Washington Square
San José, CA 95192-0120
Voice: 408-924-5600
Fax: 408-924-5605
E-mail: psych@email.sjsu.edu

Dear Parent,

I need your child's help in conducting a study. The objective of this Research is to gain a broadened perspective of reading readiness by examining how pre-literate children respond to a reading program, which emphasizes rhyme.

The benefits of your child participating in this research include hearing stories and increasing their vocabulary. The data collection phase of the reading program should take no longer than forty minutes, and should cause no harm whatsoever to the children. In contrast, the children should enjoy the activity, as it involves reading to them a book and asking questions about pictures in the book and words used in the book.

Your child's participation is completely voluntary; if you choose for your child to not participate, it will not affect your child in any negative way. You are also free to withdraw your children from the study at any time, without any negative effect on your relations with your child or with your child's school or with San Jose State University. No service of any kind, to which your child is entitled, will be lost or jeopardized by your choice.

Although the results of this study may be published, no information will be included that could identify your child or your family.

If you have any questions regarding this study, I would be happy to talk with you. I can be reached at 408-977-0438. If you have any questions or complaints about this study, you may contact Dr. Robert Pellegrini, Psychology Department Chair at 408-924-5600. If you have any questions or complaints about your child's rights as a research participant, or in the event of a research related problem or injury, please contact Dr. Pam Stacks, Interim Academic Vice President, Graduate Studies and Research at 408- 924- 2427.

Sincerely,

Sara E. Carriere
San Jose State MA student

At the time you sign this consent form, you will receive a copy of it for your records.

_____
Name of Child or Ward (please print clearly)

_____
Parent's (or Guardian's Signature Date

_____
Relation to Child or Ward

_____
Full Mailing Address

_____
Investigator's Signature Date

San José State
UNIVERSITY

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Estimado Padre o Madre,

Necesito la ayuda de su niño/a en conducir un estudio. El objective de esta investigación deberá ganar una perspectiva mas amplia de leer con prontitud examinando como niños/as pre-letrados responden a un programa de la lectura que acentúa rima.

Los beneficios de su niño tomando parte en esta investigación incluyen oír los cuentos y creciendo su vocabulario. La fase de la colección de datos del programa de la lectura no debe tomar más que cuarenta minutos, y debe causar ningun daño a los niños/as. Por contraste, los niños deben gozar la actividad, ya que implica leerles un libro y haciendo preguntas acerca de los retratos en el libro y palabras usadas en el libro.

Su participación del niño es completamente voluntaria; si usted escoge que su niño/a que no participara, no afectará a su niño en ninguna manera negativa. Usted es también libre de retirar a su niño/a del estudio a cualquier vez, sin cualquier negativo en la escuela del niño/a o con la universidad del estado con nombre San Jose State University. Ningún servicio, al cual su niño/a es permitido, no será perdido ni o será arriesgado por su desicion.

Aunque los resultados de este estudio se puedan publicar, ninguna información sera incluida que podría identificar su niño/a o a su familia.

Si usted tiene cualquier pregunta acerca de este estudio, yo sería feliz de hablar con usted. Puede comunicarse conmigo a el (408) 924-5633. Si usted tiene cualquier pregunta o alguna queja acerca de este estudio, usted puede comunicarse con el Dr. Robert Pellegrini, Director del Departamento de Psicología al (408) 924-5600. Si usted tiene cualquier pregunta o alguna queja acerca de los derechos de su niño/a como un participante del estudio, o en caso de algun problema del estudio o alguna herida relacionada, por favor comuniquese con Dr. Pam Stacks, Vicepresidente Académico provisional, Estudios Gradúantes y Estudios al (408) 924- 2427

Sinceramente.

Sara E. Carriere
San Jose State MA Student

Al tiempo que usted firme este consentimiento, usted recivira una copia para su archivo.

Nombre del nino o nina

Firma del padre, madre o guardian Relacion con el nino/a Fecha

Numero de telefono

Direccion

Firma del investigador Fecha

Appendix C

Picture Pointing Task Pictures