

Phonemic Awareness: Clarifying What We Know

Marilyn L. Chapman
University of British Columbia

ABSTRACT

In this article, Marilyn Chapman provides educators and others interested in early literacy with important information about phonemic awareness to help them make decisions about what to do in their schools. She begins with an explanation of phonemic awareness and how it relates to other aspects of literacy development such as phonological awareness and metalinguistic awareness (concepts of print). Next she explains key findings from research in order to address some of the most frequent claims about phonemic awareness and clarify what the research actually shows about phonemic awareness. She also describes a research-based developmental sequence to help educators determine age-appropriate expectations about phonemic awareness and related concepts and suggests strategies for assessment. This is followed by a discussion of classroom-based strategies for fostering children's phonemic awareness and related phonological skills through meaning-centered classroom activities that help children connect these skills to real reading and writing, particularly the importance of language play and the use of invented spelling. Finally, she provides suggestions for intervention for children who need additional support.

Literacy Teaching and Learning
Volume 7, Numbers 1 & 2

pages 91–114

Interest in phonemic awareness continues to spread throughout North America. In the United States, an increasing number of states are mandating phonemic awareness training in kindergarten and first grade, and in Canada more and more school districts are importing American phonologically based reading programs such as Open Court and Reading Mastery to provide phonemic awareness training to kindergarten and first-grade students. The growing interest in phonemic awareness is not that surprising, given that recent International Reading Association surveys show that its members consider phonemic awareness to be a hot topic which “should not be hot” (Cassidy & Cassidy, 2000–2001, 2002–2003).

Many teachers and teacher leaders with whom I work report confusing and often conflicting information about phonemic awareness. In this article I plan to clarify what we know about phonemic awareness and address some of the claims that are commonly made about it. I have organized my discussion around the following questions:

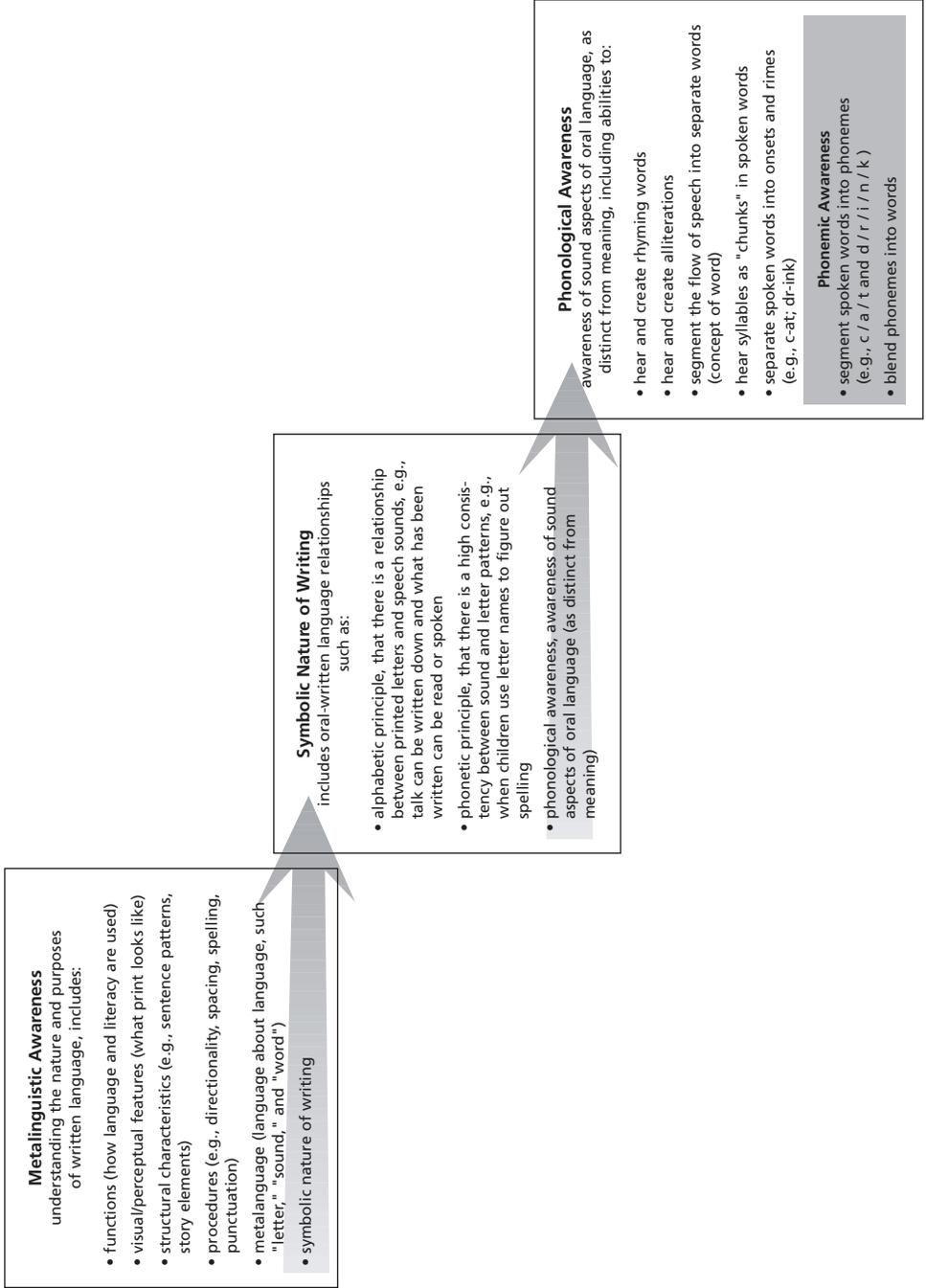
1. What is phonemic awareness and how does it relate to literacy development?
2. What do we know about learning and teaching phonemic awareness?
3. What can we expect young children to learn and when?
4. What are some classroom-based strategies for assessing phonemic awareness?
5. How can teachers foster development of phonemic awareness?
6. What are some classroom-based interventions for children who need additional support in developing phonemic awareness?

WHAT IS PHONEMIC AWARENESS AND HOW DOES IT RELATE TO LITERACY DEVELOPMENT?

Phonemic awareness needs to be understood as one small aspect of phonological awareness, which itself is part of a bigger notion called metalinguistic awareness. Although the terms phonological awareness and phonemic awareness are sometimes used interchangeably, they do have slightly different meanings. Phonological awareness is the larger of the two ideas; it is the awareness of various sound aspects of language (as distinct from its meaning). Phonemic awareness is more specific: the ability to detect each phoneme (the smallest unit of speech) in words. Figure 1 shows how phonemic awareness and phonological awareness are nested within layers of metalinguistic awareness.

Metalinguistic awareness, an omnibus term that includes an entire array of concepts related to language and literacy, develops in the preschool years and continues into adolescence and beyond. The major strands, or big ideas, of

Figure 1. Phonological and Phonemic Awareness Within the Context of Metalinguistic Awareness



metalinguistic awareness (shown in the first box in Figure 1) include awareness or understanding of the

- functions or purposes of language and literacy,
- visual-perceptual features of text,
- structural characteristics (from micro or word level to macro or text level),
- procedural knowledge (from encoding to self-regulating metacognitive reading and writing strategies),
- metalanguage (language used to talk about language and literacy, including grammar of sentences and genres), and
- symbolic nature of writing and its relationship to oral language.

Each of these major metalinguistic concepts can be separated into more discrete components. Key insights that children develop about the symbolic nature of writing and its relationship to oral language (shown in the second box in Figure 1) include the alphabetic principle (that there is a relationship between letters of the alphabet and speech sounds), the phonetic principle (that there are regular relationships between speech sound patterns and letter patterns), and phonological awareness (awareness of the sound dimension of oral language).

Phonological awareness can be further divided into smaller components such as abilities to hear alliteration, rhyming words, word boundaries, and parts of words (e.g., syllables, beginnings and onsets, endings, and phonemes, the smallest units of speech; see the third box in Figure 1.) Two key aspects of phonological awareness comprise phonemic awareness: (a) the ability to segment words into phonemes and (b) the ability to blend phonemes into words (see the last two bullets in the third box in Figure 1). Segmenting and blending phonemes have received a lot of emphasis in the research because they are the aspects of phonemic awareness most closely related to reading and spelling (Ehri & Nunes, 2002).

Children who have phonemic awareness are able to segment (break apart) a word into phonemes in order to write the word and to blend (put together) phonemes in order to read a word. Children with phonemic awareness, and who also have some knowledge of letter-sound relationships, are able to come up with an approximate spelling of a word (an invented spelling) or an approximate pronunciation, which must be checked with context and meaning cues in order to make sense of what is being read.

Although phonological and phonemic awareness are both important in learning to read, phonemic awareness tends to receive more attention because it is considered by some to be of critical importance in learning to read (Adams, 1990). While psychologists and researchers who work from a psychological perspective argue that phonemic awareness is the critical factor in literacy acquisition, in a joint position statement, the International Reading Association and

the National Association for the Education of Young Children (IRA & NAEYC, 1998) state, “Although children’s facility in phonemic awareness has been shown to be strongly related to later reading achievement, the precise role it plays in these early years is not fully understood” (p. 202).

Although psychologically oriented researchers argue that phonemic awareness is a prerequisite to reading, there is also evidence that it develops as a consequence of learning to read and write. When looking at the research literature as a whole (using the criteria articulated by Allington, 1997b), the convergence of evidence points to a reciprocal relationship between phonemic awareness and learning to read and write. In other words, phonemic awareness helps children learn to read and write, and learning to read and write helps children develop phonemic awareness (Weaver, 1998b).

There is also evidence that the alphabetic principle, understanding the relationship between speech and print, is the “linchpin of ‘real’ reading” (Roberts, 1998, p. 44). Furthermore, although young children’s performance on phonemic awareness tests correlates with literacy achievement later on, language development, not phonemic awareness, is the highest correlate with reading achievement (e.g., Catts et al., 1999).

When one takes into account a broader knowledge base in literacy development and learning, it is apparent that while phonemic awareness plays a role in literacy learning, other factors play important roles and should not be overlooked.

WHAT DO WE KNOW ABOUT LEARNING AND TEACHING PHONEMIC AWARENESS?

Research into phonemic awareness can be divided into two major, very different perspectives of the reading process: a psychological-cognitive perspective and a language literacy-oriented perspective. Psychological-cognitive research focuses on word reading while language literacy-oriented research focuses on comprehension of text. Some of the confusion teachers face is that many claims are based on a very narrow, skills-based perspective (e.g., Simner, 1998) that takes into account only clinical, experimental research. Much of this research may not apply to children in classroom settings (Chapman, 1999; Troia, 1999).

It is also important that practitioners are aware of misinterpretations of research findings. As Weaver (1998b) notes, interpreters of phonemic awareness research “often overlook the forest for the trees” (p. 342), for example, by emphasizing very slight but statistically significant differences that support their beliefs while ignoring much more substantial and statistically significant differences, a “kind of distortion [that] is running rampant these days” (p. 342).

Using the criteria recommended by Allington (1997b), I reviewed a comprehensive array of research in order to address some of the most frequent

claims about phonemic awareness and to clarify what the research actually shows about phonemic awareness.

Claim #1: Phonemic awareness is the single most important factor in learning to read.

Clarification: Phonemic awareness is an important factor, but it is only one of many abilities that children need in order to learn to read and write. As Wells (1986), Adams (1990), Braunger and Lewis (1997), and Gee (2001) have noted, children who fare well in school literacy have had language and literacy-rich preschool experiences that provide many opportunities for talk, experiences with oral and written stories, appropriate verbal interactions with adults during storybook readings, and opportunities to draw and write. Although phonemic awareness is an important predictor of literacy achievement, the ability that correlates most highly with literacy achievement is language development, not phonemic awareness (Allington, 2001; Allington & Cunningham, 1996, 1999; Blachman, 1996; Catts, Fey, Zhang, & Tomblin, 1999; Chaney, 1992; Coles, 2000; Gee, 2001; Roberts, 1998), especially expressive language (Snow, Burns, & Griffin, 1998).

Claim #2: The cause of reading problems is lack of phonemic awareness.

Clarification: While many older students who have difficulty reading do have problems with phonemic awareness, others with reading problems do not. There are many things that contribute to reading problems: social and cultural factors, poverty, language issues, lack of literacy experiences, inadequate reading instruction, and various individual differences (Allington, 2001; Allington & Cunningham, 1996, 1999; Braunger & Lewis, 1997; Coles, 2000; Roberts, 1998). There is no single cause of reading problems. However, the children who are most at risk of reading problems are poor children (Coles, 2000; Gee, 2001; Snow et al., 1998).

Claim #3: All children need to be tested in phonemic awareness to identify potential reading problems.

Clarification: “Tests of early phonological awareness (or lack thereof) do not fruitfully select those students who will later have problems in learning to read” (Gee, 2001, p. 14). Many kindergarten children with “weak phonological sensitivity” (Snow et al., 1998, p. 112) will go on to become adequate readers (Bradley & Bryant, 1983, 1985; Catts, 1991, 1996). Although kindergarten and first-grade teachers do need to assess children’s phonological and phonemic

awareness, they need not resort to tests. Instead, they should engage in ongoing direct, mostly informal assessments of children in language and literacy activities. Because it is difficult to do this in a whole class setting, it is best to observe children's phonemic awareness abilities in small group or individual activities (Au, 1998; Ericson & Juliebo, 1998). A child's writing is a powerful source of information: if a child can write with invented spellings that represent all or most phonemes, then that child is phonemically aware and need not be tested for phonemic awareness (Au, 1998; Braunger & Lewis, 1997; Chapman, 1996).

Claim #4: Phonemic awareness screening should take place at the beginning of kindergarten.

Clarification: At the beginning of kindergarten many, if not most, children who will "become normally achieving readers have not yet attained much, if any, appreciation of the phonological structure of oral language, making them nearly indistinguishable in this regard from children who will indeed encounter reading difficulties down the road" (Snow et al., 1998, p. 112). Given that most typically developing children do not have phonemic awareness at this time, the beginning of kindergarten is not an appropriate time for phonemic awareness screening (Au, 1998; Ayres, 1998; Stahl, 1997), although assessing more global aspects of metalinguistic awareness and phonological awareness that are precursors to phonemic awareness is warranted.

In kindergarten classrooms that engage children in language and literacy-rich experiences, children's phonological awareness becomes increasingly refined, and many children begin to develop phonemic awareness. The second half of kindergarten is a more appropriate time to begin assessment of phonemic awareness (Ayres, 1998; Weaver, 1998c). Monitoring children's development in phonemic awareness should continue through first grade. Children's invented spellings are a powerful resource for this purpose.

Claim #5: Phonemic awareness activities need to start at the beginning of kindergarten, or earlier.

Clarification: Children benefit from phonemic awareness activities when they have a firm understanding of the functions of print (Au, 1998; Richgels, Poremba, & McGee, 1996; Stahl, 1997). It is appropriate to conduct activities to help children understand the nature and purposes of print and to engage in phonological activities such as rhyming and so on in the first half of kindergarten (Au, 1998; Ayres, 1998). Children need onset-rime activities before the teacher focuses on phonemic awareness (Moustafa, 1998, Weaver, 1998c). Phonemic awareness activities are more appropriate in the second half of

kindergarten and in Grade 1 (Ayles, 1998). Indeed, if children do not have the prerequisite knowledge, phonemic awareness training can interfere with their literacy development and cause what John Downing refers to as “cognitive confusion” (Downing, 1971–1972, p. 2) about the process of reading (see also Purcell-Gates, 1995; Stahl, 1997).

Claim #6: It is important to identify children with phonemic awareness problems as early as possible so as to prevent reading problems.

Clarification: As noted previously, some children begin to develop phonemic awareness during the mid-part of kindergarten. Most children (80–85%) acquire phonemic awareness by the middle of Grade 1 as a result of typical experiences at home and at school. Although most children who do not yet have phonemic awareness in kindergarten or early Grade 1 will not go on to have reading problems (Allington & Cunningham, 1996, 1999; Allington & Woodside-Jiron, 1999; Weaver, 1998c), ongoing monitoring of children’s progress in concepts shown in Figure 1 during kindergarten and first grade is essential so that appropriate interventions can be implemented that address a child’s difficulties (which may or may not include phonemic awareness).

Claim #7: Kindergarten children need phonemic awareness training in order to become good readers.

Clarification: Most kindergarten children will develop phonemic awareness in literacy-rich classrooms. Literacy-rich classrooms include a variety of activities to help children develop all aspects of metalinguistic awareness, concepts of print, and phonological awareness. The goal is not just a matter of learning phonemic awareness, but also being able to apply phonemic awareness in the context of real reading and writing (Ericson & Juliebo, 1998; IRA & NAEYC, 1998; Yopp & Yopp, 2000). Unfortunately, it is sometimes the case that research studies are not interpreted accurately by some advocates of direct training. For example, Scanlon and Vellutino’s (1997) research, which showed that the more effective classrooms in their study engaged the children in significantly greater amounts of phonemic awareness activity (9% of the time in comparison to 6%), did not prove that phonemic awareness training is the best way to achieve phonemic awareness. The authors noted that more effective classrooms engaged the children in more meaning-oriented writing activities (with invented spellings) where children had opportunities to develop knowledge of how words work, including phonemic awareness.

Claim #8: Without phonemic awareness training, most children will become reading failures.

Clarification: Most children do not need direct phonemic awareness training in order to learn to read. Almost all children, however, do benefit from phonemic awareness activities that are meaningful and that help them make connections with what they are learning to reading and writing (Au, 1998; Purcell-Gates, 1995). Teachers should make phonemic awareness activities playful and engaging for young children (Allington & Cunningham, 1996, 1999; Au, 1998; Ayres, 1998; Braunger & Lewis, 1997; IRA & NAEYC, 1998; Roberts, 1998; Yopp & Yopp, 2000). It is also important to be aware of the caveat in *Preventing Reading Difficulties in Young Children*: “The effects of training [in phonological awareness, particularly in association with instruction in letters and letter-sound relationships], although quite consistent, are only moderate in strength, and have so far not been shown to extend to comprehension” (Snow et al., 1998, p. 251).

Claim #9: Phonemic awareness teaching needs to be systematic and intensive.

Clarification: Phonemic awareness teaching does need to be systematic, but this does not mean a commercial or lockstep program. Knowledge of the typical sequence of literacy development and ongoing assessment of children’s literacy progress (using their writing and invented spellings, for example) is the best guide for planning phonemic awareness teaching. The degree of intensity will vary for individual children (Allington & Cunningham, 1996, 1999; Au, 1998; IRA & NAEYC, 1998; Yopp & Yopp, 2000). Ehri and Nunes (2002) point out that segmenting appears to be key: teaching segmenting is as effective as teaching both segmenting and blending, and teaching only blending is not effective (p. 121). Phonemic segmentation is central to spelling and can and should be addressed systematically within the context of children’s writing and spelling. Clarke (1988) found that children in classrooms where invented spelling was modeled and encouraged developed superior spelling and phonic analysis skills in comparison to children where it was not encouraged or allowed. She concluded that children using invented spelling “benefited from the practice of matching sound segments of words to letters as they wrote and from using their own sound sequence analysis” (p. 307).

“Phonemic awareness instruction does not have to be lengthy to be effective” (Ehri & Nunes, 2002, p. 133). Indeed, as Ehri and Nunes point out, the optimal amount of time for phonemic awareness instruction is between 5 and 18 hours; there are only moderate effects for less than 5 hours or more than 18

hours. Despite the fact that this information was also included in the National Reading Panel report (2000), many teachers are being required to teach phonemic awareness for significantly greater amounts of time, which, besides being ineffective, takes time away from other important aspects of literacy learning and teaching.

Claim #10: Direct instruction in phonemic awareness is the best approach, particularly for children at risk for failure.

Clarification: Research does not support this despite claims of publishers and some advocates of direct instruction (Allington & Woodside-Jiron, 1999; Coles, 2000; McIntyre & Freppon, 1994; Taylor, 1998). No approach to phonemic awareness has been shown superior to others (Ehri & Nunes, 2002). While direct instruction may assist children to do some tasks on phonemic awareness tests or tests of decoding, there has not been shown to be an improvement on reading comprehension when direct assessments are used (Braunger & Lewis, 1997; Troia, 1999; Weaver, 1998b). Children do benefit from explicit instruction, but this does not equate with direct methods such as rote learning or skill-and-drill (Ukrainetz, Cooney, Dyer, Kysar, & Harris, 2000). All children, and those at risk in particular, need literacy instruction that helps them develop language and literacy in the broadest sense, not just performance on skill tasks (Au, 1998; Allington & Woodside-Jiron, 1999; Braunger & Lewis, 1997; Purcell-Gates, 1995; Roberts, 1998; Ukrainetz et al., 2000; Weaver, 1998a). There is a strong body of evidence showing that indirect approaches to phonemic awareness, particularly writing with invented spelling, fosters children's development in phonemic awareness (Adams, 1990; Chapman, 1996; Clarke, 1988; Wilde, 1992).

Claim #11: Phonemic awareness training will solve future reading problems.

Clarification: Phonemic awareness training may help some students, but because the causes of reading difficulty are various and complex, phonemic awareness will not solve all literacy problems. Phonemic awareness training has not been proven as the magic solution despite the claims of its advocates (Allington, 2001; Braunger & Lewis, 1997; Roberts, 1998; Stuart & Masterson, 1992). Gee (2001) and Wells (1999) argue that we need to look beyond skills and abilities to look at the sociocognitive resources (e.g., world and discourse knowledge) and dispositions towards literacy (e.g., identity as members of a literate community) that children bring to school literacy. While direct instruction in phonemic awareness (and phonics) has been shown to provide initial gains for at-risk students, "it does not bring them up to par with

more [socio-economically] advantaged students, and they tend to eventually fall back, fueling a fourth-grade or later ‘slump’” (Gee, 2001, p. 14).

Claim #12: Schools need special tests to screen children for phonemic awareness.

Clarification: Direct assessments of children engaged in activities that involve phonemic awareness are most helpful (Au, 1998). There are a number of informal assessments that use standardized procedures (as opposed to standardized tests) that teachers may find useful (e.g., Ericson & Juliebo, 1998; Yopp, 1995b). Children’s invented spellings are an invaluable source of information about children’s phonemic awareness (Au, 1998; Braunger & Lewis, 1997; Chapman, 1996; Clarke, 1988).

Claim #13: Schools need special materials to teach phonemic awareness.

Clarification: There is no evidence to support this claim. Instead, teachers need to develop a repertoire of language and literacy activities that foster children’s overall literacy development, including phonemic awareness. Professional development and resource books with teaching strategies are more helpful than special phonemic awareness materials (Allington & Woodside-Jiron, 1999; Ericson & Juliebo, 1998; Yopp & Yopp, 2000). There is no research that supports the use of decodable texts such as *The bug is in the big bag*. Decodable texts are more difficult for children to read than texts with natural language patterns and a wider range of vocabulary. They do not engage children with ideas, which is what all print should do even at the youngest levels of schooling (Allington, 1997a; Allington & Woodside-Jiron, 1999; Pearson, 1998).

Claim #14: Whole language is the reason why so many children have trouble with reading because whole language teachers don’t teach phonemic awareness or other phonics skills.

Clarification: There is no research evidence—only rhetoric—to support the claim that whole language has caused literacy problems. Advocates of direct instruction often ignore a great deal of research relevant to early literacy and research in whole language classrooms. Studies of young children’s literacy learning in whole language classrooms show they develop phonological and phonemic awareness at least as well as those in traditional classrooms (Dahl, Scharer, Lawson, & Grogan, 1999; Klesius, Griffith, & Zielonka, 1991; McIntyre & Freppon, 1994). Many direct instruction proponents also claim that whole language teachers do not teach skills or do not use explicit instruc-

tion. Because it is beyond the scope of this article to address this issue, I refer readers to those who have given it an in-depth analysis and discussion: Coles (2000), Krashen (1998), McQuillan (1998), Routman (1998), and Taylor (1998). These authors document the flaws in arguments used by proponents of direct phonemic awareness and phonics instruction to cast whole language as the culprit in the literacy crisis, especially reading difficulties.

Claim #15: Research has proven that there is a best way to teach children to read and that is direct instruction in phonemic awareness and phonics.

Clarification: Phonemic awareness and phonics are part of a comprehensive literacy program. There is no evidence that any approach—traditional or whole language—is superior in developing phonemic awareness (Ehri & Nunes, 2002). There is no research that proves there is one best way to teach phonemic awareness, phonics, or reading (Allington, 1997a, 2001; IRA, 1997, 1999). I agree with Gee (2001) that Gerald Coles (2000) and Denny Taylor (1998) “do about as good a job as can be imagined debunking the so-called ‘scientific research’ that has fueled calls—in the media, public policy documents, and state legislation...for scripted direct instruction in phonics and related areas of literacy such as phonemic awareness” (p. 7).

WHAT CAN WE EXPECT YOUNG CHILDREN TO LEARN AND WHEN?

Training studies have demonstrated that phonemic awareness can be taught to children as young as age 5. Yet, whether such training is appropriate for younger children is highly suspect. Other scholars have found that children benefit most from such training only after they have learned some letter names, shapes, and sounds and can apply what they learn to real reading in meaningful contexts (Cunningham, 1990; Foorman, Novy, Francis, & Liberman, 1991). Even at this later age, however, many children acquire phonemic awareness skills without specific training but as a consequence of learning to read (Ehri, 1994; Wagner & Torgeson, 1987). (International Reading Association & National Association for the Education of Young Children, 1998, p. 202)

The timing of phonemic awareness instruction is important. Purcell-Gates (1995) and others have shown that for children who lack basic understanding of functions, forms, and characteristics of spoken and written language, phonemic awareness training is meaningless and what they learn through training is

not applied to literacy tasks. It is clear that children do not make much sense of phonemic awareness instruction until they have developed some other aspects of phonological awareness. A key development appears to be awareness of onsets and rimes, which acts as an intermediate step between segmenting words into syllables and segmenting into phonemes. An onset is the beginning part of a word before the vowel; the rime is what follows (see Figure 1 for examples). “Linguists call onsets and rimes the psychological units of a syllable” (Moustafa, 1998, p.139) because young children find it much easier to separate words into onsets and rimes than into phonemes. Thus there is strong support for the sequence of teaching children how to analyze spoken syllables into onsets and rimes and later to analyze onsets and rimes into phonemes (Goswami & Bryant, 1990; Moustafa, 1998; Treiman, 1985; Yopp & Yopp, 2000).

A review of research indicates the following sequence (based on Au, 1998; Ayres, 1998; Moustafa, 1998; Stahl, 1997), a developmental schema which suggests that rather than being the first step in teaching children to read and write, children’s development of phonemic awareness should be situated within the global context of language development and metalinguistic awareness and, within this, the context of phonological awareness. There is strong evidence that children’s development proceeds from larger, more global concepts to more specific ones (Au, 1998; Moustafa, 1998) as shown in Figure 1. Children’s literacy learning (including phonemic awareness) is thus supported through the following sequence:

- Immersion in experiences with oral and written language to develop a strong language base and a repertoire of rhymes and stories (selected for their rhyme, alliteration patterns, and text features) helps children develop vocabulary knowledge, understanding of functions of print, awareness of forms of print (e.g., letters), and awareness of the sound dimension of language as distinct from its meaning (phonological awareness).
- Rhyming and alliterative play foster phonological awareness globally; this addresses concepts that are precursors to phonemic awareness (Bryant, MacLean, Bradley, & Crossland, 1990).
- Segmenting into syllables fosters the phonological skill of hearing parts of words; syllables are units that children become aware of well before they can discern phonemes (Moustafa, 1998; Snow et al., 1998).
- Onsets and rimes are an important bridging step to phonemic awareness, a psychological unit that children acquire with relative ease. They help children make the important step towards phonemic awareness and also to make analogies in reading and writing (Goswami & Bryant, 1990; Treiman, 1985).
- Phonemic segmentation, blending, and letter-sound correspondences

address phonemic awareness specifically (Ehri & Nunes, 2002; Ericson & Juliebo, 1998; Yopp & Yopp, 2000). Segmenting is especially important (Ehri & Nunes, 2002).

It is important to provide an immersion in oral and written language and to introduce rhyming and alliterative play (often using children's names) in the first half of the kindergarten year. For most children, it is appropriate to introduce syllabic segmentation in the second half of kindergarten and then move to onsets and rimes (Ayres, 1998). The vast majority of children need support in phonemic segmentation, blending, and letter-sound correspondences in the latter part of kindergarten, continuing through Grade 1. A suggested teaching sequence many teachers find helpful is provided in Ericson and Juliebo (1998). Rigid adherence to a sequence, however, should be avoided. "Phonemic awareness development is not a lock-step process" (Yopp & Yopp, 2000, p. 142). One phase (e.g., matching) does not have to be mastered before providing experiences with another (e.g., blending).

WHAT ARE SOME CLASSROOM-BASED STRATEGIES FOR ASSESSING PHONEMIC AWARENESS?

A continuum of reading and writing development is useful for identifying challenging but achievable goals or benchmarks for children's literacy learning, remembering that individual variation is to be expected and supported. Using a developmental continuum enables teachers to assess individual children's progress against realistic goals and then adapt instruction to ensure that children continue to progress. (IRA & NAEYC, 1998, p. 207)

Although researchers use standardized tests to assess phonemic awareness, this is not necessary or even desirable for classroom assessment purposes. As Taylor (1998) notes, in phonemic awareness research, reading achievement is often taken to mean scores on standardized tests, particularly word reading, "pseudo-word reading" (p. 14), or decoding speed rather than comprehension measures. "Estimating where each child is developmentally and building on that base, a key feature of all good teaching, is particularly important for the kindergarten teacher" (IRA & NAEYC, 1998, p. 203). Instead of standardized tests, classroom teachers might consider various informal measures such as the Yopp-Singer Test of Phoneme Segmentation (Yopp, 1995b) or simple tests for rhyme detection, blending, segmenting, and orthographic knowledge such as those provided in Ericson and Juliebo (1998).

One of the best ways to assess phonemic awareness is through children's independent writing, particularly their invented spellings. Gentry (2000) proposes a very simple strategy he calls the Camel Test. He chose the word *camel* because it is part of most Grade 1 children's spoken vocabularies, but they are not likely to have seen it often in print. Several times a year, simply ask a child

to spell the word *camel*. If the child knows the correct spelling, substitute another word such as *eagle*, *bacon*, or *magic*. A similar procedure is to select a sentence written by a child near the beginning of the school year (for example, in a journal) and dictate this sentence back to the child several times during the school year to document the child's progress and emerging literacy knowledge.

Invented spellings reveal how children are developing in phonological and phonemic awareness, knowledge of phonics (e.g., letter-sound relationships), and spelling patterns. The case study in Chapman (1996) shows how children's writing produced in the context of the regular instructional program can be used to document a child's progress in phonemic awareness as well as many other aspects of metalinguistic awareness and literacy knowledge.

HOW CAN TEACHERS FOSTER DEVELOPMENT OF PHONEMIC AWARENESS?

Phonemic awareness is very likely to develop as a consequence of learning phonics, learning to read, and learning to write, especially when teachers encourage children to use invented spellings (Adams, 1990; Allington & Cunningham, 1996, 1999; Cunningham, 1990; Snow et al., 1998). There is some evidence that direct instruction may produce higher initial scores on standardized tests of phonemic awareness and word attack skills, particularly with children labeled at risk or reading disabled when they are tutored one-on-one or in very small groups. On the other hand, there is also evidence that children's phonemic awareness develops equally well in traditional and whole language classrooms (Griffith, Klesius, & Kromrey, 1992; Klesius et al., 1991). After reviewing a broad spectrum of literacy research, Weaver (1998c) concluded that students in classrooms where skills were taught in the context of reading and writing typically make substantially greater advances in a variety of literacy-related skills, strategies, behaviors, and attitudes. Thus, such teaching may be superior overall to skills-intensive and phonics-intensive teaching, at least for the majority of our children (p. 39).

Children need to develop all aspects of language and literacy awareness shown in Figure 1 (not just phonemic awareness) in order to become successful readers. Phonological awareness instruction "must involve the sound system, with countless opportunities to hear stories, to repeat phrases, to invent similar sounding patterns, and to play with sounds in a manner that focuses children's awareness of the language upon syllables and phonemes" (Ayres, 1998, p. 249). Some children may need more explicit instruction in phonemic awareness, but in general the development of phonemic awareness is supported by

- language play, especially games that emphasize rhyming and thinking about the structure of words, particularly at the onset-rime level rather than the individual phonemic level;

- opportunities to help children notice and use letters and words, for example, alphabet centers and word walls;
- invented spelling, children's independent attempts at figuring out words when they write;
- language experience, dictation of children's own language;
- reading for meaning, including modeling through reading aloud, of demonstrating and problem-solving using phonemic knowledge while reading aloud, and providing manageable texts for beginning readers to apply their phonemic knowledge successfully (but not decodable texts, such as *Nan can the man*, for which there is no research support);
- rich experiences with language, environmental print, patterned stories, and Big Books that provide opportunities for modeling, demonstrating, and explicitly teaching phonemic awareness. (Braunger & Lewis, 1997, pp. 42–43)

Early experiences with literacy instruction influence children's motivation and attitudes toward literacy, with far-reaching consequences. "Therefore, classroom activities for young children must be captivating enough to hold the imagination, engaging enough to sustain active involvement for a period of time, and stimulating enough to motivate further literacy exploration" (Ayles, 1998, p. 214). Activities that are meaningful to children help them make connections to real reading and writing. Isolated phonemic awareness exercises, on the other hand, may actually create cognitive confusion about the nature and purposes of literacy (Chapman, 1999; Downing, 1971–1972; Tunmer, Herriman, & Nesdale, 1988). Yopp and Yopp (2000) suggest three principles in phonemic awareness instruction:

1. It should be child appropriate, which they describe as "playful and engaging (p. 132)."
2. It should be deliberate and purposeful (intentional, not accidental).
3. It should be viewed as part of a much broader literacy program.

One of the best ways to teach phonemic awareness is through writing. In language experience activities or shared writing, teachers can model how to stretch out words to hear the phonemes and represent them with letters. This can be modeled through whole class language experience activities and shared writing. Teachers can also use this approach in interactive writing with small groups and individual children (Fountas & Pinnell, 1996). Children should also be encouraged to write with invented spelling. Far from ignoring skills, invented spelling is likely the best way for children to apply their phonological skills and sound-symbol knowledge. (See Chapman, 1996, for an in-depth discussion of teaching and evaluating phonemic awareness through writing.)

Invented spelling is very much misunderstood by the public and some edu-

cators. Yet, it is endorsed as an appropriate strategy for developing phonemic awareness, for example, by the U.S. National Research Council report, *Preventing Reading Difficulties in Young Children* (Snow et al., 1998), and the joint position paper on early literacy by the IRA and NAEYC (1998). As Allington and Cunningham (1996) so aptly state:

Children who are allowed and encouraged to ‘invent spell’ develop an early and strong sense of phonological awareness. For too long, we have failed to recognize the potential of early and regular writing activities in developing children’s awareness of print detail and their understanding of how speech and print are related. (p. 130)

There are numerous resources to help teachers address phonological and phonemic awareness, such as *The Phonological Awareness Handbook for Kindergarten and Primary Teachers* (Ericson & Juliebo, 1998), which lays out a suggested sequence with assessment and instructional strategies and sample letters to parents. There are also useful articles for practitioners in journals such as *The Reading Teacher* (e.g., Yopp, 1995a, 1995b; Yopp & Yopp, 2000). When teachers use strategies such as those suggested here, it is clear that the question “How much teaching of phonemic awareness is necessary?” cannot be answered by a specific number of minutes per day or week because phonemic awareness can be addressed in the context of meaningful language and literacy experiences whenever appropriate.

WHAT ARE SOME CLASSROOM-BASED INTERVENTIONS FOR CHILDREN WHO NEED ADDITIONAL SUPPORT IN DEVELOPING PHONEMIC AWARENESS?

To teach in developmentally appropriate ways, teachers must understand both the continuum of reading and writing development and children’s individual and cultural variations. Teachers must recognize when variation is within the typical range and when intervention is necessary, because early intervention is more effective and less costly than later remediation. (IRA & NAEYC, 1998, p. 211)

Children who are not developing phonemic awareness by the middle of first grade need to be identified and offered intensive programs of support. However, while some people advocate allocating large amounts of time to teaching phonemic awareness, there are no longitudinal studies that support the effectiveness of this practice in increasing the reading achievement of the children when they reach the intermediate grades (IRA, 1998). Yopp and Yopp (2000) “urge teachers to be watchful for children who are not catching on—after multiple exposures” (p. 142) to phonemic awareness. They suggest the fol-

lowing strategies to help children who need additional support:

- increase the use of concrete objects or other cues
- include familiar letters
- focus on sounds that can be elongated
- use words with fewer phonemes

Approximately 15–20% of children struggle with reading. Some have difficulty with phonemic awareness; some pay too little attention to word patterns or print features (Clay, 1991); and some have oral language difficulties or a combination of problems (Catts et al., 1999). Some children struggle with reading because their home literacy experiences are quite different from school literacy or because they are learning to read in English as a second language. Instruction for cultural, ethnic, and linguistic minority students that is primarily skills-based may limit children's learning by failing to develop their analytical skills or conceptual skills or by failing to provide purposes for learning (Au, 1993; Gee, 2001; Knapp & Shields, 1990; Weaver, 1998c).

Roberts (1998) suggests there are two groups of children who benefit from intervention to support their literacy development: those who lack the necessary foundational knowledge of language systems and those who have knowledge of and experience with written language but have not yet acquired phonemic awareness. Children in the second group may become phonemically aware without direct instruction in an environment that supports exploration of print through focused activities (Richgels et al., 1996). They may also respond well to phonemic awareness training (Blachman, 1996; Purcell-Gates & Dahl, 1991). However, Blachman (1996) cautions that once children have acquired basic phonemic awareness, there is no evidence indicating that continued phonemic training outside a meaningful literacy context is of any value. Simply addressing phonemic awareness, however, is not sufficient support for struggling readers who, like all children, also need

- access and opportunity to a wide variety of reading materials.
- motivation to engage in reading.
- time to really read in real texts.
- supportive instruction in the how-tos of reading.
- self-esteem and confidence, which play integral roles in successful reading development.
- high expectations for success in a supported environment (Braunger & Lewis, 1997, p. 28).

CONCLUSIONS

A reading program that emphasizes decoding to the virtual exclusion of other areas, such as comprehension, meaning, and positive attitudes towards reading,

runs the risk of creating new problems instead of (or as well as) solving old ones. It is very important that we maintain a variety of instructional options to accommodate these individual differences in children. No single program can yield a quick fix for all reading problems (Spear-Swerling, 2001).

An increasing interest in phonemic awareness has been fueled by advocates of direct instruction and by publishers of reading programs that emphasize decoding. Educators have been inundated with research (often used in promotional materials for commercial reading programs) that has led to confusing and conflicting information about phonemic awareness, its role in early literacy development, how to address it, and when to address it. Many kindergarten and primary teachers are unsure whether phonemic awareness training will help or hinder children's literacy development. In this article I have attempted to explain phonemic awareness and its relationship to literacy development and to clarify what research shows about learning and teaching phonemic awareness. I have suggested strategies for assessing phonemic awareness in developmentally appropriate ways. I have also described ways of fostering phonemic awareness that are language based and child appropriate, and I have reviewed intervention strategies for children who need additional support.

Rather than a commercial phonemic awareness training program (as a separate package or as part of a decoding-emphasis reading program), teachers really need a knowledge base in literacy development, a repertoire of developmentally appropriate and language-based strategies for assessment and instruction, and a few well-selected resources such as the ones recommended earlier in this article. Given the limited resources for education, and literacy in particular, it is disturbing that schools spend thousands of dollars on published programs (especially consumables such as workbooks) and standardized phonemic awareness and phonics tests when this money could be so much better spent on books for classroom and school libraries and for professional development. Phonemic awareness, though important, is only one aspect of literacy development. Although fostering phonemic awareness helps children off to a good start in school literacy, it does not contribute to gains in comprehension or solve the problem of the fourth-grade slump.

There are no quick fixes and there are no programs that will help all children. It is thoughtful and knowledgeable teachers that make the difference in supporting all children in becoming literate, which includes fostering their language and literacy knowledge and skills in the broadest sense as well as their phonological and phonemic awareness.

REFERENCES

- Adams, M. (1990). *Beginning to read: Thinking and learning about print: A summary*. Urbana, IL: Center for the Study of Reading/Reading Research and Education Center.

- Allington, R. L. (1997a). Overselling phonics. *Reading Today*, 15(1), 15–16.
- Allington, R. L. (1997b). Whose claims are valid? *The School Administrator*, 54(8), 32–34.
- Allington, R. L. (2001). *What really matters for struggling readers: Designing research-based reading programs*. New York: Longman.
- Allington, R. L., & Cunningham, P. (1996). *Schools that work: Where all children can read and write*. New York: HarperCollins.
- Allington, R. L., & Cunningham, P. (1999). *Classrooms that work: They can all read and write*. (2nd ed.). New York: HarperCollins
- Allington, R. L., & Woodside-Jiron, H. (1999). The politics of literacy teaching: How “research” shaped educational policy. *Educational Researcher*, 28(8), 4–23.
- Au, K. (1993). *Literacy instruction in multicultural settings*. Fort Worth, TX: Harcourt Brace.
- Au, K. (1998). Constructivist approaches, phonics, and the literacy learning of students of diverse backgrounds. In T. Shanahan & F. Rodríguez-Brown (Eds.), *47th Yearbook of the National Reading Conference* (pp. 1–21). Chicago, IL: National Reading Conference.
- Ayres, L. (1998). Phonological awareness training of kindergarten children: Three treatments and their effects. In C. Weaver (Ed.), *Reconsidering a balanced approach to reading* (pp. 209–258). Urbana, IL: National Council of Teachers of English.
- Blachman, B. (1996). Early intervention and phonological awareness: A cautionary tale. In B. Blachman (Ed.), *Foundations of reading acquisition and dyslexia: Implications for early intervention*. (pp. 409–430) Mahwah, NJ: Erlbaum.
- Bradley, L., & Bryant, P. (1983). Categorizing sounds and learning to read: A causal connection. *Nature*, 30, 419–421.
- Bradley, L., & Bryant, P. (1985). *Rhyme and reason in reading and spelling*. Ann Arbor, MI: University of Michigan Press.
- Braunger, J., & Lewis, J. (1997). *Building a knowledge base in reading*. Portland, OR: Northwest Regional Educational Laboratory; Urbana, IL: National Council of Teachers of English; and Newark, DE: International Reading Association.
- Bryant, P., MacLean, M., Bradley, L., & Crossland, J. (1990). Rhyme and alliteration. Phoneme detection, and learning to read. *Developmental Psychology*, 26(3), 429–438.
- Cassidy, J., & Cassidy, D. (2000–2001). What’s hot/what’s not. *Reading Today*, 18(3), 1 & 18.
- Cassidy, J., & Cassidy, D. (2002–2003). What’s hot/what’s not for 2003. *Reading Today*, 20(30), 1 & 18.

- Catts, H. (1991). Early identification of reading disabilities. *Topics in Language Disorders, 12*(1), 1–16.
- Catts, H. (1996). Defining dyslexia as a developmental language disorder: An expanded view. *Topics in Language Disorders, 16*(2), 14–29.
- Catts, H., Fey, M., Zhang, X., & Tomblin, J. B. (1999). Language basis of reading and reading disabilities: Evidence from a longitudinal investigation. *Scientific Studies of Reading, 3*(4), 331–362.
- Chaney, C. (1992). Language development, metalinguistic skills, and print awareness in 3-year-old children. *Applied Psychology, 13*(4), 261–282.
- Chapman, M. L. (1996). The development of phonemic awareness in young children: Some insights from a case study of a first-grade writer. *Young Children, 51*(2), 164–192.
- Chapman, M. L. (1999). Enhancing phonemic awareness in early literacy programs. *The Canadian Journal of Research in Early Childhood Education, 7*(4), 405–409.
- Clarke, L. (1988). Invented spelling versus traditional spelling in first graders' writings: Effects on learning to spell and read. *Research in the Teaching of English, 22*(3), 281–309.
- Clay, M. M. (1991). *Becoming literate: The construction of inner control*. Portsmouth, NH: Heinemann.
- Coles, G. (2000). *Misreading reading: The bad science that hurts children*. Portsmouth, NH: Heinemann.
- Cunningham, P. (1990). Explicit versus implicit instruction in phonemic awareness. *Journal of Experimental Child Psychology, 50*, 429–444.
- Dahl, K., Scharer, P., Lawson, L., & Grogan, P. (1999). Phonics instruction and student achievement in whole-language first-grade classrooms. *Reading Research Quarterly, 34*(3), 312–341.
- Downing, J. (1971–1972). Children's developing concepts of spoken and written language. *Journal of Reading Behavior, 4*(1), 1–19.
- Ericson, L., & Juliebo, M. (1998). *The phonological awareness handbook for kindergarten and primary teachers*. Newark, DE: International Reading Association.
- Ehri, L. (1994). Development of the ability to read words: Update. In R. Ruddell & H. Singer (Eds.), *Theoretical models and processes of reading* (pp. 323–358). Newark, DE: International Reading Association.
- Ehri, L., & Nunes, S. R. (2002). The role of phonemic awareness in learning to read. In A. Farstrup & S. J. Samuels (Eds.), *What research has to say about reading instruction* (3rd ed.) (pp. 110–139). Newark, DE: International Reading Association.
- Foorman, B., Novy, D., Francis, D., & Liberman, D. (1991). How letter-sound instruction mediates progress in first-grade reading and spelling. *Journal of Educational Psychology, 83*, 456–469.

- Fountas, I., & Pinnell, G. S. (1996). *Guided reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.
- Gee, J. (2001). Reading, language abilities, and semiotic resources: Beyond limited perspectives on reading. In J. Larson (Ed.), *Literacy as snake oil: Beyond the quick fix* (pp. 7–26). New York: Peter Lang.
- Gentry, J. R. (2000). A retrospective on invented spelling and a look forward. *The Reading Teacher*, 54(3), 318–332.
- Goswami, U., & Bryant, P. (1990). Onset and rime awareness and analogies in reading. *Reading Research Quarterly*, 27, 153–162.
- Griffith, P., Klesius, J., & Kromrey, J. (1992). The effect of phonemic awareness on the literacy development of first grade children in a traditional or a whole language classroom. *Journal of Research in Childhood Education*, 6(2), 85–92.
- International Reading Association. (1997). *The role of phonics in reading instruction: A position statement of the International Reading Association*. Newark, DE: International Reading Association.
- International Reading Association. (1998). *Phonemic awareness and the teaching of reading: A position statement of the International Reading Association*. Newark, DE: International Reading Association.
- International Reading Association. (1999). *Using multiple methods of beginning reading instruction: A position statement of the International Reading Association*. Newark, DE: International Reading Association.
- International Reading Association & National Association for the Education of Young Children. (1998). Learning to read and write: Developmentally appropriate practices for young children: A joint position statement of the International Reading Association (IRA) and the National Association for the Education of Young Children (NAEYC). *The Reading Teacher*, 52(2), 193–216.
- Klesius, J., Griffith, P., & Zielonka, P. (1991). A whole language and traditional instruction comparison: Overall effectiveness and development of the alphabetic principle. *Reading Research and Instruction*, 30(2), 47–61.
- Knapp, M., & Shields, P. (1990). Reconceiving academic instruction for the children of poverty. *Phi Delta Kappa*, 71(10), 753–758.
- Krashen, S. (1998). Every person a reader: An alternative to the California Task Force on Reading. In C. Weaver (Ed.), *Reconsidering a balanced approach to reading* (pp. 425–452). Urbana, IL: National Council of Teachers of English.
- McIntyre, E., & Freppon, P. (1994). A comparison of children's development of alphabetic knowledge in a skills-based and a whole-language classroom. *Research in the Teaching of English*, 28(4), 391–418.
- McQuillan, J. (1998). *The literacy crisis: False claims, real solutions*. Portsmouth, NH: Heinemann.

- Moustafa, M. (1998). Reconceptualizing phonics instruction. In C. Weaver (Ed.), *Reconsidering a balanced approach to reading* (pp. 135–158). Urbana, IL: National Council of Teachers of English.
- National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups*. (National Institute of Health Pub. No. 00-4754).
- Pearson, D. P. (1998). *Critical balances: Early instruction for lifelong reading*. readingonline (an electronic journal of the International Reading Association). Available through www.readingonline.org.
- Purcell-Gates, V. (1995). *Other people's words: The cycle of low literacy*. Cambridge, MA: Harvard University Press.
- Purcell-Gates, V., & Dahl, K. (1991). Low-SES children's success and failure at early literacy learning in a skills-based classroom. *Journal of Reading Behavior, 23*, 1–34.
- Richgels, D., Poremba, K., & McGee, L. (1996). Kindergartners talk about print: Phonemic awareness in meaningful contexts. *The Reading Teacher, 49*, 632–642.
- Roberts, B. (1998). "I No evrethENGe": What skills are essential in early literacy? In S. Neuman & Roskos, K. (Eds.), *Children achieving: Best practices in early literacy* (pp. 38–55). Newark, DE: International Reading Association.
- Routman, R. (1998, May). *Phonics and other necessary reading and writing strategies*. Paper presented at the 43rd Annual Convention of the International Reading Association, Orlando, FL.
- Scanlon, D., & Vellutino, F. (1997). A comparison of the instructional backgrounds and cognitive profiles of poor, average, and good readers who were initially identified as at risk for reading failure. *Scientific Studies of Reading, 1*, 191–216.
- Simner, M. (1998). The Canadian Psychological Association's stand on beginning reading instruction. *The Canadian Journal of Research in Early Childhood Education, 7*(2), 157–158.
- Snow, C., Burns, S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Research Council, National Academy Press.
- Spear-Swerling, L. (2001). Science, revolutionaries, and reading: A review of "Why our children can't read and what we can do about it: A scientific revolution in reading" by Dianne McGuinness, LD Online/WETA.
- Stahl, S. (1997). Instructional models in reading: An introduction. In S. Stahl & D. A. Hayes (Eds.), *Instructional models in reading* (pp. 1–29). Mahwah, NH: Erlbaum.
- Stuart, M., & Masterson, J. (1992). Patterns of reading and spelling in 10-year-

- old children related to prereading phonological abilities. *Journal of Experimental Child Psychology*, 54, 168–187.
- Taylor, D. (1998). *Beginning to read and the spin doctors of science: The political campaign to change America's mind about how children learn to read*. Urbana, IL: National Council of Teachers of English.
- Treiman, R. (1985). Onsets and rimes as units of spoken syllables: Evidence from children. *Journal of Experimental Child Psychology*, 39, 161–81.
- Troia, G. (1999). Phonological awareness intervention research: A critical review of the experimental methodology. *Reading Research Quarterly*, 34(1), 28–53.
- Tunmer, W., Herriman, M., & Nesdale, A. (1988). Metalinguistic abilities and beginning reading. *Reading Research Quarterly*, 23(1), 134–158.
- Ukrainetz, T., Cooney, M., Dyer, S., Kysar, A., & Harris, T. (2000). An investigation into teaching phonemic awareness through shared reading and writing. *Early Childhood Research Quarterly*, 15(3), 331–355.
- Wagner, R., & Torgeson, J. (1987). The nature of phonological processing and its causal role in the acquisition of reading skills. *Psychology Bulletin*, 101(2), 192–212.
- Weaver, C. (1998a). *Critical balances: Early instruction for lifelong reading*. Available through <http://www.reading.org>
- Weaver, C. (1998b). Experimental research: On phonemic awareness and on whole language. In C. Weaver (Ed.), *Reconsidering a balanced approach to reading* (pp. 321–371). Urbana, IL: National Council of Teachers of English.
- Weaver, C. (1998c). Toward a balanced approach to reading. In C. Weaver (Ed.), *Reconsidering a balanced approach to reading* (pp. 11–74). Urbana, IL: National Council of Teachers of English.
- Wells, G. (1986). *The meaning makers*. Portsmouth, NH: Heinemann.
- Wells, G. (1999). *Dialogic inquiry: Toward a sociocultural practice and theory of education*. Cambridge, UK: Cambridge University Press.
- Wilde, S. (1992). *You can read this. Spelling and punctuation for whole language classrooms*. Portsmouth, NH: Heinemann.
- Yopp, H. (1995a). Read-aloud books for developing phonemic awareness: An annotated bibliography. *The Reading Teacher*, 48, 538–542.
- Yopp, H. (1995b). A test for assessing phonemic awareness in young children. *The Reading Teacher*, 49(1), 20–29.
- Yopp, H., & Yopp, R. (2000). Supporting phonemic awareness development in the classroom. *The Reading Teacher*, 54(2), 130–143.