The case for teaching phonemic awareness and simple phonics to preschoolers.

If you ask parents what is the best thing to do to help preschool children learn to read, they are likely to say, “Read books to them”. Yet many researchers nowadays would say that the best thing a parent can do is teach pre-reading skills such as the alphabet and phonemic awareness, and some simple phonics skills. A great deal of research is now showing that children on the verge of starting school who lack these skills have considerable difficulties lying ahead of them when they start to learn to read.

Many children start school knowing few if any letters of the alphabet, and with little or no phonemic awareness, that is conscious awareness that spoken words are made up of phonemes (sounds). They also lack the ability to show even very simple understanding of the alphabetic principle, such as the ability to apply letter-sound correspondences. The prognosis for these children is not good. They are at-risk of not learning to read. They are also at-risk for emotional and behavioral difficulties, especially if they are from low socioeconomic and minority backgrounds (Levi & Chard, 2001, Nicholson, 2004).

In contrast, many children, particularly those from middle class homes, start school with good pre-reading skills. They know most of the letters of the alphabet, have some phonemic awareness, and some basic decoding ability. What this means is that from the first day of school, while some children immediately face a steep learning curve, others will have a much easier time. It is not at all easy to quickly close this gap in pre-reading knowledge. The letters of the alphabet are abstract identities and take a lot of time to learn. It is also difficult to teach children to become consciously aware that a spoken word consists of a series of phonemes. It can be argued that these skills are best acquired in preschool. If all children started school with good pre-reading skills, then there would be a much more level playing field in terms of benefiting from reading instruction. Children who are poorly equipped to begin the task of learning to read will struggle and most of them will still not be reading even after a year of school. It must be discouraging for a teacher to hear a child who has only been in school for one year say: “Mum likes me to read, but I read ugly. ‘Cause I don’t know how to read” (Nicholson, 1999a).

In New Zealand, between 20 and 25 percent of children have a hard time of it in learning to read (Kerslake, 2001). A possible reason is the large discrepancy in pre-reading skills among children when they first start school. This discrepancy was found in a New Zealand longitudinal study of the reading and writing progress of 112 school beginners over a five-year period (Nicholson, 2003). The children were from low-income and middle-income home backgrounds. The middle-class children made much better progress in reading than did the low-income children, who as a group remained below average for their age throughout the study.

What was noticeable from the outset of this study was that even in the first months of school there were huge gaps in pre-reading skills between children from these two social classes. For example, out of 88 children in the study from low-income homes, there were 41 (47 percent) who started school
knowing fewer than five letters of the alphabet, and only 14 (16 percent) who knew between 22 and 26 letters. In contrast, out of 23 children from middle-income homes, there were none who knew fewer than five letters, and 14 (61 percent) who knew between 22 and 26 letters (Figure 1).

There were also large differences in phonemic awareness. In the low-income group 28 (32 percent) did not score at all on a phonemic awareness test, while in the middle-income group only 1 (4 percent) failed to score (Figure 2). In a test of invented spelling, which reflects the ability to relate phonemes to letters, 46 (60 percent) of the low-income group did not score at all while in the middle-income group all the children scored at least some points (Figure 3).

These differences in pre-reading skills at entry to school seem to lead to Matthew effects where children who are well prepared for reading instruction move ahead quickly, while those who are not so well prepared fall behind, and stay behind (Juel, 1994; Stanovich, 1986). Any intervention to try to reduce these incoming differences would have to start at preschool.

How do we know that preschool children with good pre-reading skills have a good prognosis for learning to read?

Most researchers will agree that if you had to recommend two skills that will help children most when they start school, it would be knowing the alphabet and having phonemic awareness. With these two skills, preschoolers are able to begin to learn the correspondences between letters and sounds necessary to decode and spell words. Alphabet knowledge refers to knowledge of the names and sounds of letters. Researchers have known for many years that knowledge of the alphabet is a strong predictor of learning to read (see Bond & Dykstra, 1967). Alphabet knowledge refers to knowledge of the names and sounds of letters. Children typically learn the names of letters before they learn their sounds (Treiman, 1994; McBride-Chang, 1994). Children use the names of letters as a bridge to learning the sounds for example, using the name “bee” for the letter B to infer the phoneme /b/ (Treiman, 1994). In this way, they begin working out the letter-sound relationships needed to learn to read.

Phonemic awareness is awareness that spoken words can be deconstructed into their constituent phonemes (this term is derived from the Greek word ‘phone’ which means ‘sound’). Phonemic awareness is not all or nothing (Nicholson, 1999b, 2000). A child can have a little bit of phonemic awareness if he or she is able to break a word into its onset and rime (e.g., f- ish) or tell you that the first sound in ‘fish’ is /f/. The child who has complete awareness can segment spoken words into all their phonemes (e.g., f-i-sh). The influence of phonemic awareness research on our understanding of the causes of reading difficulties is relatively recent, though the research on this topic goes back to the 1960s (for a review see Nicholson, 1998).

There is a great deal of correlational evidence to suggest that children with high levels of phonological awareness before starting school have a very good prognosis for later success in reading (e.g., Bradley and Bryant, 1983; Byrne and Fielding-Barnsley, 1991, 1993, 1995; Helfgott, 1976; Juel, 1994; Lundberg, Frost & Peterson, 1988; Lundberg, Olofsson & Wall, 1980; MacLean, Bryant & Bradley, 1987; Nicholson, 2003; Roper, 1984; Share, Jorm, MacLean & Matthews, 1984; Stanovich, Cunningham & Cramer, 1984;
Tunmer, Herriman & Nesdale, 1988). In support of the long-term importance of phonemic awareness in learning to read, Nicholson (2003) reported that while the correlation between alphabet knowledge and phonemic awareness was very high in the first year of school, the best predictor of reading progress in the second year of school was phonemic awareness. This is because most children after a year of school have learned the letters of the alphabet, but even at the end of their second year of school many have still not acquired high levels of phonemic awareness.

There is also direct evidence from training studies that a high level of phonological awareness at preschool level will get children off to a better start in reading. The report of the National Reading Panel (2000) in the United States, based on a meta-analysis of training studies in the teaching of phonemic awareness, found that preschool children in particular were likely to benefit from phonological awareness instruction. The report found that the preschoolers benefited more than kindergartners, first and second grade children from training in phonological awareness. The phonological awareness training also had larger transfer effects at preschool level (d=1.25) than at older age levels. The probable reason for this is that preschoolers have lower levels of phonemic awareness than older children and thus benefit more from the training, which in turn benefits their reading progress.

While preschool children have much to gain from phonological awareness instruction, McCutcheon (2002) has reported that preschool teachers are not very knowledgeable about phonological awareness and require instruction. She instructed a group of 23 kindergarten and first grade teachers. These teachers became the experimental group. She followed their classes for one year. A control group of 20 teachers was also followed. The study found that children in the experimental group made greater gains in reading and writing than did children in the control group. The findings of this study suggest that with sufficient knowledge of the structure of language, kindergarten teachers can implement phonemic awareness training in their classrooms and produce better reading performance for the children they teach.

The argument against teaching pre-reading skills

On the other hand, there is the argument that preschools should not teach pre-reading skills, but should instead focus their efforts on reading to children. Coles (1998) has argued that knowing the names and sounds of the letters of the alphabet and having phonemic awareness is not so much a cause of reading success but a marker of family support. Children with high levels of phonemic awareness come from homes where there are many books, where there is a rich language environment, and where they encounter many experiences with written language through having books read to them. Phonemic awareness, then, may be a result of a literate home environment. If this is the case, then it can be argued that the best way to help children learn to read is to provide a literate environment at home and at school by reading books to children and surrounding them with print. Moustafa (1997) writes that “Reading to children helps children learn to read” (p. 72) and that “the primary literacy education task of preschool and the early school years is not teaching children letter-sound correspondences but reading to them.” (p. 79). She cites in support of her argument studies that have found positive relationships between being read to at home and learning to read (Wells, 1985; Heath, 1982). Mason (1992) also reviewed several studies that also supported the relation between reading books to pre-school children and learning to read.
On the other hand, Scarborough and Dobrich (1994) reviewed research on this topic over a 30 year time period and found only a small correlation (r=.28) between reading aloud to pre-school children and whether or not they learned to read. Nicholson (1997) asked 57 children from low-income homes (mean age of seven years) to estimate how many books they had at home. The correlation between reading and the number of books they had at home was low, r=.22, whereas the correlation between reading and their phonemic awareness scores was higher, r=.55. The correlation between reading and their invented spelling scores was even higher, r=.68.

Stuart, Dixon, Masterson and Quinlan (1998) conducted an interview survey of 61 parents of children who were in their first, second and third years of a primary school in North London, England. The parents were divided into two different social class groups. While the middle class parents spent more time reading to their children than did the low-income parents, time spent reading did not correlate significantly with reading progress. Anderson and Matthews (1996) conducted a study of the emergent literacy development of 15 preschoolers over a 1-year period from low-income homes. Storybook reading was emphasized in class and children took storybooks home at least once each week. At the end of the year only one of the 15 children showed any awareness of written language.

In a training study designed to simulate the experience of being read to, Gibbs and Nicholson (1999) used a “talking book” procedure with 5-year-old school beginners in a small mining town in New Zealand. In the first term of school the sample of 64 children were assigned either to a talking book, where they listened to stories read to them via audiotape, every day for five weeks, or to a control group who looked at the same books but did not get the talking book audio support. The results showed that the talking book group was significantly better than the control group when asked to read the books they had listened to. However, when given new books that they had not heard before, there was no difference in reading between the experimental and control groups. These results indicated that the talking book children had memorized the stories they had listened to, but had not acquired any reading skills as a result of listening to stories being read to them.

It could be objected that talking books at school are not the same as being read a story by the teacher or a parent. Yet there have been several recent studies of the effects of reading storybooks to preschool children showing that children benefit in terms of learning new vocabulary but do not benefit in terms of learning to read words (Arnold, D.S., & Whitehurst, G.J., 1994; Epstein, Angell, Payne, Crone & Fischel, 1994a; Whitehurst, G.J., Arnold, D.S., Epstein, J.N., Angell, A.L., Smith, M., & Fischel, J.E., 1994b)

Nevertheless, the case is not closed about the effects of coming from a literate home environment. Burgess, Hecht and Lonigan (2002) conducted a 1-year study of 115 preschool children’s literacy progress. A survey of the parents of these children, asking them questions about when they first started reading to their children, how often they read themselves and so on, showed differences in home literacy practices. The researchers found that these differences predicted growth in reading related skills such as phonological awareness. They concluded that the home literacy environment plays a large part in assisting children’s emerging literacy skills. They argued that previous studies did not use measures that were sensitive to changes in literacy knowledge (e.g., alphabet knowledge, measures of phonological sensitivity, ability to identify high frequency words, and so on), and this might explain the
small correlations found by other researchers between home literacy environments and reading.

A comparison study of the teaching of phonemic awareness and reading books to preschool children.

In order to explore this issue we carried out a training study to compare the effects of teaching reading directly, with the effects of reading books to children. The experimental group was given training in phonemic awareness and simple phonics. The control group was read a number of children’s stories that included lots of discussion and interaction.

The study
Setting
The study was carried out in a childcare center in Singapore. The language of instruction was English. The school curriculum was taught in English, but the children also spent a portion of the morning learning to read in Mandarin and write Chinese script. All children were from middle socioeconomic backgrounds. None of the children were native speakers of English. There is strong willingness to learn English among Singapore children since it is the official language of Singapore.

Participants
There were 24 children in the study, 13 girls and 11 boys. Their ages ranged from 3 years 6 months to 4 years 5 months, with a mean age of 3 years and 11 months. They were assessed for pre-reading skills as well as verbal and non-verbal ability. The children were assessed for receptive language in English at pretest and posttest. The pretest standard scores were below average for their age, but the posttest scores of both groups were within the normal range. There was no statistical difference in receptive language between the two groups at pretest and posttest.

The children were placed in matched pairs according to verbal and non-verbal ability, alphabet knowledge, and phonological sensitivity. They were then assigned randomly to an experimental and a control group. The numbers of children in the two groups were equally balanced according to whether or not the children came from English dominant or other-language dominant homes. The 12 children in each group were divided into two further subgroups of six according to whether their scores on the phonological sensitivity tests were high or low. An analysis of variance showed no statistical differences between the groups for any of the pretest measures, except that children with high phonological sensitivity had significantly higher phonemic scores than the children with low phonological sensitivity. Also, the high phonological ability children were a few months older than the low phonological ability children.

During the course of the study, one child was found to be receiving reading tuition from her mother at home and had already learned to read. As a result, her data and the data of her matched partner were excluded from the final analysis.

Research design
This was a pretest-posttest design with an experimental and a control group. There were 24 children, with 12 in each of the main groups, and 6 in each subgroup. The children were taught in pairs rather than individually or as a whole group.

The design of the study was as follows:

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<th>Phonological Sensitivity</th>
<th>Experimental Group</th>
<th>Control Group</th>
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<tr>
<td>High</td>
<td>N=6</td>
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<td>Low</td>
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Measures
Timed letter naming was used to assess knowledge of letter names as it has been found to be an even stronger predictor of reading performance than simple letter naming. The Rapid Letter Naming Test (O'Connor, Jenkins, Slocum, 1995) was used, where the child named up to 60 randomly allocated letters as rapidly as possible in one minute. Phonological sensitivity was assessed with a composite test that was sensitive to emerging phonological skills. The assessment tasks included: nursery rhyme knowledge (MacLean, Bryant and Bradley, 1987), rhyme detection (Byrne & Fielding-Barnsley, 1991), and initial and final phoneme detection (Byrne & Fielding-Barnsley 1991). More complex phoneme awareness was assessed with the GKR (Gough-Kastler-Roper) test of phonemic awareness. The test-retest reliabilities average 0.7 (Roper, 1984; Juel, Griffith & Gough, 1986).

A standardized test was used to assess receptive vocabulary (Peabody Picture Vocabulary Test – revised - Dunn & Dunn, 1981). The test-retest reliability coefficient for the age group 3 years to 4 years 11 months is 0.77. A standardized test was used to assess non-verbal ability (Raven's Progressive Matrices - Raven, Court, & Raven, 1990).

Word reading was assessed with the Burt Word Reading Test (Gilmore, Croft, & Reid, 1981). It has a test-retest reliability of 0.97. Pseudoword reading was assessed with the Bryant Test of Basic Decoding Skills (Bryant, 1975). Since the children were very young, a simple measure of text reading, using easy-to-decode CVC words, was developed, so as to provide a sensitive indicator of children's emergent reading skills. Three sentences were selected from the popular children's book, “Hop on Pop: the Simplest Seuss for Youngest Use” (Seuss, 1963). One sentence read. “Pat sat on cat.” The children scored a point for each word correctly read. The maximum possible score for each sentence read correctly was four, and for the entire text reading exercise, 12.

Procedure
The experimental group received 30 sessions of phonemic awareness, letter-sound, and simple phonics training, with daily sessions lasting 20 minutes, five days a week, spread over six weeks. Two children were taught at a time in a room within the childcare center. The 30 sessions covered all the 26 letter sounds of the alphabet, and the short sounds of the vowels /a/, /e/, /i/, /o/, /u/.

The skills taught in the 30 sessions included naming of letter sounds, the identification of initial/final phonemes, as well as blending and segmenting. Letter-sound correspondences were emphasized in each lesson. Sandpaper letters were used to familiarize the children with the shapes of the letters (Montessori, 1964).

The identification of the initial and final phoneme was taught using posters that had many illustrations of animals and objects beginning or ending with the same phoneme, from a teaching package called Sound Foundations (Byrne & Fielding-Barnsley, 1991a, 1993).

Other activities included the Two-Picture activity where the child had to decide whether the pictures started with the same phoneme, and the Yes-No activity (Wallach and Wallach, 1976), where the child had to answer if the picture started with a certain phoneme, and the odd one out activity (Bryant & Bradley, 1983) where the child had to decide which of three pictures did not start or end with the same sound. Children were taught to break words into onsets and rime (e.g., m-at). Where the phoneme was difficult to pronounce a
repetition technique was used (e.g., b-b-b-b-bear) as mentioned in Lewkowicz (1980).

The Elkonin technique (Elkonin, 1973) of using a square to represent a phoneme was used, albeit with the children using letters without first resorting to tokens. The Fun Fit (Nutshell, 1993) alphabet cards were used to facilitate segmenting and blending of letter-sounds.

The control group received an alternative training session equal in duration to that of the experimental group. The control group instruction was intended to provide children with the possibility of learning to read by being read to (Moustafa, 1997). Children were taught in pairs. The teaching approach used the technique of interactive reading, where an adult reads stories and uses open-ended questions to encourage the child’s participation (Whitehurst, undated). A total of 12 books were read to the children during those 30 sessions. Some books were read over two sessions, and there were also repeated readings of some books, as chosen by the children.

Results

For the IPDT (initial phoneme) and FPDT (final phoneme) tasks, the experimental group made significantly greater gains from pretest to posttest than did the control group (see Figures 4 and 5).

For the GKR phonemic awareness measure, there was an advantage for the experimental group. The experimental subgroup with good phonological pretest scores had a mean posttest score of 10.00 (SD= 5.98). The experimental subgroup with low phonological pretest scores had a mean posttest score of 2.83 (SD= 1.33). The control group did not score at all on this measure.

For reading of words there was a significant difference between the two groups (see Figure 6). In the experimental group, the high phonemic awareness subgroup mean was 4.60 (SD=2.88) and the low phonemic awareness subgroup mean was 2.50 (SD=1.52). In the control group, the high phonemic awareness subgroup mean was 0.40 (SD=0.89) and the low phonemic awareness subgroup mean was 0.67 (SD=1.21). Inspection of the individual word reading scores (see Figure 7) showed that all of the children in the experimental group were able to read at least one word on the Burt word test, while 8 out of 11 of the control children were unable to read any of the words. To explore the extent to which the training influenced ability to read regularly spelled words, the words on the Burt test that were successfully read by the children were analyzed according to whether they had regular spellings (e.g., up, sad) or irregular (e.g., of, to). The children’s individual scores revealed that seven out of 11 children in the experimental group were able to read some regular words. Of the seven who did, the number of regular words constituted, for each child, at least half of the total number of words read. This suggested that the effects of the training extended to both regular and irregular words.

For reading of the three sentences from Dr. Seuss text there was also a significant difference favoring the experimental group (see Figure 6). In the experimental group, the high phonemic awareness subgroup mean was 7.00(SD=5.20) and the low phonemic awareness subgroup mean was 3.00
In the control group, the high phonemic awareness subgroup mean was 0.80 (SD=1.30) and the low phonemic awareness subgroup mean was 1.00 (SD=1.55).

The results for pseudoword reading, using the Bryant test, showed an advantage for the experimental group (high ability \(M = 3.00, \, SD = 4.64\); low ability \(M = 0.50, \, SD = 1.23\)). The control group did not score at all on this task.

**Implications of the study**

The study outlined above showed that the combination of instruction in phonemic awareness, letter-sound correspondences and simple phonics was more effective in terms of acquiring elementary reading skills than the “interactive” technique of reading books to this particular group of preschool children.

Results suggested that phonemic awareness training combined with simple letter-sound (CVC) decoding instruction helped these preschoolers, who were second language learners, to make a start in learning to read. The instruction helped both the children who started the training with high levels of phonological sensitivity as well as children with low levels of sensitivity.

For the control group, a possible reason for the lack of improvement in phonological awareness and reading of words and sentences was that the interactive reading approach did not directly teach reading skills. This is not to say that we should not read books to children. The research on this approach shows that while it does have beneficial effects, the effects are likely to be in terms of vocabulary acquisition rather than decoding of words.

**Conclusion**

Teaching phonemic awareness and initial reading skills to preschoolers gives them a protection factor in terms of learning to read. Children who start school well prepared in terms of knowing the alphabet, having phonemic awareness, and having some basic understanding of letter-sound correspondences, are more likely to succeed in reading. Although all children are likely to benefit from such instruction, children who are particularly at risk in terms of not acquiring these skills before starting school are those from minority and low-income backgrounds.

Many parents think that the best thing they can do for their children is read to them, but the research does not support this belief. Instead, it is better if parents do as much as they can to help children directly acquire the crucial phonemic awareness and reading related skills they need to succeed in school. Teaching a child the alphabet names and sounds with magnetic letters on the refrigerator, playing rhyming and alliteration games, encouraging a child to spell words according to the way they sound, are all directly related to the task of learning to read.

A literate home environment, of course, is desirable, and no one would deny that it has many positive benefits, and is certainly better than a home without books. On the other hand, a highly literate home environment is not possible for some families, especially in low-income homes where families are struggling to put a meal on the table from day to day (Awatere, 2002). Asking some families to teach these basic skills at home may not be realistic when they are coping with unemployment, desertion, violence or illness, and other negative effects of poverty.

In addition, children are likely to gain spin-off benefits from getting off to a quick start in learning to read. The quicker they learn to read, the quicker
they will have access to the language of books, which will in turn have positive effects on their language learning (Whitehurst et al., 1994a, 1994b). This also seems to be the case for children learning English as a second language (Lam, 1996). Children with good decoding skills are also in a better position to focus their attention on the important task of comprehension, which becomes highly important in the later grades (Dymock & Nicholson, 1999, 2001, 2002).

Results of the study outlined above, along with other research reviewed in this chapter, suggests that the teaching of pre-reading skills is certainly possible in preschool, which is where children have an opportunity to learn necessary reading related skills that will enable them to hit the ground running when they start elementary school. The provision of such instruction at preschool is the best hope for many at-risk children who otherwise are likely to start school way behind other children who are better prepared, and will be unlikely to catch up. This is why there is a strong case for teaching phonemic awareness and other reading related skills at the preschool level.

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References


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Figure 1. The percent distribution of alphabet scores (maximum score = 26) for the low- and high-socioeconomic (SES) groups at the start of their first year of school

**Alphabet Knowledge At School Entry**

*Alphabet Knowledge for Low and High SES Groups*
Phonemic Awareness At School Entry

Phonemic awareness scores for low- and high-SES Groups

Figure 2. The percent distribution of phonemic awareness scores (maximum score = 42) for the low- and high-SES children at the start of their first year of school.
Invented Spelling At School Entry

Invented spelling point scores for low- and high-SES Groups
Figure 4. Pre and post test scores on the initial phoneme deletion test

Figure 5. Pre and post test scores on the final phoneme deletion test
Figure 6. Post test scores on the word reading test and the Dr Seuss sentences

Figure 7 Distribution of Burt word-reading scores across the experimental and control groups (e.g., 8 children in control group had a score of zero)