

What is it?

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Phonological awareness is a sensitivity to the segmental nature of speech, an explicit understanding that spoken language comprises discrete units ranging from entire words and syllables to smaller intrasyllabic units of onsets, rimes, and phonemes. *Phonemic awareness* is the deepest level of phonological awareness and the most crucial to success in reading and spelling (e.g., Lonigan, Burgess, Anthony, & Barker, 1998). For example, phonemic awareness facilitates the process by which many beginning readers of English identify printed words—phonological decoding—which requires converting single letters and letter strings into their corresponding phonemes and then reassembling the sounds to pronounce the written word. Thus, a child must be able to isolate the phoneme /f/ in words such as *fish*, *foot*, and *fork* in order to fully understand that the grapheme “f” represents this sound and to associate the sound with the letter when attempting to decode a word like *fog*. Without this level of awareness, the relationship between letters and sounds in English would remain quite mysterious. In other alphabetic languages, such as Spanish, German, and Greek, phonemic awareness also is causally related to literacy achievement. Even reading proficiency in non-alphabetic languages, such as Chinese, exhibits a reliance on phonological sensitivity because phonetic components are embedded in many of the written characters.

Phonological awareness takes several years to develop and begins to emerge between the ages of 2 and 4, most likely as an outcome of typically developing children’s natural propensity for language and word play, early exposure to print and print-related concepts, and eventually exemplary formal reading instruction with a strong emphasis on grapheme-phoneme correspondence. Young children find it easier to isolate and manipulate syllables than subsyllabic units of onsets and rimes, which they find easier to isolate and manipulate than individual sounds within the onset or rime portion of a word. In environments rich with oral and written language stimulation, preschool children engage in many routine behaviors and activities that foster increasingly deeper levels of phonological awareness, including (reprinted from Troia, Roth, & Graham, 1998):

- ◆ spontaneous rehearsal and decomposition of spoken language, as in the following pre-sleep monologue of a toddler: “Berries, not barries. Barries. Barries. Not barries, berries. Ba-ba-berries.” (Weir, 1962)
- ◆ reciting fingerplays (e.g., “Itsy-Bitsy Spider” and “I’m a Little Teapot”)
- ◆ singing songs and chants (e.g., “This Old Man” and “Teddy Bear, Teddy Bear”)

- ◆ self-initiated alliteration and rhyming (e.g., “dad, dad, stick, stad”)
- ◆ spontaneous segmentation and blending, as in a recent Family Circus cartoon script: “Mirror, mirror on the wall, who’s the fairest of [the m]all?”
- ◆ joint book reading with older children and adults
- ◆ viewing educational television programs such as *Between the Lions*, *Shining Time Station*, and *Sesame Street*
- ◆ exposure to environmental print (e.g., restaurant logos and street signs)
- ◆ interaction with various forms of literature (e.g., menus, shopping lists, recipes, phone books, television viewing guides)

Why is it important?

There is no question that children who perform well on sound awareness tasks often become successful readers, whereas children who perform poorly on such tasks later struggle with word recognition, regardless of their IQ levels, family income, vocabulary knowledge, or verbal memory skills. In fact, phonological awareness in kindergarten is the single best predictor of reading and spelling achievement at the end of first and second grade (e.g., Torgesen, Wagner, & Rashotte, 1994). This predictive relationship exists even before children begin school; individual differences in phonological sensitivity among preschoolers account for a large portion of variance in later reading achievement (e.g., Bryant, MacLean, Bradley, & Crossland, 1990). In addition, children at risk for reading failure, such as those with early speech and language impairments, and those identified with dyslexia typically perform significantly more poorly on measures of phonological awareness than their normally achieving peers. Although phonological sensitivity is causally related to the acquisition of basic literacy skills, increases in reading and spelling ability exert a strong influence on the continuing development of phonological awareness (e.g., Yopp, 1988).

Approximately 80% of children appear to effortlessly acquire insight into the phonological structure of language without explicit teaching (Torgesen & Davis, 1996). Often, these children go on to experience success in traditional classroom reading and spelling curricula. The remaining 20% are not so fortunate and either need direct intervention in phonological awareness or require specialized reading/language arts instruction. Numerous intervention studies have demonstrated the effectiveness of explicit phonological awareness training for children with and without disabilities. In these studies, the majority of children who receive such

instruction make substantial progress in both decoding and spelling proficiency, though these gains are more robust and consistent when training in phonological sensitivity is coupled with instruction in letter-sound knowledge (e.g., Bus & van Ijzendoorn, 1999).

How does it work?

Beyond rhyming (e.g., *fan-man*) and alliteration (e.g., *lazy lions like to lounge at lunch*), which may not necessarily require explicit awareness of speech sounds, phonological sensitivity tasks reflect two distinct but highly related abilities—phonological analysis and phonological synthesis. Analysis tasks require the segmentation of spoken stimuli into smaller units (e.g., *fish* = f-ish) whereas synthesis tasks require the blending of small units into larger segments (e.g., d-o-g = *dog*). Analysis tasks appear to be more demanding than synthesis tasks, because the ability to segment develops later and is more difficult to train (e.g., Torgesen, Morgan, & Davis, 1992). There are numerous analysis and synthesis tasks that can be used to assess and teach phonological sensitivity, but their associated level of difficulty varies along five dimensions: the level of depth of the phonological unit, the position of the unit in the stimulus word, the number of units in the stimulus word, the stimulus word frequency, and the type of task. The phonological units, in order of increasing depth and difficulty, are syllables, onsets/rimes, and phonemes (e.g., Treiman & Zukowski, 1996). These units tend to be easier to segment when they occur at the beginning of a stimulus (e.g., **sh**-ark), but easier to blend when they are added to the end of a stimulus (e.g., bir-**d**). Analysis and synthesis tasks seem to be simpler for children when the number of units to manipulate in the stimulus is few and when the stimulus is a relatively high-frequency word (e.g., Troia, Roth, & Yeni-Komshian, 1996). For example, compound words are easier to segment into syllables than other multisyllabic words because there are only two segments and each segment is a real word. The types of analysis and synthesis tasks include, in order of increasing difficulty (see Lewkowicz, 1980; Troia et al., 1998; Yopp, 1988):

- ◆ matching, which requires the child to identify which word from a given set shares the same segment as a stimulus (e.g., “Show me which picture rhymes with *dish*; Point to the picture that ends with /s/; Which of these words begins with the same sound as *car*: *tooth*, *sock*, *coat*?”)
- ◆ oddity detection, which requires the child to identify which word from a given set does not share the same syllable or sound as the stimulus (e.g., “Show me which picture does not begin with /t/; Point to the picture that does not end with the same sound as *lip*; Which of these words does not begin with *sun*: *Sunday*, *sunshine*, *cowboy*, *sunglasses*?”)
- ◆ same/different judgment, which requires the child to give a yes/no response (e.g., “Does *fog* rhyme with *pit*?; Does *coat* start with the /k/ sound?; When you put them together, do these sounds make the word *bus*: b-u-s?”)

- ◆ segment isolation, which requires the child to pronounce a particular segment in a given position of a word (e.g., “What is the first sound of *shark*?; What is the first part of *hotdog*?; What is the sound at the end of *pinch*?”)
- ◆ simple production, which requires the child either to (a) generate a response that shares the same segment as a stimulus (e.g., “Tell me a word that begins with /d/; Tell me a word that ends with the same sound as *top*; Tell me a word that rhymes with *right*”) or (b) segment a word or blend segments to form a word (e.g., “Tell me each sound in the word *shock*; When you put them together, what word do these two parts make: car-toon?”)
- ◆ counting, which requires the child to report the number of segments present in a stimulus word; hence, the child first must completely segment the word (e.g., “Tap out the number of parts you hear in *Neptune*; How many sounds are in the word *road*?”)
- ◆ compound production, which requires the child to execute two or more steps to produce the desired response (e.g., “Say *grow*. Now say it without /r/; Tell me the word you get when you change the /p/ in *pan* to /k/; Tell me the word you get when you switch the /t/ and /m/ sounds in the word *time*; Say *feet*. Now say *eat*. What sound did you leave out?”)

Some additional considerations when designing and implementing phonological awareness activities include the phonetic characteristics of the sounds being manipulated and ways to reduce the cognitive demands of the task. Continuant sounds (e.g., fricatives such as /s/ and /f/ and nasals such as /m/) tend to be easier for children to segment or blend than noncontinuant sounds (e.g., stop plosives such as /b/ and /g/ and affricates such as /_ / in the word *chime*) due to their longer duration (e.g., Skjelfjord, 1976). Along similar lines, it is advisable to model slow and exaggerated pronunciation of continuant sounds (e.g., “mmmmmap”) and use iteration of noncontinuant sounds (e.g., “t-t-t-top”) to enhance the prominence of the individual sounds (e.g., Elkonin, 1973). The use of associated pictures, manipulatives like counters, and visual cues such as squares representing the number of segments in a word can help reduce demands on working memory and make phonological awareness tasks more concrete.

How effective is it?

Deliberate, systematic instruction in phonological awareness profits many children with and without disabilities. However, there are five important points to consider regarding the effectiveness of this type of training. First, spontaneous transfer from one trained phonological awareness skill such as segmentation to another untrained skill such as blending is a rare occurrence (e.g., Slocum, O’Connor, & Jenkins, 1993). Second, segmentation training in isolation or in combination with blending instruction yields positive effects on reading achievement, although blending training alone appears to be of relatively little value

unless children already know how to segment (e.g., Fox & Routh, 1976). Third, not all children respond favorably to explicit instruction in segmentation and blending (up to 30% of children who receive quality phonological awareness training show little or no meaningful performance gains in either phonological awareness or literacy) and, consequently, they continue to experience deficits in phonological awareness and reading and/or spelling (e.g., Byrne & Fielding-Barnsley, 1995). Fourth, even when gains are realized, they often attenuate in as few as 18 months unless initial training is followed up with additional phonics instruction (Bus & van Ijzendoorn, 1999). Last, it is quite possible that a sufficient level of phonological sensitivity is conferred to children with and without disabilities through explicit, intensive, and systematic phonics instruction without a special emphasis on phonological awareness (Fuchs et al., 2002), but it is important to note that exemplary phonics instruction may be relatively uncommon. An early and specific focus on phonological awareness training may serve to “inoculate” children against qualitatively inferior phonics instruction.

More elaborate, intensive, and/or prolonged instruction in phonological sensitivity may help children who are unresponsive to intervention, although a different approach or combination of treatment methods might be necessary. For example, there is limited empirical support for incorporating oral-motor and articulatory awareness training with phonological awareness instruction (e.g., Wise, Ring, & Olson, 1999). It also is possible that the stimuli used in phonological awareness tasks may be an important variable in learning. Recent studies suggest that children perform better on some phonological awareness tasks when the stimulus words are from dense (many similar-sounding words, such as *hat, bat, cat, sat, flat, democrat*, etc.) rather than sparse (very few similar-sounding words, such as *huge, rouge, deluge*, etc.) lexical neighborhoods (De Cara & Goswami, 2002; Metsala, 1999).

What questions remain?

Perhaps the most pressing question about phonological awareness instruction is in regard to teaching sound sensitivity to children whose native language is not English. For instance, there is some evidence that awareness of onsets and rimes is not particularly relevant for learning to read in Spanish (Jimenez, Alvarez, Estevez, & Hernandez-Valle, 2000). The implications for English language learners (ELLs) are unclear. Those children who have acquired literacy in Spanish and who are transitioning to reading and writing English may be able to capitalize on their knowledge of their native language’s phonological structure. Preliterate ELLs, however, may need to develop onset and rime awareness to learn to read English, but because of differences in sound structure for English and Spanish, this level of sensitivity may create confusion. It is probably advisable to focus instruction on those phonological elements (i.e., syllables and phonemes) that are similar in both languages.

How do I learn more?

The following sources provide detailed information about phonological awareness instructional materials and procedures or are representative of the kinds of commercially produced materials available:

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Current Practice Alerts is a joint publication of the Division for Learning Disabilities and the Division for Research within the Council for Exceptional Children. The series is intended to provide an authoritative resource concerning the effectiveness of current practices intended for individuals with specific learning disabilities. Each Alerts issue focuses on a single practice or family of practices that is widely used or discussed in the LD field. The Alert describes the target practice and provides a critical overview of the existing data regarding its effectiveness for individuals with learning disabilities. Practices judged by the Alerts Editorial Committee to be well validated and reliably used are featured under the rubric of Go For It. Those practices judged to have insufficient evidence of effectiveness are featured as Use Caution. For more information about the Alerts series and a cumulative list of past Alerts topics, visit the Alerts page on the CEC/DLD website: www.TeachingLD.org/