

# Developing phoneme awareness through alphabet books

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**ABSTRACT.** Previous research suggests that children who are successful in phoneme awareness tasks also have high levels of alphabet knowledge. One connection between the two might be alphabet books. Such books typically include both letter-name information and phonological information about initial sounds ('B is for bear'). It may be that children who are read alphabet books, and thus understand *how B is for bear*, will learn both letter names and be able to isolate phonemes. To examine this, we gave three treatments to different groups of prekindergarteners. In the first group, the teacher read conventional alphabet books. In the second, the teacher read books chosen to contain the letter names only, without example words to demonstrate sound values. The third group, a control, read only storybooks. We found that all groups gained in print concept and letter knowledge over the course of the study. The conventional alphabet group made significantly greater gains in phoneme awareness than the group that read books about letters without example words, suggesting that conventional alphabet books may be one route to the development of phoneme awareness.

**KEY WORDS:** Alphabet books, Emergent literacy, Phoneme awareness, Reading acquisition, Reading readiness

## INTRODUCTION

One precursor to success in beginning reading is phoneme awareness or recognition that spoken words are composed of familiar vocal gestures (phonemes) that are recycled across words. This recognition is important because words are composed from a limited phoneme set; for example, *mate* and *tame* are combinations of the same three phonemes. Because alphabetic writing systems record pronunciations at the phoneme level, learning to read and write with an alphabet may depend on familiarity with phonemes.

Though many ramifications remain to be explored, researchers are near consensus on the usefulness of phoneme awareness for those who would begin to read (Stanovich 1986, 1988). Deficiencies in phoneme awareness may predispose children to a downward spiral of reading difficulties. Conversely, early knowledge of phonemes may provide special advantages in learning to read.

The ability to read words as phoneme maps depends on awareness of letter and phoneme identities and on blending skill. These abilities develop in different types of classrooms, traditional as well as whole language (see Mills, O'Keefe & Stephens 1990). Some teachers influenced by the whole language

philosophy may abjure direct teaching as an inappropriate detour from text meaning. Phoneme awareness is, however, fostered through many whole language activities, such as invented spelling and working with words during reading (Winsor 1991). In both traditional and whole language classrooms, though, knowledge of phoneme identity and skill in blending are commonly assumed, rather than taught, in early instruction. Thus, any plausible means of imparting these skills early in reading development should be explored.

### *The value of alphabet knowledge*

Although knowledge of letter identities has long been recognized as one of the best predictors of reading acquisition (see Chall 1983, for review), most researchers have dismissed letter-name knowledge as a causal factor in beginning reading success (e.g., Gibson & Levin 1975). Ehri (1983) challenges this dismissal. Skilled readers, she notes, are distinguished from their less-skilled peers by their facility with the letter-sound mapping system. For skilled readers, letters symbolize the phonemes in pronunciations. Learning letter names not only helps beginners discriminate and remember the visual features of letters, but also may facilitate learning their phoneme values, since most letter names contain the phonemes they commonly symbolize. Learning associations between letter forms and names is difficult and time consuming, since the connection is arbitrary and some letter forms are difficult to discriminate; for instance, lower-case *b*, *d*, *p*, and *q* differ only in orientation. Children who arrive in first grade with an overlearned familiarity with letter names find themselves at a considerable advantage in learning to read. Ehri (1983), for example, found that learning letter-phoneme associations was much easier for children who could name letters; children who had not mastered letter names could not reach her criterion on letter phonemes. One explanation for Ehri's results is that identifying letters is a part of the task of learning letter-phoneme associations, and that automaticity in identifying letters permits full attention to the more advanced task. As evidence for this explanation, Speer and Lamb (1976) found correlations in the 0.80 range for letter-naming speed and reading achievement, as compared to the 0.60-range correlations for letter-naming accuracy and reading achievement.

Stahl and Murray (1994) hypothesize a further link between alphabet knowledge and beginning reading: Alphabet knowledge seems to facilitate phoneme awareness. They found that a certain level of letter-name knowledge nearly always accompanies a rudimentary level of phonological awareness, indicated by the ability to analyze syllables into onsets and rimes. In a sample of 113 kindergarten and first-grade children, they found only one child who could successfully recognize and manipulate onsets and rimes but who was unable to recognize and name at least 45 of 54 letter forms. This finding suggests that knowledge of letter identities may be necessary for phoneme awareness.

Several studies indicate that phoneme awareness does not mature natu-

rally but ordinarily develops reciprocally with learning to read in an alphabetic orthography (Mann 1986; Morais, Bertelson, Cary & Alegria 1986; Read, Yun-Fei, Hong-Yin & Bao-Qing 1986). Thus, phoneme awareness seems to aid the acquisition of an alphabetic orthography, but further acquisition of that orthographic knowledge also seems to aid in learning to reflect upon phonemes in spoken words.

Examination of training programs seems to confirm this. Although it is possible to effectively familiarize children with phonemes without tying them to letters (Lundberg, Frost & Petersen 1988), such training often involves teaching both phoneme awareness and alphabet knowledge. For example, Bradley and Bryant (1983) found that the most successful of their training programs incorporated teaching phoneme identities with alphabet letters. Teaching letter identities to symbolize phoneme identities increased the potency of the training, with high-risk children in this treatment group eventually reading an average of 16 months ahead of an untreated control. Wagner and Rashotte (1993), in a meta-analysis of phonological training studies, found that such training has the largest effect, and indeed the only significant effects, when it is tied to alphabet learning.

#### *Learning from alphabet books*

The oral reading of an alphabet book seems a useful occasion to acquaint children with features of texts, printed letters, and spoken word structure. However, during typical picture-book reading, children key in on the meaning of the story and take little interest in the formal aspects of written letters and concepts about print (Smolkin & Yaden 1992; Yaden, Smolkin & MacGillivray 1993). Though storybook reading may have other praiseworthy effects (e.g., learning questioning schemata, acquiring vocabulary), there is little reason to expect children to learn much about written symbols (Meyer, Stahl, Wardrop & Linn 1994), unless their attention is specifically drawn to the print. Choice of text might be one way of focusing children's attention on written symbols. Children's interest in print is greatest in texts where the print is made salient, for example, by placing a large letter in isolation. Alphabet books typically offer prime examples of salient print, and observations suggest that conversations about print are more likely to take place with alphabet books than with other genres of children's literature (Bus & van IJzendoorn 1987; Yaden et al. 1993). Though mothers usually disavow any instructional efforts with their children about reading, observers have noted mothers' attempts to lead their children to recognize letters, to connect letters to well-known words, and to identify phonemes in words; the frequency of such instruction is positively correlated with tests of prereading ability (Bus & van IJzendoorn 1987). Of course, such valuable instructional conversations may be much less likely in a class of 18 wiggling prekindergarteners than with a single child on her mother's lap.

Even under the best of circumstances, however, parental talk about alphabet

texts can be incomprehensible to children. For example, Yaden et al. (1993) observed alphabet book conversations involving children of two upper middle-class parents and recorded the following dialogue:

Miriam: And O is for mouse [taking a cue from the illustration, which features an opossum hanging from a letter O].

Father: That's not – *mouse doesn't start with an O*. That's an opossum. (Italics added.)

To this child, who is focusing on the semantic properties of words, a 'mouse' starts with a nose and whiskers, not a letter. Such parental talk must be quite mysterious to many children, and indeed, as Yaden et al. (1993) point out, elaborate attempts by parents to correct children's misunderstandings may go unheeded – even under these ideal circumstances. Children like Miriam who appear to ignore parental corrections probably do not understand them, and parents may be oblivious to their children's incomprehension.

Alphabet books are usually designed to present connections between letters and the phonemes they represent. However, since these connections aren't explicit, the child must identify and segment the phoneme to link it with the letter. For children without phoneme awareness, it is difficult to see how this can be accomplished; they struggle to understand why these letters should be associated with anything at all. Connections such children make tend to be arbitrary and semantic. They are therefore unreliable – a name recalled twice may be forgotten on a third occasion. Tenuous connections may be made using the oral context or a picture. Thus, the toad meant to represent *T* may be called *a frog*, the bunny that exemplifies *B* might be *a rabbit*.

Phoneme awareness might well begin with the problem the child experiences in puzzling over how *M* relates to *mouse*. Solving the problem requires a metalinguistic shift from viewing *mouse* as signifying a particular animal to a simultaneous recognition of its phonological structure, a focus on the spoken word itself as well as seeing through that word to the concept it represents. Attempting to understand how *M* could represent *mouse* sets up a disequilibrium, in Piaget's terms (Piaget & Inhelder 1969). Resolving that disequilibrium requires the beginnings of a new cognitive structure, one which represents the beginning of both phoneme awareness and learning an alphabetic code.

Complicating the difficulty of the metalinguistic task is the frequent use of alphabet books that are too difficult. The alphabet books studied by Yaden et al. (1993) are like many offered to children: They feature language poorly adapted to the linguistic capabilities of young children, their primary audience. Alphabet books, for instance, that illustrate letter phonemes with 'yak' and 'unau' do not give children memorable words from which to abstract letter phonemes. The research of Yaden et al. points to the appropriateness of choosing alphabet books that use familiar children's language. Moreover, Yaden et al. suggest the use of more explicit language in framing the instructional dialogue. Rather than the ambiguous, 'M is for mouse', parents might say, 'M is the letter you begin with when you want to write the word mouse',

or possibly 'M tells your mouth to say mmm at the beginning of mmm-mouse', stretching or iterating the initial phoneme of the exemplary word.

Much of the literature on the use of alphabet books has used ethnographic methods (Yaden et al. 1993) or correlational methods (Bus & van IJzendoorn 1987; Worden & Boettcher 1990). The purpose of the present study is to use quasiexperimental methods to study the role of alphabet books in mediating growth between letter-name knowledge and onset-rime manipulation.

## METHOD

*Subjects.* Subjects for this study were 42 children in three intact prekindergarten classes in three public elementary schools in a small city in the southeastern USA. The children were participants in a pilot state-funded prekindergarten program for low-income families; parents who applied to the program were screened for income criteria and for willingness to participate in weekly instructional sessions. Most children were 4 years old, though a few had recently turned 5. Most were African American (86%), and the majority were boys (63%). Only children who returned signed permission forms were included in the study. Two students were dropped from the analysis (both from the Storybook control class) because they were already reading. Another two students were dropped because they did not make any verbal response to any task.

The three prekindergarten classes in this study were organized along similar lines, with a premium placed on exploratory learning at play centers. Each class devoted a brief period daily to shared storybook experiences. Their classrooms were adorned with printed displays, but systematic attempts to develop academic knowledge were considered inappropriate. Most time was devoted to exploratory play.

*Instruments.* We pretested and posttested the children individually in the hallways outside their classrooms in sessions that ranged from 10 to 20 minutes. Three tests were administered:

The Concepts About Print measure (Clay 1985) was always given first. This test involves the shared reading of a brief storybook (*Sand* was used for the pretesting, *Stones* for the posttesting). Questions are interspersed throughout the reading to assess children's emergent knowledge of print conventions. Because of our subjects' youth and inexperience with texts, we employed cutoff rules to limit frustration with items probing early reading and knowledge of punctuation.

An alphabet recognition measure from Clay (1985) was given next. In this measure 26 capital letter forms and 28 lower case letter forms (2 each of *a* and *g*) are presented for naming. Again, we employed a cutoff rule to limit frustration, ending this subtest when 10 letters went unrecognized.

The Tests of Onset-Rime Awareness, a phoneme awareness measure

adapted for this study from measures used by Stahl and Murray (1994) (see Appendix 2) was given last. For this measure we introduced the child to a puppet who liked to talk in a special way, by separately pronouncing the onset (the initial consonant in familiar CV or CVC words) and rime (the remainder of the word). We originally prepared two versions each of blending, phoneme isolation, segmentation, and deletion tasks, parallel in linguistic form, with all words chosen to fall within the listening vocabulary of preschool children. However, we discarded the phoneme isolation and deletion tasks when initial administrations indicated they were too difficult. Retaining the blending and segmentation tasks allowed us to segue smoothly in our instructions. First, we asked the child to tell us what the puppet was saying (blending); later, we asked if the child could talk like the puppet (segmentation). Cutoff rules were employed to limit frustration. If the child could not respond successfully to any items during guided practice where correction was given, or failed on 3 consecutive test items, the test was discontinued. If, however, the child answered correctly on 4 of 5 subtest items, additional items were administered to probe for more refined awareness of individual phonemes.

*Procedures.* Each class was given four children's books to be read aloud daily. Only the choice of books distinguished the three treatments: Alphabet Books, Letter-Name Books, and Storybooks. A random drawing was held to match classes with treatments. For the experimental Alphabet Books treatment, the class was given a selection of conventional alphabet books in which letters are introduced and example words that begin with these letters are provided. The books used in the Alphabet Books condition were *From Apple to Zipper* (Cohen 1993), *Dr. Seuss's ABC* (Geisel 1963), *Alphabears: An ABC Book* (Hague 1984), and *The Z Was Zapped: A Play in Twenty-six Acts* (Van Allsburg 1987). (Complete references for all treatment books are given in the Appendix.)

For the Letter-Name Books condition, the class was given books that featured alphabet letters without providing example words. Books selected for this treatment were *The Cat in the Hat Comes Back!* (Geisel 1958); *Chicka Chicka Boom Boom* (Martin & Archambault 1989); *The Gunnywolf* (Delaney 1988); and an altered version of *The Z Was Zapped* (Van Allsburg 1987), which we titled *The Z Was Struck by Lightning*. To create this text, we photocopied and laminated the illustrations of Val Allsburg's book and allowed the children to compose the text.

For the Storybooks condition, the class was given picture storybooks of quality children's literature. Books selected for this treatment included *Have You Seen My Cat?* (Carle 1991); *The Cat in the Hat* (Geisel 1957); *The Gunniwolf* (Harper 1970); and *Caps For Sale* (Slobodkina 1991).

We attempted to use similar books across conditions, varying only on the target attributes. Thus, we used two versions of *The Gunnywolf*, one in which the protagonist mollifies the wolf by singing the alphabet and one in which she sings other lyrics. We also used *The Cat in the Hat* for the Storybook

treatment, and *The Cat in the Hat Comes Back* in the Letter-Name Books condition. The Van Allsburg text of *The Z was Zapped*, used in the Alphabet Book treatment, contrasted with the children's original version in the Letter-Name Books group.

For each condition, the teacher agreed to read one of the books aloud daily over a period of 3 weeks (15 class days) during October and November. After all four books were read initially, children chose which book would be read that day. Reading time varied with the length of the book and the class's interest in the story, but averaged about 10 minutes per day. We did not impose any conditions on how the books were to be read. Because we were interested in whether alphabet books were a possible source for the development of phoneme awareness, we wanted to have teachers read the books as they would ordinarily. We visited each classroom unannounced once a week during the scheduled reading time to observe how the books were read aloud. We were interested in what the teacher did with the book, whether she pointed out or exaggerated the phonemes, what use was made of the illustrations, and other oral reading features.

## RESULTS

### *Observations of book reading*

The first author visited each classroom once a week over the course of the treatment and took field notes during the readings. In all three classes children sat on the floor in a semicircle around the teacher's chair as she read. Songs, recitations, and routinized directions ('Cross your legs and fold your hands, and sit as quiet as can be') were used to gain children's attention. In each case, the teachers read clearly and expressively, and children, for the most part, listened and participated enthusiastically by reciting memorized parts, offering comments, and clapping as stories were concluded.

All three teachers departed from the printed text to some degree, though they differed somewhat in their instructional dialogues. The teacher in the Storybook condition seemed to adhere closest to the printed text, consistent with the finding of Bus and van IJzendoorn (1987) that narrative storybooks provide somewhat less opportunity for instructional interactions. The following is a description of the storybook reading, from our field notes of the second week of the study.

The children have just made 'shakers' and drums. Some are wearing Indian headdresses made of construction paper. After accompanying a song with their rhythm instruments, the instruments are collected. The teacher sits in a rocker and prepares to read *The Gunniwolf* (Harper 1970) as the children sit in a semicircle on the floor. They sing 'If You're Happy' as a preliminary. She tells them, 'Cross your legs, and fold your hands, and sit as quiet as can be'. The teacher reads the text rapidly with little commentary. The

children join in without cuing on the lines, 'Kum-kwa, khi-wa, kum-kwa, khi-wa'. When the teacher reads the wolf's question, 'Why for you move?' the children answer unhesitatingly, 'I no move'. All children are attentive, and most join in with memorized dialogue. Afterwards a discussion ensues:

- Girl: If you go to a jungle, a wolf might bite.  
 Another girl: If I was her, I wouldn't go near the jungle.  
 Boy: I would go into the jungle. I would never go back home again.  
 Teacher: Why?  
 Boy: I would stay with the Gunniwolf.

Then the teacher reads *Have You Seen My Cat?* and the children recite most of the book. They count the kittens at the end.

The teacher in the Letter-Name Books condition used the occasion of reading aloud to teach concepts and vocabulary. For example, in reading the book the children helped compose, she taught them that they were the authors, that *The Z Was Struck by Lightning* was the title, and that *disappearing* means things such as 'go away'. She also touched the letters in the books as they named them, providing opportunities for letter-name associations. In this class, the teacher's aide created a 'Chicka-Chicka-Boom-Boom' tree, a laminated construction paper tree with detachable velcro capital letters to match with capitals on the tree. This became a popular learning-center activity. Children played at racing the letters up the coconut tree, as in the book. The following description from field notes, also from the second week, is typical, although the regular teacher was absent that day.

Today, the teacher is ill, and the aide reads to the class. The children sit on the floor near her forming three semicircular rows. She leads the class in the 'Good Morning' song, then asks, 'You've been wanting to hear who?' The children answer, 'The Gunnywolf!' The substitute teacher helps the aide hold the big book version of *The Gunnywolf* (Delaney 1992). In the parts where the girl in the story sings the alphabet song, about half the children join in, continuing beyond the partial alphabet in the text. Where the letters are printed in lower case, the aide leads them to read more softly. She asks, "What is 'pitter pat'?" A child explains, 'She is running away from there', and the aide pantomimes her quiet flight. She reads the wolf part with a big, deep voice. Her gestures and face are lively as she dramatizes the story: 'Shwoo!' she says, pretending to wipe her brow. The class supplies an ending to the alphabet, singing, 'Now I've said my ABCs. Tell me what you think of me'. At the end, the aide asks the children to retell the events of the story.

The teacher in the Alphabet Books condition used the alphabet books with examples to elicit student knowledge, e.g., 'R was rolled offstage. What did they use to roll it? Right, wheels'. She also seized opportunities for children to practice counting pictured objects. Like the teacher in the Letter-Name Books class, this teacher routinely touched the letters when saying them, to



build letter identification. However, it is noteworthy that we observed no effort by this teacher to call attention to the phoneme values of the letters in these conventional alphabet books. We did not witness any direct or indirect instruction in phoneme awareness during the alphabet book readings. Again, the following are taken from field notes of our observations from the second week.

The children sit in a circle on the floor around the teacher. She reads *From Apple to Zipper*, pausing for children to respond with the example word pictured. When a child volunteers that I is for 'water', the teacher responds, 'It looks like water. It's frozen water, ice'. 'N is for noodle' leads to a discussion of dishes with noodles. After reading 'S is for seahorse', she asks, 'Where do seahorses live?'

Child: In the water, with the alligators.

Teacher: What does alligator start with?

Child: B?

Teacher: A. That's one of the A-words.

When she reads, 'X is for xylophone', she continues, 'Have you ever played with one of those before?' At the conclusion of the book, the children clap appreciatively. The teacher asks Jamal, the 'book person', to take the book to the shelf 'so if anyone wants to read it, he can'. She adds, 'Thank you, Jamal. You did a nice job.'

The teacher in the conventional alphabet book reading condition said she and her aide were getting tired of alphabet books by the end of the 3-week treatment period. The day she mentioned her fatigue she read the book *The Z Was Zapped*. Student incomprehension was evident when children couldn't remember the difficult example words, despite the illustrations, e.g.:

Teacher: The E was . . . ?

Student: Burned up.

Teacher: The E was evaporating.

This book may have been too challenging for the language level of these children.

### *Quantitative results*

The statistical design used to test for treatment differences was a 3 (conditions)  $\times$  2 (time) analysis of variance, with the second factor considered to be a repeated measurement on all three measures. The group means for the Concepts About Print measure are summarized in Table 1. Note especially the low pre- and posttest scores. Many of the children in these classes had little notion of books and how they were used; a considerable number could not, for example, identify that the print, not the pictures, carries the meaning of a text.

The analysis of variance indicated a statistically significant pretest-to-posttest gain in Concepts About Print scores across all treatment groups [ $F(1,39) = 6.14$ ;  $p < 0.05$ ], indicating that there was an overall gain in knowledge of print conventions. However, there is no evidence of a group-

Table 1. Means and standard deviations for measures

	Alphabet books	Letter-name books	Storybooks	Total
<i>Concepts about print</i>				
Pre	3.21 (1.97)	3.69 (1.80)	4.00 (3.09)	3.64 (2.36)
Post	4.14 (1.99)	4.00 (1.78)	5.40 (2.87)	4.55 (2.33)
Gain	0.93	0.31	1.40	0.91
<i>Alphabet names</i>				
Pre	4.71 (11.10)	4.15 (11.15)	4.93 (11.38)	4.61 (10.94)
Post	7.50 (12.43)	4.76 (12.17)	6.07 (13.16)	6.14 (12.36)
Gain	2.79	0.61	1.14	1.53
<i>Phoneme awareness</i>				
Pre	0.00 (0.00)	0.46 (0.97)	0.33 (1.29)	0.26 (0.94)
Post	1.86 (2.21)	0.46 (0.78)	1.60 (2.50)	1.33 (2.06)
Gain	1.86	0.00	1.27	1.07

Note: Total possible score on *Concepts about print* was 24, on *Alphabet names* 54, and on *Phoneme awareness* was 20. Standard deviations in parentheses.

Table 2. Summary table for analysis of variance

Source of variance	SS	DF	MS	F	Significance
Within cells	62.32	39	1.60		
Phoneme awareness	22.69	1	22.69	14.20	0.001
Treatments $\times$ Phoneme awareness	12.07	2	6.03	3.78	0.032

by-time interaction, indicating that the treatment groups did not significantly differ in the amount of print knowledge they gained during the treatments.

The group means for the letter recognition measure are also summarized in Table 1. Again, the analysis of variance indicated a statistically significant pretest-to-posttest gain in letter knowledge across all treatment groups [ $F(2,39) = 5.98; p < 0.05$ ], indicating an overall gain across groups in knowledge of letter identities. Once again, however, the group-by-time interaction was not statistically significant, indicating that the treatment groups did not significantly differ in the number of letters they learned to identify. This is somewhat surprising, since two of the groups had alphabet books read to them, while the third had no alphabet books read to them during the study period.

Table 1 also summarizes the group means for the phoneme awareness measure. As with the other two measures, the analysis of variance indicated a statistically significant pretest-to-posttest gain in phoneme awareness across all treatment groups [ $F(1,39) = 14.20; p < 0.01$ ], indicating that there was an overall gain across groups in sensitivity to the phoneme structure of spoken words. On this measure, however, there was a statistically significant group-by-time interaction [ $F(2,39) = 3.78; p < 0.05$ ], indicating that the treatment

groups differed in the amount of measured phoneme awareness acquired during the course of the read alouds. Figure 1 graphically depicts the interaction. Post hoc analysis of a separate analysis of gain scores only using the Newman-Kuels procedure indicated that the children in the Alphabet Books condition outgained the Letter-Name Books condition. No other group differences reached statistical significance.

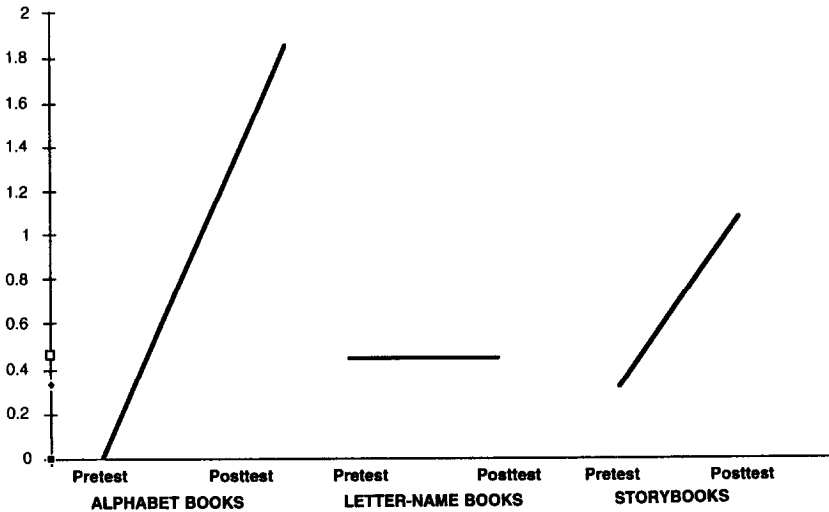


Figure 1. Mean scores on phoneme awareness measures by group.

DISCUSSION

The purpose of this study was to determine whether reading alphabet books to preschool children increases their awareness of phonemes in spoken words. Our results provide limited support for the hypothesis that children’s phoneme awareness develops at least partly through exposure to alphabet books. By puzzling over what is meant by ‘A is for *apple*’ and ‘B is for *bear*’, children examine phonemes in spoken words and are introduced to the idea that phonemes can be signified by letters. Our treatment was relatively short, with daily 10-minute read-alouds over a period of 3 weeks, but even this short treatment began to show some effects. In addition, our subjects had remarkably little knowledge of print and how it functions, as evidenced by the extremely low pre- and posttest scores in Concepts About Print. It is possible that such a treatment might have different (and probably stronger) effects with a more knowledgeable population.

Alphabet book reading could easily merge into direct instruction in phoneme awareness. If readers, for example, stretch out a phoneme, as in ‘M is for mmmm-mouse’, they use a well-known activity for direct instruction in phoneme awareness (Skjelfjord 1987). No stretching was observed here.

Although the teacher in the Alphabet Books group was aware of the purpose of the study, she did not call special attention to the phonemes. Instead, she read alphabet books as she read other books, stressing the meanings of the words in the pictures. Since she did not emphasize phoneme identities, we believe that our results are due to the books themselves and not the result of instructional talk surrounding the books, and that the results of this study should transfer to other naturalistic readings of alphabet books. The reading of traditional alphabet books with example words, as well as the instructional dialogue that accompanies such readings, seems to have an effect in sensitizing children to the phoneme structure of spoken words.

Another issue that needs to be discussed are the unexpected gains made by the students in the Storybooks class, designed as a control treatment. These students made considerable gains in alphabet knowledge and in phoneme awareness, approaching the magnitude of the experimental Alphabet Books group. The teacher in the Storybooks class was a former graduate student of the second author, and was aware of the importance of both alphabet knowledge and phoneme awareness for success in reading prior to the study. Although we only observed the storybook reading times, it is likely that she incorporated these goals into her school day. For example, she reported talking about letter names as a cue to get children to find their cubbies and she used rhymes both as an instructional device and as a transitional activity throughout the day. It may be these activities, rather than the instructional treatment, that led to gains in alphabet knowledge and phoneme awareness.

Because we only involved three teachers, it is inevitable that the Teacher factor is confounded with the Treatment. It is certainly possible that a different set of teachers would have produced somewhat different results, probably with lesser gains under the Storybooks treatment. Another limitation is the floor effects for the outcome measures, restricting variability. Effect sizes may have been larger with simpler measures of alphabet recognition and phoneme identity and with alphabet books that were more comprehensible and explicit.

The sample that we chose had much lower initial levels of phoneme awareness and alphabet knowledge than samples used in other studies. That this simple treatment had a measurable effect with this population suggests strongly that alphabet book reading might be an important factor in the development of phoneme awareness, one which has not been previously identified.

Given the results of this study, it is interesting to speculate on the possible effects of reading alphabet books under more favorable conditions: a longer treatment of 4 to 6 weeks; reading to kindergarten children with their slightly firmer grounding in print conventions, rather than to prekindergarteners; selecting or devising alphabet books that provide multiple example words and which use language easily comprehended by young children; and making explicit efforts to draw attention to the phoneme structure of spoken words by stretching or iterating initial consonant phonemes.

In practice, the effects of reading alphabet books might be enhanced by scheduling related activities. Teachers could, for example, solicit other example words from children, categorize children's names, pictures, or items found in the classroom by initial letters or phonemes, and incorporate writing by producing a class alphabet book. Though alphabet books have a long tradition in beginning reading instruction, they merit recognition as powerful texts in introducing children to literacy.

#### APPENDIX 1: CHILDREN'S BOOKS USED

##### *Alphabet books*

Cohen, W. (1993). *From apple to zipper*. New York: Macmillan.

Geisel, T. S. (1963). *Dr Seuss's ABC*. New York: Random House.

Hague, K. (1984). *Alphabears: An ABC book*. New York: Holt, Rinehart & Winston.

Van Allsburg, C. (1987). *The Z was zapped: A play in twenty-six acts*. Boston: Houghton Mifflin.

##### *Letter-name books*

Delaney, A. (1988). *The Gunnywolf*. New York: Harper Collins.

Geisel, T. S. (1958). *The cat in the hat comes back!* New York: Random House.

Martin, B. & Archambault, J. (1989). *Chicka chicka boom boom*. New York: Simon & Schuster.

In addition, we used an adaptation of *The Z Was Zapped*, with the captions excised and replaced by children's own captions.

##### *Storybooks*

Carle, E. (1991). *Have you seen my cat?* New York: Scholastic.

Geisel, T. S. (1957). *The cat in the hat*. New York: Random House.

Harper, W. (1970). *The Gunniwolf*. New York: Dutton.

Slobodkina, E. (1991). *Caps for sale*. New York: Harper Collins.

#### APPENDIX 2: TESTS OF ONSET-RIME AWARENESS

*Administration.* Give feedback only for practice words. After two consecutive successes on practice items, discontinue feedback and give the test items. After three consecutive misses on the test items, discontinue and go to the next subtest. Give additional expert items only if subject passes at least 4 items in the first part.

*Introduction.* I want you to meet a friend of mine. His name is Fritz, and he's a fire dog. But before you meet Fritz, I need to tell you something about him. He's real shy. He's brave when he's fighting fires, but he's shy around people. Fritz has a special way he likes to talk. If you can talk to him this special way, he feels good. The way Fritz talks is to say just a little bit of a word, and then to say the rest. Fritz, can you come and meet [name]? Here comes Fritz. How are you, Fritz? 'F-ine'. Can you say hi to [name]? 'H-i'.

## I. Blending

Instructions: Do you think you can understand what Fritz is saying when he says just a little bit of the word, and then says the rest? I'm going to have Fritz say some words. You guess what word he's saying. Like, if Fritz says j-am, you say jam.

f-oot – foot      p-ool – pool      k-ing – king      s-and – sand      s-ome – some

## 1. Pretest

m-ap      map      \_\_\_\_\_  
 t-en      ten      \_\_\_\_\_  
 s-oap      soap      \_\_\_\_\_  
 c-ook      cook      \_\_\_\_\_  
 sh-eep      sheep      \_\_\_\_\_

Additional expert words

## 1X.

f-a-t      fat      \_\_\_\_\_  
 p-i-g      pig      \_\_\_\_\_  
 n-i-ce      nice      \_\_\_\_\_  
 b-oo-k      book      \_\_\_\_\_  
 ch-a-se      chase      \_\_\_\_\_

## 2. Posttest

m-ad      mad      \_\_\_\_\_  
 t-oad      toad      \_\_\_\_\_  
 s-oup      soup      \_\_\_\_\_  
 k-id      kid      \_\_\_\_\_  
 sh-ark      shark      \_\_\_\_\_

## 2X.

f-a-n      fan      \_\_\_\_\_  
 p-a-ge      page      \_\_\_\_\_  
 n-igh-t      night      \_\_\_\_\_  
 b-oa-t      boat      \_\_\_\_\_  
 ch-al-k      chalk      \_\_\_\_\_

## II. Segmentation

Directions: What did you say, Fritz? Fritz wonders if you can say some words for him the way he likes to say them. He wonders if you could say just a little bit, and then say the rest of the word. Like, if I say sheep, you say sh-eeep.

me – m-e      soon – s-oon      fish – f-ish      piece – p-iece      can – c-an

## 1. Pretest

make      m-ake      \_\_\_\_\_  
 team      t-eam      \_\_\_\_\_  
 sick      s-ick      \_\_\_\_\_  
 done      d-one      \_\_\_\_\_  
 fight      f-ight      \_\_\_\_\_

## 2. Posttest

cake      c-ake      \_\_\_\_\_  
 seem      s-eem      \_\_\_\_\_  
 tick      t-ick      \_\_\_\_\_  
 fun      f-un      \_\_\_\_\_  
 night      n-ight      \_\_\_\_\_

Additional Expert Items. Instructions: Fritz loves to hear you say the words like that. Do you think you could break up all the sounds in the words? Like, if I say dog, you say d-o-g.

pipe – p-i-pe      home – h-o-me      catch – c-a-tch      gate – g-a-te      shop – sh-o-p

## 1X.

game      g-a-me      \_\_\_\_\_  
 moon      m-oo-n      \_\_\_\_\_  
 feet      f-ee-t      \_\_\_\_\_  
 bath      b-a-th      \_\_\_\_\_  
 cheese      ch-ee-se      \_\_\_\_\_

## 2X.

gate      g-a-te      \_\_\_\_\_  
 main      m-ai-n      \_\_\_\_\_  
 foam      f-oa-m      \_\_\_\_\_  
 beach      b-ea-ch      \_\_\_\_\_  
 cheap      ch-ea-p      \_\_\_\_\_

## REFERENCES

- Bradley, L. & Bryant, P. E. (1983). Categorizing sounds and learning to read: A causal connection, *Nature* 301: 419–421.
- Bus, A. G. & van IJzendoorn, M. H. (1987). Mother-child interactions, attachment and emergent literacy: A cross-sectional study. Paper presented at the biennial meeting of the Society for Research in Child Development, Baltimore, MD.
- Chall, J. S. (1983). *Learning to read: The great debate*. Revised, with a new forward. New York: McGraw-Hill.
- Clay, M. M. (1985). *The early detection of reading difficulties*. Portsmouth, NH: Heinemann.
- Ehri, L. C. (1983). A critique of five studies related to letter-name knowledge and learning to read. In: L. M. Gentile, M. L. Kamil & J. S. Blanchard (eds.), *Reading research revisited* (pp. 143–153). Columbus, OH: Merrill.
- Ehri, L. C. (1991). Development of the ability to read words. In: R. Barr, M. L. Kamil, P. B. Mosenthal & P. D. Pearson (eds.), *Handbook of reading research*, Volume 2 (pp. 383–417). White Plains, NY: Longman.
- Ehri, L. C. (1992). Reconceptualizing the development of sight word reading and its relationship to recoding. In: P. B. Gough, L. C. Ehri & R. Treiman (eds.), *Reading acquisition* (pp. 107–143). Hillsdale, NJ: Erlbaum.
- Gibson, E. J. & Levin, H. L. (1975). *The psychology of reading*. Cambridge, MA: MIT Press.
- Lundberg, I., Frost, J. & Petersen, O.-P. (1988). Effects of an extensive program for stimulating phonological awareness in preschool children, *Reading Research Quarterly* 23: 263–284.
- Mann, V. A. (1986). Phonological awareness: The role of reading experience. In: P. Bertelson (ed.), *The onset of literacy: Cognitive processes in reading acquisition* (pp. 65–92). Cambridge, MA: MIT Press.
- Meyer, L. A., Stahl, S. A., Wardrop, J. L. & Linn, R. L. (1994). The effects of reading story-books aloud to children, *Journal of Educational Research* 88: 69–884.
- Mills, H., O'Keefe, T. & Stephens, D. (1990). *Looking closely: The role of phonics in a whole language classroom*. Urbana, IL: National Council of Teachers of English.
- Morais, J., Bertelson, P., Cary, L. & Alegria, J. (1986). Literacy training and speech segmentation. In: P. Bertelson (ed.), *The onset of literacy: Cognitive processes in reading acquisition* (pp. 45–64). Cambridge, MA: MIT Press.
- Piaget, J. & Inhelder, B. (1969). *The psychology of the child*. New York: Basic Books.
- Read, C., Yun-Fei, Z., Hong-Yin, N. & Bao-Qing, D. (1986). The ability to manipulate speech sounds depends on knowing alphabetic writing. In: P. Bertelson (ed.), *The onset of literacy: Cognitive processes in reading acquisition* (pp. 31–44). Cambridge, MA: MIT Press.
- Skjelfjord, V. J. (1987). Phonemic segmentation: An important subskill in learning to read, Part 1, *Scandinavian Journal of Educational Research* 31: 41–57.
- Smolkin, L. B. & Yaden, D. B. (1992). O is for mouse: First encounters with the alphabet book, *Language Arts* 69: 432–441.
- Speer, O. B. & Lamb, G. S. (1976). First grade reading ability and fluency in naming verbal symbols, *The Reading Teacher* 29: 572–576.
- Stahl, S. A. & Murray, B. A. (1994). Defining phonological awareness and its relationship to early reading, *Journal of Educational Psychology* 86: 221–234.
- Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy, *Reading Research Quarterly* 21: 360–407.
- Stanovich, K. E. (1988). *Children's reading and the development of phonological awareness*. Detroit, MI: Wayne State University Press.
- Wagner, R. K. & Rashotte, C. (1993). A meta-analysis of phonological awareness training studies. Paper presented at the annual meeting of the American Educational Research Association, Atlanta, GA.

- Winsor, P. (1991). Paired for success: Whole language and phonemic awareness instruction. Paper presented at the annual meeting of the National Reading Conference, Palm Springs, CA.
- Worden, P. E. & Boettcher, W. (1990). Young children's acquisition of alphabet knowledge, *Journal of Reading Behavior* 22: 277-297.
- Yaden, D. B., Smolkin, L. B. & MacGillivray, L. (1993). A psychogenetic perspective on children's understanding about letter associations during alphabet book readings, *Journal of Reading Behavior* 25: 43-68.

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