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## Successful phonological awareness instruction with preschool children: Lessons from the classroom

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Significant research and professional development efforts in the past several decades have focused on increasing scholarly and pedagogical knowledge about the nature and relevance of phonological awareness for children's early literacy development (e.g., National Reading Panel, 2000; Wagner et al., 1997). Despite these concerted efforts, many early childhood educators, particularly those providing child care and preschool education, are lacking in a sophisticated understanding of phonological awareness and of how to appropriately promote its development in young children (Dickinson & Brady, 2005; Moats & Foorman, 2003; Phillips, Menchetti, Lonigan, & Farver, 2007; Zill & Resnick, 2006). As a result, opportunities are missed for supporting the emergent literacy development of many children, particularly those from backgrounds that make them at risk for reading difficulties. The goal of this paper is to explain and clarify pedagogically relevant aspects of phonological awareness development and to provide research-supported guidance for its successful instruction in early childhood.

### What is Phonological Awareness?

Phonological Awareness is the ability to detect and manipulate the sound structure of words independent of their meaning. It is an increasingly sophisticated capability that is highly predictive of, and causally related to, children's later ability to read (Ehri et al., 2001; Lonigan, 2003; Snow, Burns, & Griffin, 1999; Storch & Whitehurst, 2002). Findings from several decades of research converge on the idea that most children who have difficulties learning to read have a core deficit in phonological awareness and related processing skills (Share & Stanovich, 1995; Wagner et al., 1997). In other words, regardless of what other types of language and cognitive difficulties a child might display, a problem in performing and applying phonological awareness capabilities is at the heart of most children's reading problems. One key goal of instruction and intervention in the preschool period is, therefore, to minimize the number of children who develop later reading problems by maximizing the number who enter kindergarten with sufficient phonological skills to benefit from formal reading instruction.

Phonological awareness and phonics are terms describing two related constructs that often are confused. Phonological awareness is distinct from phonics. Whereas phonological awareness is a measurable capability that each child can possess in smaller or greater amounts, phonics is a method of reading instruction that focuses on the associations of letter sounds with printed letters or groups of letters. Having strong phonological awareness skills likely aids children in benefiting from phonics instruction.

Another important distinction to be made is between phonological awareness and phonemic awareness. In this case, one is a subtype of the other. Phonological awareness represents a range of manipulation and detection skills across different sizes of sound pieces. Phonemic awareness, however, specifically refers to the ability to manipulate and detect the smallest sound pieces in words, the phonemes (e.g., /b/, /s/, and /th/ all are phonemes). For example, the ability to say that the word “hat” has three phonemes, or to know that the sounds /p/ /i/ /g/ together make up the word “pig,” are indications that a child possesses phonemic awareness.

## Why Phonological Awareness is Important for Later Reading

Children’s understanding that words are made up of smaller sounds like syllables and phonemes helps them to “break the code” of written language and acquire the alphabetic principle. The alphabetic principle refers to the fact that written words represent spoken words in a sound-by-sound correspondence. Sounds are signified by a single letter, or, in some cases, several letters indicating a single sound in a word (e.g., “sh” and “ch”). When teachers and parents tell a child who is trying to write or read to “sound it out,” this suggestion will only make sense if the child grasps the concept that the word can be broken down into these smaller components. Phonological awareness, letter name knowledge, and letter sound knowledge come together in young children to forge this conceptual understanding and to facilitate reading and writing development. This is accomplished when children use their understanding of the regular relationships between sounds and letters to sound out unknown words (Ehri, 2002; Foorman et al., 2003; Phillips & Torgesen, 2006; Share & Stanovich, 1995). A strong grasp of phonological awareness also may help children understand that the alphabetic principle applies despite the fact that in English, two or more letters can stand for the same sound in different words (e.g., “c” in cat and “k” in koala both represent the /k/ sound and “ee” “ea” and “ei” spelling patterns all can signify the long /e/ vowel sound, as in *need*, *team*, and *receive*).

Research by Lonigan and colleagues (e.g., Lonigan, 2004a; Lonigan, Burgess, Anthony, & Barker, 1998) and others (e.g., Bowey, 1995; Chaney, 1994; Hecht, Burgess, Torgesen, Wagner, & Rashotte, 2000; Raz & Bryant, 1990; Webb, Schwanenflugel, & Kim, 2004) has shown consistently that preschool and early school age children from lower-income backgrounds and those whose parents have less education demonstrate lower phonological awareness skills than more affluent peers. This discrepancy holds for the other key emergent literacy skills of print knowledge and oral language as well. Data indicate that there is a persistent gap in skill level and in rate of new skill acquisition (Lonigan, 2003, 2007a; 2007b). Current theory suggests that these social class differences in early skill levels likely are related to early language environments and vocabulary development (e.g., Hart & Risley, 1995; Hoff, 2003; Landry, Smith, Millar-Loncar, & Swank, 1997; Lonigan, 2003, 2007a) as well as to the general home literacy environment (e.g., Evans, Shaw, & Bell, 2000; Lonigan, Dyer, & Anthony, 1996; Payne, Whitehurst, & Angell, 1994; Sénéchal & LeFevre, 2002; Phillips & Lonigan, 2005; 2007). Such findings suggest that instruction in phonological awareness and other emergent literacy skills is especially critical for preschool children from these at-risk backgrounds, if early education is to meet its aspirational goal of

closing the gap in educational achievement for children who grow up in conditions of poverty.

Phonological awareness, as with other decoding skills, is not an intuitive or naturally developing ability, as language skills may be for some children, but rather may require deliberate teaching and practice opportunities. The greater challenge in learning is, in part, because phonemes do not naturally exist in spoken language. When both children and adults speak, they do not distinctly pronounce each isolated phoneme. Instead, human speech includes what is called “co-articulation” of the speech sounds, with each phoneme affected by the ones preceding it, subsequent to it, or both. For example, not all words that begin with the letter b include the same version of the /b/ phoneme. When we say words such as “bit,” “bright,” or “body,” the phoneme is pronounced differently, depending on what vowel or consonant comes after (test this yourself by noticing your own mouth movements while saying the /b/ sound in these words). The fact that phonemes do not exist as distinct units of sound when people speak, and that children and adults may be more disposed to pay attention to the meaning of words than to the specific sounds of words, represents a potential barrier to developing phonological awareness at the phoneme and larger unit levels. This suggests that a key early focus of phonological awareness instruction for many children is to prompt them to learn to attend to the sound structure of words, in addition to what the words mean.

## The Developmental Continuum of Phonological Awareness

A growing amount of research with young children demonstrates that the normative developmental progression of phonological awareness skill is from larger to successively smaller units of sound (Adams, 1990; Anthony, Lonigan, Driscoll, Phillips, & Burgess, 2003; Anthony et al., 2002; Blachman, 1994; Lane, Pullen, Eisele, & Jordan, 2002). As depicted in Figure 1 the continuum of skill development moves from the capacity to manipulate words, such as words in phrases and words within compounds (rain + bow = rainbow), to the syllable level (sister - /sis/ = /ter/), to onset-rime (/b/ + ird = bird), and finally to phonemes (/m/+o/+p/ = mop). In linguistic terminology, the *onset* of a syllable (or word, in the case of single syllable words) is the initial consonant, consonant cluster (e.g., “cl”), or digraph (e.g., “sh”) in a word, and the *rime* of a syllable (or word, in the case of a single syllable word) is the vowel and the remainder of the phonemes after the vowel. Note that in Figure 1 the squares representing these levels of linguistic complexity overlap. This overlap represents the fact that the growth of phonological awareness is best represented as a continuum. It is not a sequential stage model in which children must demonstrate full mastery of a skill at one level before beginning to develop skill in the next level; rather, children’s skills in multiple levels of the continuum may develop at the same time (Anthony et al., 2003).

The other way in which children’s phonological awareness skill develops is across different types of tasks with varied difficulty. Tasks that assess or teach phonological awareness can include identity tasks (e.g., rhyme oddity, first sound matching), synthesis tasks (e.g., syllable or phoneme blending) or analysis tasks (e.g., word or syllable segmenting or deleting, phoneme counting tasks). Blending tasks typically are easier to manage than are

analysis tasks and tasks requiring production are more challenging than recognition tasks. Also, as will be discussed below, tasks supported by visual props or that use multiple-choice items often are simpler for children than those that require more memory or verbal production.

## What the Continuum Suggests for Instructional Practice

One pragmatic implication of this continuum of phonological awareness along levels of linguistic complexity and cognitive operation is that at any given point in time, a classroom of preschool children will include children at numerous points along the continuum. Therefore, a teacher's initial task is to use formal or informal assessment to identify where each child is showing mastery. Whereas some children may enter the preschool classroom with relatively advanced skills, many others, likely those with one or more familial risk factors or language delay, may demonstrate very underdeveloped skills and perform quite poorly on initial assessments or informal probes. However, there is no evidence that could be interpreted to mean that teachers need to postpone phonological awareness instruction until children reach kindergarten age or until they show mastery in non-linguistic sound discrimination and matching (e.g., musical tones). In fact, regardless of their initial level of phonological awareness, children clearly can make substantial and significant progress in phonological awareness without attending to, or specific knowledge of, their auditory discrimination skills (e.g., Byrne & Fielding-Barnsley, 1991; Lundberg, Frost, & Petersen, 1988; Lonigan, Phillips, & Menchetti, 2006; Lonigan, Farver, Menchetti, Phillips, & Eppe-Chamberlain, 2005; Lonigan, Schatschneider, Westberg, et al., in press-a).

It is likely that preschool teachers will be confronted with substantial diversity of knowledge in each new group of children. At present, with respect to phonological awareness instruction, there is no empirical evidence either in favor of or against the idea of matching instruction to the child's current skill level (i.e., as opposed to starting all children at the same point, or only teaching one level of the continuum). Early childhood pedagogical research and theory (e.g., Bedrova & Leong, 2006; Berk & Winsler, 1994; Rogoff, 1990) does, however, support the concept of teaching within the near range of children's abilities. Thus, we recommend that teachers become proficient in teaching at multiple levels of the phonological awareness continuum and in understanding what tasks are more or less challenging than others. Likewise, the overwhelming majority of instructional approaches with empirical support include small group or individualized instruction (Lonigan et al., 2006; Rashotte, MacPhee, & Torgesen, 2001; What Works Clearinghouse, 2007a). Therefore, we suggest that findings from an initial assessment of children should lead to grouping children into homogeneous subgroups, and then instruction should focus on the appropriate level of the continuum for each group. As these children may progress along the continuum at different rates, these groupings should be flexible and children regrouped as indicated by ongoing assessment.

Instructional suggestions provided throughout this paper are derived not only from developmental and experimental findings but also from principles of universal design. That is, these pedagogical methods are intended to be appropriate for children with a wide range of cognitive and sensory abilities, including those with developmental disabilities and

delays. The instructional principles described are fully consistent with current best practices for children with developmental disabilities and delays (i.e., small group instruction, explicit instruction, individualized differential instruction, scaffolding techniques; see also Adams, Foorman, Lundberg, & Beeler, 1998). Further, as detailed below, many of the experimental studies in which these methods have been evaluated included significant representation of children with a range of developmental disabilities, primarily children with speech and language disabilities and delays (e.g., Lonigan et al., 2005, 2006).

Despite the evidentiary support for the efficacy and benefits of phonological awareness instruction in this age group, recent observational research indicates a striking absence of such instruction occurring in preschool classrooms. In a recent intervention study, nine classrooms assigned to a “business as usual” condition were repeatedly observed during a 2-year period. The observers encountered phonological awareness activities, regardless of the group size or whether they were explicit or implicit, in only 12–15% of the observations (Phillips et al., 2007). Similarly, in a recent multi-state study of state-funded pre-k, researchers found a relatively low average rating for the instructional climate of classrooms, indicating that intentional instruction and use of small group instruction were rare, irrespective of the targeted skills (NCEDL, 2005). In particular, the time spent on letter or sound activities averaged 3% and time spent in small groups averaged just 6% of the total daily time allocation.

Perhaps one reason for the dearth of phonological awareness instruction in preschool classrooms is the concern expressed by some members of the early childhood education community that preschool is too early to begin phonological awareness or other letter and sound focused instruction, or that because of the children’s age it would not be effective or appropriate (Alliance for Childhood, 2006; Bredekamp & Copple, 1997; Elkind, 1987; Olfman, 2003). One of the most notable conclusions of the forthcoming National Early Literacy Panel (NELP) report, however, is that phonological awareness interventions had an equivalent, and substantial, effect on children regardless of whether they were of kindergarten or preschool age (Lonigan et al., in press-a). Further, results showed that children’s skills improved significantly regardless of the level of their print-related skills at the outset of intervention. From a broader perspective, the recent research studies conducted by Lonigan and colleagues, and by other early childhood educational researchers, clearly refute the notion that early educators have to choose dichotomously between imaginative, play-based, and developmentally-focused activities and activities that enhance early literacy skills such as phonological awareness. Rather, these and similar studies show that children can benefit from well-designed early literacy instruction in a developmentally appropriate preschool context that also involves daily opportunities for independent exploration, dramatic play, and other important activities of early childhood (Landry, Swank, Smith, Assel, & Gunnewig, 2006; Lonigan et al., 2005, 2006; Phillips & Lonigan, 2005). In fact, empirically supported instructional methods rely on very consistent, but brief and interactive small group or individual sessions lasting no longer than 10-15 minutes a day (Ehri et al., 2001; Lonigan et al., in press-a; What Works Clearinghouse, 2007a). Such findings support the idea that effective phonological awareness instruction can be integrated into a curriculum that simultaneously supports the development of children’s language, social, motor, and general knowledge and interests.

## The Issue of Rhyme

Long before researchers and educators became aware of the powerful link between phonological awareness and reading, parents and teachers of young children have been singing songs, reading books, and playing games associated with rhyming. Many have experienced a child's enjoyment of the cadence and humor in these rhyming texts. The assumption that rhyming falls under the umbrella of phonological awareness abilities has led many educators to either assume that the rhyming activities already present within their curriculum were sufficient for building skills or to expect that rhyming is among the easiest of the phonological awareness capabilities and that it should be a central focus of early literacy activities (Snow et al., 1999; Culatta, Kovarsky, Theodore, Franklin, & Timler, 2003; Majsterek, Shorr, & Erion, 2000).

Although rhyming is indeed part of the phonological awareness construct (e.g., Anthony & Lonigan, 2004; Anthony et al., 2002; Lonigan, Burgess, & Anthony, 2000), evidence shows that rhyming is not necessarily the most evidence-based of the pedagogical choices or the simplest phonological awareness skill to master (Lonigan, 2007b; Woods, 1998). To understand why this is the case, consider that rhyming activities might involve identifying which two of three words rhyme in a matching task or identifying which word in a trio does not rhyme with the others (e.g., 'rhyme oddity'). Another popular task and instructional game, potentially the most challenging of all, is rhyme production (i.e., responding correctly to a query of, "Say a word that rhymes with 'boat'"). All of these rhyme tasks rely on the basic fact that words *rhyme* because they share a common *rime*, or ending sound, and thus, these tasks represent assessment or instruction of skills near the middle of the developmental continuum of phonological awareness. Indeed, evidence from some developmental and intervention samples indicates that contrary to popular belief, competence at these types of rhyme matching, oddity, and production tasks arrives on average at an older age than does the capability to manipulate segments of compound words, syllables, and perhaps even some phoneme-level skills (Dorr, 1999; Lonigan, 2007b).

One way of explaining why rhyme manipulations are actually more difficult than they may appear is to do a kind of task analysis and break down the component abilities within the successful performance of a rhyme oddity problem, for example. Suppose a child is confronted with three pictures, one of a cat, a bat, and a pig. To correctly identify pig as the odd-one-out, the child must first know what it means to rhyme--that words share the same ending sounds. The child must then attend to the sound structure in all three words, and mentally segment the /at/ and /ig/ sounds from the onsets of /c/, /b/, and /p/. She or he then has to compare these ending vowel-consonant *rime* sounds across the three words. Finally, the child needs to conclude that cat and bat share a rime whereas pig has a different rime. Imagine how much more complex the task might be for a four- or five-year-old child if instead of pig, he or she was faced with the same task using the words cup, cat, and bat. Now, the word cup shares an onset with one of the other two words--a possible challenge to his or her focus on words sharing ending, rather than beginning sounds (Carroll & Snowling, 2001).

Preschool intervention studies also suggest that when compared head-to-head with phonological awareness instruction focused on alternative tasks and activities, children exposed to rhyming interventions made less progress. In fact, none of the studies that form the empirical basis in support of modular phonological awareness instruction have used rhyming as their level of instruction (What Works Clearinghouse, 2007a; 2007b; Yeh, 2003). Likewise, the few comprehensive preschool curricula that have empirical support for their impact on phonological awareness include rhyming only as one of several levels of phonological awareness instruction (What Works Clearinghouse, 2007c, 2007d, 2007e).

Of course, none of this implies that children will not enjoy exposure to nursery rhymes, Dr. Seuss books and other rhyming classic and more modern texts and songs. It is also possible that such exposure may aid children in learning to pay attention to the sound structure in words as well as the semantic structure. However, the instructional implications from the developmental and efficacy research are several. First, it is likely that teachers who mistakenly consider rhyme manipulations or productions to be entry-level skills that children can master readily may find themselves frustrated and bewildered by the confusion and poor performance demonstrated by their students. Second, the studies suggest that if teachers are to include a focus on rhyming in their instructional plans, then the expectation likely needs to be that children will benefit from repeated exposure, explicit teaching of what it means to rhyme, and a high degree of scaffolding (i.e., supportive verbal prompts and modeling; Roth, Troia, Worthington, & Dow, 2002). Moreover, given the metalinguistic skills involved, it may be best to teach rhyming in the context of explicit onset - rime instruction, rather than as a stand-alone activity. Third, and perhaps most importantly, the findings suggest that teachers looking for an efficient and effective linguistic focus may be better served by teaching children phonological awareness via word, syllable, onset-rime, and phoneme level manipulations, rather than exclusively or predominantly through more traditional rhyming activities.

## **Pedagogical Strategies for Young Children**

The instructional strategies presented below are derived from the processes and outcomes of three curriculum and intervention studies with preschool children that produced statistically significant and educationally meaningful effects on the children's phonological awareness development (Lonigan, 2004b; Lonigan et al., 2005, 2006). Children served within these studies included typical children, children with mild, moderate, and severe developmental disabilities, and English Language Learners. These projects were conducted in collaboration both with certified teachers serving Title I pre-kindergarten children and with non-certified teachers in Head Start Centers and other child care settings.

The goal here is to summarize the core pedagogical content knowledge accrued during the development and implementation of these studies and several other ongoing projects with the same age group and younger children. These suggestions also are consistent with the methodologies of the effective studies surveyed by the NELP and the What Works Clearinghouse in their respective comprehensive reviews of early code-focused instruction (Lonigan et al., in press-a; What Works Clearinghouse, 2007a; 2007b). Although not promoting a particular curriculum or specific instructional activities, the information

reviewed below may assist early childhood teachers in scrutinizing, selecting, or developing the phonological awareness component of classroom curricula. Throughout each of the following sections are examples of accommodations and modifications that may be useful when working with children with developmental disabilities and delays, and ways in which speech language pathologists and other early intervention specialists can provide integrated small group and individualized instruction that supports both individual children's Individualized Education Plan goals and the needs of the inclusive classrooms.

### **Systematic and explicit instruction**

A teacher whose goals include providing every child with the opportunity to make substantial advances in his or her phonological awareness capabilities is unlikely to find that incidental or implicit instruction alone will suffice. Incidental instruction relies on seizing the moment to bring up a phonological awareness topic in interactions with children, typically prompted by a text or song with rhymes or by something a child says that prompts attention to the sound structure in words, rather than intentionally introducing these topics in planned instructional sequences. Likewise, implicit instruction in phonological awareness, albeit more planful, typically focuses exclusively on exposure to different sound patterns and on teachers commenting about shared sounds between words. To varying degrees, both incidental and implicit instruction carry the presumption that all children bring to the instructional situation a level of conceptual understanding by which they can benefit from this type of instruction. For phonological awareness instruction this conceptual understanding (i.e., the knowledge and skills necessary to help children think about and understand the learning process and its goals) would include aspects such as the understanding that they should attend to the sound structure of words, an understanding of what it means to blend sounds, and the knowledge of what it means for words to rhyme.

It is clear from developmental and observational research that a presumption of children's preexisting conceptual understanding is inaccurate in many classroom contexts (Neuman & Roskos, 1993; Zill & Resnick, 2006). Therefore, many children require a more explicit and systematic type of instruction that follows a carefully planned scope and sequence and that intentionally includes a focus on building conceptual understandings in the process of helping children to master specific tasks. There are several key elements to providing systematic and explicit instruction. These include instructional sequencing, modeling, and explaining the task, scaffolding, and providing corrective feedback. Each of these is described below in the context of phonological awareness instruction for the preschool age group.

*Instructional sequencing* requires the teacher to plan ahead of time what is going to be taught, (e.g. phonological awareness skills), the order in which it is going to be taught (e.g., compound words – syllables – onset and rime -- phoneme), the pacing of instruction, and how it is going to be taught (e.g., whole group, small group, or one-on-one). A lesson plan that includes these details serves as the teacher's "instructional road map" and should reflect the coherent and intentional design as well as the planned presentation of the instruction. Classroom management strategies that encourage children to learn routines and schedules also help enable teachers to maximize the instructional time during each day and to insure



that children receive the level of instructional intensity they need to learn these novel concepts and skills. Moreover, well-managed transitions and small groups help support the needs of children with attention and behavioral difficulties, a significant challenge that in many children goes hand in hand with developmental disabilities and difficulties in learning to read (Al Otaiba & Fuchs, 2002; Nelson, Benner, & Gonzales, 2003; Torgesen et al., 1999).

During instructional activities, pacing can contribute to student attentiveness if it moves quickly but not so fast as to cause unnecessary errors. A fast pace helps students stay engaged, provides more practice time, and helps students maintain on-task behavior--thus reducing behavior management problems (Zanolli, Daggett, & Pestine, 1995). One way to maintain an optimal pace is to limit the number of different lesson formats so that children can focus their attention on the conceptual tasks at hand, rather than on learning a new procedural or game sequence. Likewise, limiting task variability within the instructional session makes learning the task easier. Attempting to teach too many skills in one session can be overwhelming for the novice learner. Limiting the focus of each phonological session to a single skill is effective and efficient as it reduces the complexity of introducing numerous skills that would increase the memory demands for the child. Pacing considerations may be particularly important when working with children with cognitive and language impairments, as they may benefit from a slightly slower pace and more "wait time" to allow them to process the verbal and visual prompts and formulate a response.

Planned redundancy or systematic review helps preschool age children gain mastery over newly acquired skills. This means that newly introduced skills, concepts, and vocabulary need to be repeated and revisited as a natural occurrence throughout not just the day, but as a planned on-going cycle throughout the year. Young children need to use newly acquired skills in multiple settings to help them gain proficiency. Setting up the classroom environment and teacher-child interactions to provide children with multiple opportunities to explore and utilize newly acquired skills and concepts is a vital means of supporting and encouraging phonological awareness development. As an analogy, a print rich environment provides many opportunities for children to see and actively engage in print-related activities (e.g., having a classroom library, a listening center, a writing center, displaying examples of children's writing around the room, taking dictation on children's art work, and demonstrating writing during group time, to name a few). In the same way, an environment in which teachers include review of phonological awareness instruction as brief transitional activities and as whole group games, where the picture cards and props from the instructional groups are made available to children for independent play, and where teachers seize opportune moments for incidental reinforcement can support children's mastery of these new skills and can contribute to the rich language and conceptual milieu of the classroom. An observer in a classroom abundant in phonological awareness would see planned, systematic, explicit instruction in one of the phonological awareness modules taking place with small groups of children. The instructional format would be game-like in manner and utilize visual props and hand signals. The teacher would rotate small groups until all the children participated. Additionally the teacher would make connections throughout the day to reinforce the phonological awareness lesson. For example, if the lesson had been on compound words the teacher might have compound word cards in the

writing center, books with multiple examples of compound words in the reading center, an art activity focusing on creating pictures of the two independent words of a compound word, transition signals utilizing compound words and so on.

Some children with disabilities or classroom behavioral difficulties may benefit from additional structured practice with the teacher or an early intervention specialist, particularly with newly introduced concepts and with novel additions to the classroom environment. For example, if the teacher adds a set of rhyming word puzzles to the writing center for independent exploration, some children may need more explicit guidance on how to interact meaningfully with the new materials.

A hallmark of explicit instruction is that it includes specific teacher statements and behaviors that make it very clear to the students both what they are being asked to do and what it looks like when accomplished. Instructional strategies typically utilized include *defining* the concept (e.g., “compound words are words made up of two separate words combined together to make a new, different word”), *modeling* and *explaining* (“when I put ‘sea’ and ‘shell’ together, they become ‘seashell’”), providing guided *practice* with feedback, and following with supported practice then independent practice. These different types of practice relate to how much support, or *scaffolding*, a child needs to be able to successfully produce the targeted behavior (e.g., saying the compound word or identifying the piece left when a sound piece is removed). The scaffolding is directed at providing just the right amount of support for the child to arrive at the correct answer or perform a skill independently. Support may include verbal cues or reminders after an error occurs. The error may indicate a skill or conceptual deficit; in which case, the skill may need to be further divided into smaller steps or task-analyzed to help the child gain mastery. Other types of support may include repeated modeling, providing additional examples, and guided practice. For example, during an activity on compound words, a child may have difficulty blending the two separate words into one. The teacher may say, “What word is this, ‘cow’ (2 second pause) ‘boy’?” If the child does not answer, the teacher can repeat with a shorter pause between the two words, “What word, ‘cow’ (1 second pause) ‘boy’.” Additionally, the teacher could use pictures during this activity. She could hold up a picture of a cow and a boy. When the words are said separately the two pictures are held apart, and when the words are said together the teacher moves the pictures together and asks, “What word?”

*Feedback* to children is most effective when it is specific, positive, frequent, and immediate. Effective feedback is specific as opposed to generic (e.g., “You’re right, the first sound in deer and dog is /d/”--not “Good job.”). Frequent positive reinforcement is especially important during the skill acquisition phase when the child is learning the new skill. Positive feedback should be provided immediately following the desired behavior or response; this lets the child know what he or she is doing right. Likewise, when providing corrective feedback it is important to distinguish whether the error is due to a lack of knowledge or a lack of attentiveness. A lack of knowledge indicates a skill limitation requiring the appropriate instructional support and additional scaffolding. A lack of attention on the part of the student requires the teacher to focus on the child’s motivation and increase his or her eagerness to learn or to focus on minimizing distractions in the environment. Within these instructional contexts, the provision of corrective feedback is not “high stakes” for the

children, and all children can feel successful, motivated, and supported regardless of their actual performance. Positive feedback for even partially correct responses or good efforts may be especially important for maintaining the motivation and attention of children, such as those who may have cognitive delays, who may initially struggle with some of these activities.

### **Specific pedagogical features important for phonological awareness instruction**

One of the most salient features of phonological awareness instruction is the importance of clear and consistent articulation. Many letters--especially vowels--have more than one sound. The most common sound of a letter is the one produced in a short, one-syllable word, such as *sun* or *mad*. For vowels, the most common sound is the short vowel sound (the a in bat, e in set, i in fit, o in hot, and u in nut). When producing letter sounds, it is important to understand the difference between stop sounds and continuous sounds (i.e., most fricatives, nasals, and approximants). A stop sound can only be "said" for an instant, whereas continuous sounds can be said for several seconds. Holding a stop sound for longer than an instant distorts its sound. For example, the letter b makes the /b/ sound, not /buh/. It is critical not to add the 'uh' at the end of any letter sound, as it will cause confusion for the child. When making a continuous sound the voice should be held in a monotone fashion without raising or lowering the voice in a "sing-song" manner. For example the letter m makes the /mmm/ sound. Again, this is to avoid confusion (imagine the misunderstandings and opportunities for errors children might experience when a teacher sounds out the word 'stop' in this manner /ssSs/ /tuh/ /OOo/ /puh/ and then asking the child, "What word?").

As children will repeat the teacher's model, it is imperative that the modeled letter sound production be articulate and clear. Teachers also need to model correctly the space between sounds when conducting blending/segmenting activities. In multisyllabic words, teachers need to be very careful not to repeat letter consonant sounds in words that contain repeated consonants such as butter (bu/ter; not but/ter). In Standard American English, the letters that make stop sounds are: b, c, d, g, j, k, p, q, t, and x. The letter h and the 'ch' sound, although not stop sounds, also can be challenging to articulate without adding extra sounds. The letters that make continuous sounds are: a, e, f, i, l, m, n, o, r, s, u, v, w, y, and z.

### **Scaffolding children's learning**

Nonverbal cues can be used to support children's task engagement and understanding, to maintain good pacing, and to minimize behavioral problems during instruction. Many classrooms are filled with a variety of nonverbal cues, signals that alert the children to a transition, a request, or some other requirement without the teacher having to speak. For example, many teachers blink the lights on and off (or ring a bell) to cue the children that it is time to stop what they are doing, clean up, and get ready for the next activity. The visual and auditory cues can be seen or heard by all the children simultaneously. Research on the use of signals (Cowart, Carnine, & Becker, 1976) indicates that the use of signals by a teacher resulted in the students attending more and responding at higher levels.

Nonverbal cues can be used during small group time to signal a child to respond after a teacher directive. For example if a child starts to speak while the teacher is explaining

directions, the teacher can hold up her hand like a stop sign to signal the child to wait until talking. This is less obtrusive and keeps the group focused on the lesson. The teacher may also want to teach the students that different hand signals mean different things depending on the nature of the task. For example, during a lesson on compound words, when the teacher holds the picture cards apart the children say the two words with a pause between them (segmenting); when the pictures are placed side-by-side the students say the words together (blending). Another positive implication of the use of signals is that it allows the student the opportunity to initiate his or her own response (Carnine, Silbert, & Kameenui, 1997).

One successfully implemented, strategic use of nonverbal cues is to introduce hand and body gestures to accompany the auditory phonological awareness activities. The most ubiquitous and familiar version of this is clapping while counting, such as clapping the number of words in a phrase or the number of syllables in the children's names. Going beyond that, teachers in experimental intervention studies have found that physical movements that represent the act of putting sounds together or taking them apart can be a useful augmentation during word-, syllable-, and phoneme-level blending or elision tasks. Teachers can model gestures such as holding hands wide apart and then bringing them together to represent the concept and action of blending two syllables or compound word elements. Children may also be taught to use such gestures themselves when they are engaged in these blending and segmenting activities. Children with limited oral language or mobility can be given adaptive response modalities such as pointing, nodding, or using images within their communication boards.

Given that phonological awareness activities require a child to hold a representation of multiple sound pieces in memory while performing a manipulation (i.e., blending or separating sounds), the use of picture or object props can help ease the memory load and enable better task performance. A child who can be looking at the image of a pony, for example, is likely to bring more cognitive resources to bear on the task of producing the segment 'po' when asked "what you get when you say pony without 'ne'" than will a child who must also remember the original word. Perhaps more importantly, the use of pictured items allow for children to demonstrate gradual skill mastery via less taxing multiple-choice, matching, and similar activities in which they can point to a picture to indicate their response. These tasks are lower on the continuum of task difficulty than are tasks in which a child is asked to produce the target word or component sound section of a word. Pictures of the words may be especially useful when manipulating compound words, such that you can display both the component word pictures and the image of the compound word, and when pictures are cut into the same number of puzzle pieces as component parts (e.g., cutting a picture of a banana into three pieces). Using pictures and other visual props also allows children with limited expressive language abilities--because of delay, developmental disability, or English Language Learner status--to actively participate in the interactive learning in the preschool context. It would be particularly useful to build pictures from these activities into the communication boards of children with limited oral language. Likewise, adding knobs, hooks, or other easily grasped devices onto picture cards, or using enlarged copies can allow students with limited fine motor skills or impaired vision more independence. Of course, for a child who is demonstrating strong performance with visual

support, removing the pictures can appropriately increase the challenge and allow for generalization to words that are not as easily pictured (e.g., adjectives, verbs, etc.).

The use of boxes or markers to represent each word, syllable, or phoneme can help make oral activities more concrete for young children (Castiglioni-Spalten, & Ehri, 2003). A number of evidence-based phonemic awareness curricula make use of these visual aids, and some evidence suggests that the use of blank markers can be an intermediary step between purely auditory and writing-linked activities, in which the next step would be to use individual letter tiles to represent each phoneme.

Many of the activities teachers use to teach phonological awareness may include multiple-choice type tasks where the child is asked to choose the option that rhymes with or starts or ends with the same sound as a presented word. This type of task also can work well with some blending or deletion tasks where the target choice is the correct remainder when a sound is removed (i.e., a picture of a key, when the teacher says “point to monkey without the /mon/ sound”). In developing such activities, it is important to keep in mind that the nature of the alternative, incorrect choices presented can increase or decrease the difficulty level of the task. For example, in a rhyming task where the presented word is “bug” the task would be harder if one of the foils was “bus” or “nut”, both words that share sound elements with the cue word without sharing the target sound of the rime. Likewise, in a blending task for compound words, having the component words be among the choices, along with the complete compound, increases the challenge as it forces the child to focus very specifically on the sound assembly task that yields the correct response, and not to just choose an option that seems to sound like the cue words (i.e., if the teacher presented “door ---- bell” as the prompt, having images of a door, a bell, and a doorbell as the options). As with all other scaffolding strategies, teachers can alter the difficulty level of teaching and practice tasks for individual children by changing the multiple choice options presented. Increasing the challenge is also one way of informally assessing whether a child truly grasps the underlying concept of the sound manipulation tasks. In the same manner, tasks can be made simpler by reducing the number of choice options and by including incorrect options that are clearly distinct from the target.

## Other Instructional Considerations

A survey of published studies of phonological awareness instruction in early childhood is important not only for what it does support, as illustrated throughout this paper, but also for what it does not support. At present, virtually all phonological awareness interventions for preschool, and kindergarten that are supported by efficacy data, have been conducted with individual children or with small groups of children rather than with large groups (Ehri & Roberts, 2006; Lonigan et al., in press-a, What Works Clearinghouse, 2007a; 2007b). Further, the overwhelming majority of the successful efficacy studies have included explicit instructional strategies in which the teacher clearly explains, models, and supports children’s initial practice with the tasks.

In contrast to the strategies included within the intervention literature, observation of preschool classrooms (Bracken & Fischel, 2006; Phillips et al., 2007; NCEDL, 2005) and a

review of popular preschool curricula (e.g., Heroman & Jones, 2004; Hohmann & Weikert, 2002) indicate (where there is any relevant instruction at all) a predominance of either whole group activities, implicit activities, or the combination to teach phonological awareness. Examples include reading rhyming stories, whole group clapping of syllables, and singing word play songs. Whereas no published study to date indicates that exposure to these more implicit activities or to instruction in large groups has null or negative effects on phonological awareness skills, there is an absence of studies supporting that they have any *positive* effect. This implies that teachers would be best served by considering these common--and no doubt enjoyable--implicit experiences as supplemental to, rather than sufficient for, a scope and sequence of phonological awareness instruction. Teachers who want to implement instructional strategies supported by scientific evidence should attend to the evidence for small group or individual, systematic, and explicit instruction.

### Reciprocal Links with Print Knowledge and Oral Language

A number of longitudinal studies (e.g., Burgess & Lonigan, 1998; Frost, 2001; Webb et al., 2004) indicate that the development of letter-name and letter-sound knowledge and the development of phonological awareness are reciprocally supportive, and that both are strong predictors of decoding skill. That is, growth in one skill can set the stage for, and increase, improvement in the other. This may be particularly true for the link between letter-sound knowledge and onset-rime and phoneme level phonological awareness skills (e.g., Carroll, 2004; Johnston, Anderson, & Holligan, 1996; Foy & Mann, 2006; Webb et al., 2004). Further, the forthcoming NELP Report (Lonigan et al., in press-a), demonstrates that almost all of the instructional studies to date that yielded significant growth in letter knowledge also included instruction in phonological awareness, and the earlier National Reading Panel Report on phonemic awareness instruction supported the inclusion of letters when teaching phonemic awareness (NRP, 2000).

At the same time, evidence from a preschool intervention study indicates that instruction in phonological awareness or letter knowledge alone will not always automatically lead to growth in the untaught skill area (Lonigan, 2004b). Moreover, instruction in phonological awareness that actively includes written letters, which is essentially the earliest stage of phonics instruction, assumes that children already know the names and, to some degree, the sounds of individual letters. For preschool age children, for whom in many cases this is an invalid assumption, teachers may need to use formal and informal assessment results to determine whether children have acquired enough letter knowledge to benefit from a fully integrated instructional strategy that teaches phonological awareness by having children manipulate written letters, rather than targeting phonological awareness and letter knowledge in distinct but contemporaneous instructional modules. That is, whereas letter name or sound knowledge is clearly not a prerequisite for sound-based phonological awareness instruction, it may be beneficial to insure that children know the sounds of letters used if conducting integrated, phonics-like instruction (i.e., using written letters to manipulate sounds or spell words).

Like phonological awareness, strong letter knowledge skills facilitate the acquisition of decoding ability, and can be taught effectively with preschool children. Evidence from

comprehensive instructional studies in preschool classrooms (e.g., Lonigan, 2004b, Lonigan et al., 2005) indicates that instruction in letter names and sounds should be systematic and explicit. Virtually all of the pedagogical features discussed regarding phonological awareness instruction apply comparably to teaching letter names and sounds. Similarly, experimental evidence suggests that incidental and implicit exposure to letters without explicit instruction is unlikely to result in substantial growth in children's letter knowledge (Lonigan et al., 2006). Children benefit from systematic opportunities to hear the letter names and sounds modeled, to practice discriminating between different letters, and to practice both receptive (i.e., "point to the letter G") and expressive (i.e., "what is the name of this letter?") identification of letters.

Preschool teachers are faced with numerous decisions regarding letter knowledge instruction, including the order in which to teach letters, whether to teach letter names and sounds simultaneously or sequentially, and whether to teach upper case, lower case, or both. Unfortunately, there is a lack of empirical evidence evaluating and comparing these instructional choices. Recent investigations do suggest, however, that children may benefit from learning letter names before letter sounds (Justice, Pence, Bowles, & Wiggins, 2006; Share, 2004), and may be most motivated by, and most readily learn, the letters in their own names (Bloodgood, 1999; Phillips, Lonigan, & Graham, 2006; Treiman & Broderick, 1998). In the absence of more concrete experimental evidence, teachers should at a minimum focus on giving all children the opportunity to learn all the letter names and as many sounds as possible, and on planning instruction such that exposure and manipulation activities with each letter are repeated and cumulatively reviewed (i.e., as opposed to a brief exposure to a letter and then no further opportunities to practice with that particular letter). Further, teachers should assess children's foundational understanding of the difference between letters and non-letters (e.g., other shapes, numerals) and provide instruction in this preliminary capability where needed. Likewise, the difficulty of letter identification and discrimination activities can be modified by controlling the number of other letters included, by reducing task complexity (e.g., matching to sample is simpler than selecting from several options), and by being sure that children with visual and motor impairments are given appropriately modified letter models to manipulate.

Vocabulary is another key skill area that appears to have the possibility of increasing children's phonological awareness ability. Results of some intriguing studies suggest the possibility that the larger a child's vocabulary becomes, particularly with more words that may share sound components, the more likely a child is to cognitively grasp the concept that words are made up of sound components, the key insight needed for growth in phonological awareness and later phonemic decoding skill (e.g., Metsala and Walley, 1998; Walley, Metsala, & Garlock, 2003). Results from a recent intervention study, in fact, indicated that those children exposed to an intervention component focused on oral language but not one focused on phonological awareness nonetheless demonstrated modest but significant growth in their phonological skills (Lonigan, 2007a). Even outside of intervention contexts, rich home language environments and accelerated vocabulary development indeed may be one of the reasons that some children appear to develop phonological awareness capabilities in the absence of specific instruction, and conversely, may be one of the key factors behind the gap seen in early phonological awareness for children from less enriching homes. Many children

with expressive and receptive language delays from all backgrounds demonstrate lower phonological awareness than more typical peers, a factor contributing to these children's increased risk for reading problems (e.g., Bishop & Snowling, 2004; Catts, Fey, Zhang, & Tomblin, 1999). Clearly, strong and consistent instruction in vocabulary and other language skills is critically important for young children, especially those from at-risk backgrounds and those with known language difficulties, irrespective of its potential indirect impact on phonological awareness development. Moreover, the NELP report (Lonigan et al., in press-b) and other data sources (e.g., Storch & Whitehurst, 2002) indicate that various types of oral language component skills, such as vocabulary, syntactical knowledge, and narrative understanding, are key for reading comprehension later in elementary school.

All children can benefit from greater attention to language instruction in preschool contexts. In particular, children need opportunities to learn new vocabulary words and concepts, to learn synonyms for known concept labels, and to use new language in natural, functionally relevant situations. A growing body of intervention and developmental research supports the importance, and capacity of teachers to enhance their student's word knowledge. Rich language environments and exposure to book reading are needed, but may be insufficient for many children without explicit, intentional vocabulary instruction (Coyne, Simmons, Kame'enui, & Stoolmiller, 2004; Penno, Wilkinson, & Moore, 2002). Evidence-based methods of vocabulary instruction within a book reading context include dialogic reading (Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999; Whitehurst, Arnold, et al., 1994) and explicit embedded and repeated vocabulary instruction (Coyne, McCoach, & Kapp, 2007; Beck & McKeown, 2007), although of these only dialogic reading has been evaluated with a preschool age group.

## Conclusions

Whereas major educational organizations such as the International Reading Association and the National Association for the Education of Young Children (NAEYC; 1998; NAEYC, 2006) have dramatically altered their positions regarding the need for, and appropriateness of, teacher-initiated phonological awareness instruction with preschool children in the last several years, teachers in the field have lagged behind in their actual incorporation of such instruction, as have the observational tools many research studies and organizations use to evaluate teachers and classroom environments (e.g., Dickinson, 2002). It is likely that many preschool teachers are lacking in clear pedagogical understanding of the relevant constructs, as well as lacking in appropriate curricular materials, and, perhaps, motivation to change (McCutchen & Berninger, 1999). Of some promise, the new educational and performance standards recently developed by most states do include reference to phonological awareness abilities (e.g., Florida Department of Education, 2005, Oklahoma Department of Human Services, 2006) and may be the lever that promotes greater teacher awareness of and pedagogical development in teaching these important skills. The research and instructional strategies summarized in this paper can serve as one more tool for teachers and early childhood administrators in their efforts to provide all children with effective, meaningful, and robust preschool educational experiences that continue to fit the framework of developmentally appropriate practice while simultaneously working to close the educational gap.



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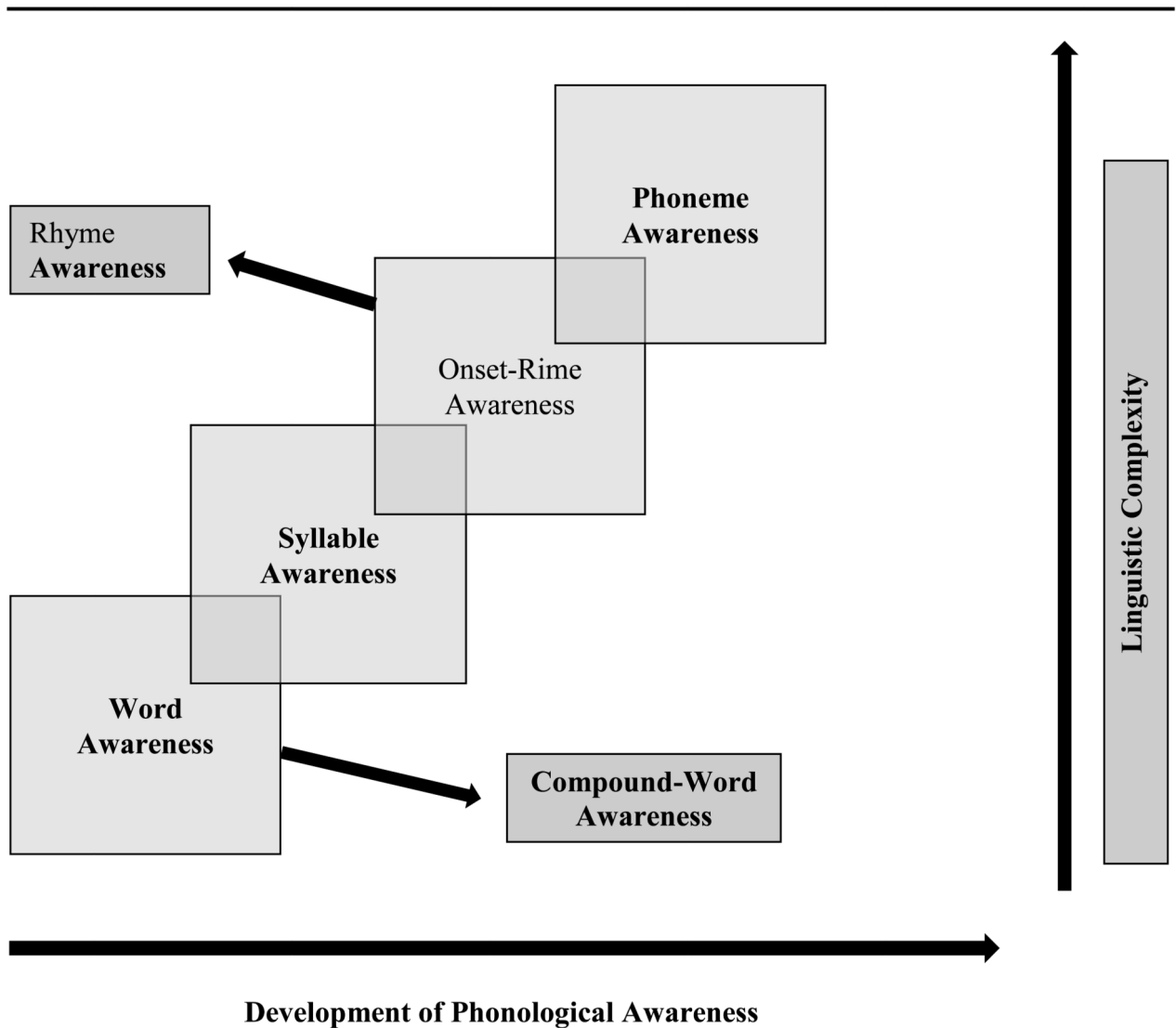
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**Figure 1. The Developmental Continuum of Phonological Awareness**

*Note:* The development of phonological awareness proceeds along a continuum from awareness of large, concrete units of sound, such as words and syllables, to awareness of smaller abstract units of sound, such as phonemes. This is not a stage model in which a child has to master one level before moving to the next. Rather, as the overlap between levels in the figure indicates, children show beginning levels of skill on more complex levels while still working toward mastery of less complex levels. Children's ability to combine words to form a compound word (e.g., *hot + dog = hotdog*) or to remove one word from a compound word and say what remains (e.g., *baseball - ball = base*) is one way to measure children's *word awareness*. Children's ability to detect words that rhyme with each other (e.g., indicating that *hat* rhymes with *flat* and *cat* but not *ham* or *man*) is one way to measure children's onset-rime awareness.