Effect of Instruction on the Development of Rhyming Skills in Young Children

Mary E. Reynolds
Kristie Callihan
Erin Browning
Marshall University, Huntington, WV

Reading is one of the most important skills young children develop. Children who are good readers enjoy reading and read more, further improving their reading skills and vocabulary knowledge. Children who have difficulty reading typically read less than their peers do. Without repeated reading experiences, these children’s vocabulary knowledge and overall learning ability often fall behind those of their reading-adept peers, which can adversely affect their academic success and their self-esteem (Sanders, 2001).

Difficulty learning to read usually does not become evident until first grade, by which time these children are at risk for continuing reading difficulties (Snow, Burns, & Griffin, 1998). Therefore, it is important to identify early predictors of reading success. Previous research has found phonological awareness to be one of the strongest predictors of later reading ability (Badian, 2001; Bradley & Bryant, 1991; Catts, 1993; Ellis & Large, 1987; Hulme, 2002; Hulme et al., 2002; Lundberg, Frost, & Peterson, 1988; MacDonald & Cornwall, 1995; MacLean, Bryant, & Bradley, 1987; Singleton, Thomas, & Horne, 2000; Stanovich, Cunningham, & Cramer, 1984; Swank & Catts, 1994). Children demonstrate phonological awareness through knowledge of the syllabic structure of words (the ability to segment words into syllables), onset/rime (the ability to perform alliteration and rhyming activities), and the phonemic structure of words, often referred to as phonemic awareness (the ability to segment words into phonemes) (Yopp & Yopp, 2000).

Because phonological awareness skills are significant predictors of children’s later success in learning to read, everything possible should be done to give young children the opportunity to develop these skills. Many studies have shown that children who are specifically taught phonological awareness skills during the preschool years, whether they be rhyming (Majsterek, Shorr, & Erion, 2000; Mitchell & Fox, 2001; van Kleeck, Gillam, & McFadden, 1998; Walton, Bowden, Kurtz, & Angus, 2001), syllable awareness (Mitchell & Fox, 2001), or phoneme awareness (Mitchell & Fox, 2001; van Kleeck et al., 1998; Walton et al., 2001), acquire them more effectively than do children who are not specifically exposed to these skills.

ABSTRACT: Phonological awareness is a strong predictor of success in learning to read. Rhyming ability is an early developing component of phonological awareness. Therefore, it is believed that strengthened early rhyming ability might facilitate the acquisition of reading. This study examined the effect of the explicit teaching of rhymes on improvement in the ability of children ranging in age from 37 to 54 months to identify and produce rhyming words between a pretest and a posttest. Results showed that the rhyming abilities of children who received explicit instruction improved significantly more than did the rhyming abilities of children who did not receive this instruction. Implications these findings have for speech-language pathologists and for further research are discussed.

KEY WORDS: rhyme, phonological awareness, reading, explicit instruction
There are two questions that remain to be answered, however. The first is the age at which phonological awareness training should begin. The majority of studies that have examined the efficacy of phonological awareness training have targeted children 4 to 6 years of age (Majsterek et al., 2000; Mitchell & Fox, 2001; van Kleeck et al., 1998; Walton et al., 2001). However, Chaney (1992) showed that the ages between 2 and 4 are active periods of metalinguistic learning, including the acquisition of phonological awareness skills, and the findings of a study conducted by Lonigan, Burgess, and Anthony (2000) indicated that children’s phonological awareness skills develop significantly between ages 3 and 4. Additionally, most children enter preschool programs by age 3. Therefore, we suggest that it might be advisable to begin phonological awareness training before the age of 4.

The second question to be answered is which phonological awareness skills should be taught first. Stahl and Murray (1994) and Treiman and Zukowski (1991) suggested that children gain control over larger units of sound, such as onset (the part of a syllable that includes all consonants that precede the vowel) and rime (the part of a syllable that includes the vowel and consonants that follow the vowel), before smaller units such as individual phonemes. MacLean et al. (1987) showed that some children as young as 3:3 (years:months) successfully recited nursery rhymes and completed rhyme identification and production tasks. Furthermore, Yopp (1988) found that rhyme tasks were the easiest of the phonological awareness tasks for kindergarten children to perform. Based on this information, it would seem advisable to teach the concept of rhyme before teaching children to identify individual phonemes.

There is some controversy, however, as to whether the component skills of phonological awareness represent a unified construct that develops progressively throughout the preschool and early school-aged years, or instead represent different underlying abilities. Results of a factor analysis conducted by Yopp (1988) suggested that rhyming tasks might tap a different underlying ability than other phonological awareness skills. Although some studies found that rhyme detection differentiated good from poor readers in first grade (Badian, 2001), at age 8 (Singleton et al., 2000), and in seventh grade (Badian, 2001), other studies found that phonemic awareness was a stronger predictor of later reading success than was rhyming ability (Hulme, 2002; Hulme et al., 2002; Lundberg et al., 1988; Stanovich et al., 1984). Several researchers have suggested, however, that studies that failed to find significant relationships between rhyming and reading did so because they were conducted with older children, and ceiling effects were noted on the rhyming tasks used (Goswami, 2001; Lundberg et al., 1988; Stanovich et al., 1984; Yopp, 1988).

In contrast to the findings of Yopp (1988), the findings of other studies lend support to the theory that the component skills of phonological awareness represent a unified construct. For example, in a study undertaken to determine which factors contributed most strongly to children’s ability to learn to read by analogy, Wood (2000) found that a subgroup of participants (mean age = 5:8) who performed poorly on a rhyme detection task also performed poorly on a phoneme deletion task. Furthermore, factor analyses conducted by Stahl and Murray (1994), Lonigan et al. (2000), and Anthony et al. (2002) suggested that all of the components of phonological awareness represented a single, underlying phonological ability. Anthony et al. found that children who demonstrated greater sensitivity to lower levels of phonological awareness, such as rhyme detection, also demonstrated greater sensitivity to higher levels of phonological awareness, such as phonemic awareness. Based on their findings, Anthony et al. argued that rhyme sensitivity (awareness) and phoneme sensitivity (awareness) do not have unique relationships to reading because they do not reflect different abilities.

There is considerable evidence to suggest that phonological awareness is significantly related to success in learning to read, and rhyming ability is one of the earliest developing components of phonological awareness, but little research has been done on the effect of explicit rhyming instruction on the ability of children younger than 4 to learn to rhyme. The present study was designed to answer the following question: “Will children between the ages of 37 and 54 months who participate in lessons designed to teach them to identify and produce rhyming words make greater gains in their awareness of rhyme than will a similar group of children who do not receive this training, as measured by their improvement in identifying and producing rhymes between a pretest and a posttest?”

**METHOD**

**Participants**

Sixteen children enrolled in a local daycare center participated in the study. Eight children (4 male and 4 female) were randomly assigned to a group that received training in rhyming skills (experimental group); the other 8 children (6 male, 2 female) were randomly assigned to a group that received training in narrative skills (control group). We decided to use narrative training for the children in the control group because research has shown a high correlation between the ability to understand and generate narratives during the preschool years and later academic success (Bishop & Edmundson, 1987; Paul, 2001; Snow & Dickinson, 1990), specifically reading comprehension ability (Snyder & Downey, 1991). Children in the experimental group ranged in age from 37 to 54 months ($M = 42.4, SD = 5.1$); children in the control group ranged in age from 37 to 53 months ($M = 46.0, SD = 6.5$). The difference between these means was not statistically significant, $t(14) = 1.244, p > .05$. One child in the experimental group and 1 in the control group were receiving therapy for mild articulation problems. None of the other children was enrolled in speech or language therapy.

**Research Design**

This study used a pretest–posttest control group design (Hegde, 1994). The type of intervention (rhyming treatment...
Setting and Procedures

The study was conducted by undergraduate students majoring in communication disorders (hereafter called student clinicians) under the supervision of the authors at the daycare center. Before beginning the study, student clinicians received 2 hours of training in correct implementation of the research protocol. Following this training, pretest data were collected for each child participating in the study. The pretest data consisted of informal rhyming assessments modeled after the protocol used by van Kleeck et al. (1998). Specifically, children were asked to complete three rhyming tasks: one rhyme identification task, one rhyme decision task, and one rhyme generation task. Practice items were provided for each task so that the student clinicians could be sure the children understood the directions before beginning data collection. The tasks were administered in the manner described in the following paragraphs.

Rhyme identification task. Each child was shown 10 sets of pictures, three pictures per set. Two pictures in each set rhymed; the other did not. The student clinician named each picture and asked the child which picture did not rhyme with the other two.

Rhyme decision task. Each child was introduced to a puppet named Jed and was told that Jed likes words that rhyme with his name. The student clinician then said “Jed” followed by another word. Some of the words rhymed with Jed and some did not. The child was required to tell the student clinician whether or not the words rhymed.

Rhyme generation task. The student clinician said a series of 10 words. After each word, she asked the child to say a word that rhymed with the word the child had just heard.

Following the collection of pretest data, the children participated once a week for 10 weeks in activities designed to improve either their rhyming or their narrative skills. Each session lasted approximately 30–40 minutes. Children worked in small groups with two to three student clinicians. Each session began with one student clinician reading an appropriate children’s book. Books (see Appendix) that were appropriate for preschool-aged children (Gebers, 1995) and that emphasized either phonological awareness or narrative skills were used during treatment sessions. Books for the rhyming group emphasized rhyming words, with the exception of one book that emphasized letter/sound correspondence. Books for the narrative group were written in a narrative structure, but did not emphasize rhyming words. Following the book reading, the student clinicians conducted activities designed to improve either the children’s rhyming skills or their narrative skills.

The following steps, partially modeled after the protocol used by van Kleeck et al. (1998), were included in activities for the rhyming group. One student clinician chose five rhyming pairs from the story, except in the case of the book that emphasized letter/sound correspondence, where five words were taken from the story and five rhyming words were chosen to correspond with these words. She presented the children with cards, each of which had a picture with one of the ten words written beneath the picture. She pronounced each rhyming pair and asked the children to point to each picture as she said the word corresponding to it. After saying each rhyming pair, the student clinician emphasized to the children that the words rhymed, or sounded alike. The children were instructed to say each word in chorus after the student clinician said it. The student clinician again emphasized that the word pairs rhymed. Next, the student clinician put one picture card from each rhyming pair on a game board or toy. She shuffled the remaining cards. One child chose a target picture on the game board or toy. Another child was asked to pick its rhyming match from among the shuffled cards. If the child was unable to do this, the other student clinicians in the group assisted him or her with this step. When the correct picture card was found, the child put it on the board or toy under the target picture. The student clinician next added five pictures to the ten pictures already used. These pictures did not rhyme with any of the existing pairs. The student clinician named two pictures and the children took turns telling her whether or not the pictures named rhymed. Card pairs that rhymed were put into one container; those that did not rhyme were put into another container. Next, the student clinician took each rhyming pair and had the children generate additional rhyming words. She did this by showing the children that the rhyming pairs had all sounds in common except the first sound. By placing different letters in front of the “rimes,” the children could generate new rhyming words.

The following steps were included in activities for the narrative group. The student clinician first showed the children a book, named it while pointing to the title, and asked the children what they thought the book would be about. After giving the children time to respond, she read the book to them. When she finished reading the book, she asked the children questions designed to elicit information about the elements of story grammar (e.g., setting, initiating event, internal response, attempt, direct consequence, and reaction). After the children answered the story grammar questions, the student clinician read the story again. This time she paused every time she came to a key word or phrase from the story and asked the children to say it. Following this, the children acted out the story, sometimes using puppets to enhance this activity.

Following the 10-week intervention program, posttest data for both groups were collected in the same way that pretest data had been collected.

Interrater Reliability

The third author independently scored the rhyming information after the first author had scored it. Using a unit-by-unit agreement ratio (Hegde, 1994), interrater reliability was 100% for both the pretest and the posttest data.
RESULTS

An alpha level of .05 was used for all statistical tests. Results indicated a significant main effect for time, \( F(1, 14) = 35.773, p < .05 \), indicating that rhyming skills improved for all children between the pretest and the posttest. This result was qualified, however, by a significant time by group interaction, \( F(1, 14) = 14.21, p < .05 \).

Examination of the mean differences in improvement for each group showed that rhyming scores improved significantly more for the experimental group (Pretest \( M = 4.63, SD = 3.66 \); Posttest \( M = 16.75, SD = 7.68 \)) than they did for the control group (Pretest \( M = 8.88, SD = 6.42 \); Posttest \( M = 11.63, SD = 8.55 \)). These results can be seen in Figure 1.

DISCUSSION

In this study, we began phonological awareness training of young children with instruction in rhyming tasks. Our results showed that, when children as young as 37 months were explicitly taught to rhyme, their rhyming abilities improved significantly more than did those of similarly aged children who were not explicitly taught this skill. Although MacLean et al. (1987) found that some 3-year-old children were able to identify and generate rhyming words, Norris and Hoffman (2002) suggested that most children do not begin to perform the tasks taught during the present study until the ages of 4 to 5 years. Thus, explicit instruction appeared to foster earlier acquisition of the concept of rhyming than would be likely to occur without such instruction.

The question remains, however, whether early instruction in rhyming will eventually result in enhanced reading ability. As noted earlier, some studies have reported significant relationships between early rhyming and later reading ability (Badian, 2001; Bradley & Bryant, 1991; Goswami & Bryant, 1990; MacLean et al., 1987; Walton et al., 2001), whereas others have failed to find these relationships (Duncan & Johnston, 1999; Stanovich et al., 1984; Yopp, 1988). Virtually all studies, however, have found significant relationships between phoneme awareness and later reading ability (Duncan & Johnston, 1999; Hulme, 2002; Hulme et al., 2002; Stanovich et al., 1984; Walton et al., 2001). Other studies have suggested that children who attend language-rich preschools that emphasize basic skills, such as phonological awareness and experience with narratives, have an advantage over their peers in later reading acquisition (Snow et al., 1998; Snow & Dickinson, 1990).

Although several researchers (Bishop & Edmundson, 1987; Paul, 2001; Snow & Dickinson, 1990; Snyder & Downey, 1991) found that children’s early experiences with narratives had a positive influence on their later acquisition of reading, Roth, Speece, and Cooper (2002) found that children’s early narrative experiences did not predict either word decoding or comprehension in second grade, but that phonological awareness skills were strong predictors of decoding skills, which are necessary for reading proficiency. Additionally, the results of the present study showed that, although narrative experience may be beneficial for young children, explicit instruction in phonological awareness skills was required to effect a significant improvement in these skills. If, as hypothesized by several researchers (Anthony et al., 2002; Lonigan et al., 2000; Stahl & Murray, 1994), rhyming and phoneme awareness are part of a single construct of phonological awareness, with rhyming preceding phoneme awareness developmentally, it follows that young children who have mastered rhyming skills will learn phoneme awareness skills more efficiently than will children who have not first mastered rhyming skills. Therefore, early acquisition of these skills should increase the likelihood of later proficiency in reading.

These findings should be of special interest to speech-language pathologists. Previous research has shown that children with specific language impairment are at a significant risk for difficulty in learning to read (Snow et al., 1998). Furthermore, Aram and Nation (1980) showed that, when therapy designed to help these children improve their language skills without specifically addressing phonological awareness skills was administered during the preschool years, children with language impairment did not achieve better reading abilities upon school entry. Given these findings, and findings that show that children with language impairment have significantly more difficulty with rhyming skills than either their chronological-age or language-age peers do (Boudreau & Hedberg, 1999; Fazio, 1997), it follows that early explicit instruction in phonological awareness, proceeding in a developmentally appropriate fashion, is especially important for them. As researchers gain more knowledge about the developmental sequence of phonological awareness skills, they will be able to use this knowledge to enhance the early experiences of children with language impairment, as well as those of normally developing children.

In light of the findings of this study, we suggest that further research be conducted to answer the following questions:

![Figure 1. Improvement in rhyming between the pretest and the posttest.](image-url)
• Will young children, both with and without language impairment, who are first taught rhyming skills master phoneme awareness skills following explicit instruction more quickly than will children who have not first been taught rhyming skills?
• Will young children, both with and without language impairment, who are first taught rhyming skills, followed by instruction in phoneme awareness skills, acquire reading and spelling skills more easily upon school entry than will children who have not explicitly been taught phonological awareness skills?

ACKNOWLEDGMENT

The authors wish to thank the students who conducted the phonological awareness and narrative sessions and the children, parents, and staff of the Marshall Academy.

REFERENCES


Hegde, M. N. (1994). Clinical research in communication disorders (2nd ed.). Austin, TX: Pro-Ed.
Educational Psychology, 86, 221–234.


Contact author: Mary E. Reynolds, PhD, Department of Communication Disorders, Marshall University, 400 Hal Greer Boulevard, Huntington, WV 25755-2675. E-mail: reynoldm@marshall.edu

APPENDIX. BOOKS USED FOR RHYMING AND NARRATIVE ACTIVITIES

Rhyming and Letter/Sound Correspondence Books

Narrative Books