



Play It by (H)ear

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As audiologists familiarize themselves with phonological awareness and its contribution to early literacy skills, they will be better equipped to educate parents to be long-term literacy advocates.



History in audiology and the education of children with hearing impairment (CHI) is replete with concerns of literacy development. As cited in Yoshinaga-Itano and Downey (1996), Furth (1966) demonstrated that only 25 percent of deaf or hard-of-hearing (DHH) students aged 14.5 to 16.5 years had achieved at least a fifth-grade reading level (Yoshinaga-Itano and Downey, 1996). More recently, Traxler (2000) described a similar trend: SAT results revealed that 50 percent of 18-year-old students with hearing loss achieved fourth-grade equivalent (GE) scores for both reading comprehension and vocabulary and a sixth-grade level in GE scores for spelling.

Fortunately, the future holds more promise. The No Child Left Behind Act is designed to systematically analyze and improve the academic performance of students with hearing impairment (Johnson, 2008). Advanced hearing aid and cochlear implant technology and universal implementation of early identification and intervention of hearing loss (HL) yield unprecedented auditory accessibility to the sounds of spoken language early in life, thereby affecting the potential for literacy development. Research continues to investigate the benefits of these innovations while widespread improvement in reading and overall academic outcomes for the general population of DHH high school graduates remains forthcoming.

The question, then, is what can audiologists do to support literacy achievement of CHI? This article will present information regarding one specific component of literacy, namely phonological awareness and its connection to audition. As audiologists familiarize themselves with phonological awareness and its contribution to early literacy skills, they will be better equipped to educate parents of CHI to be long-term literacy facilitators and advocates. Although not reading specialists, audiologists can help parents understand the relationship between listening and reading.

Early Literacy

Early literacy is defined as "reading and writing behaviors with no awareness, or only a beginning awareness, of letter-sound relationships" (Paulson and Moats, 2010). A two-year-old engaged in pretending to read aloud from a book is exhibiting early literacy skills and, likewise, the three-year-old who places a random string of magnetic letters on the refrigerator and proudly proclaims, "This says Andrew!" Similar is the child who, upon seeing the black two-eared logo, exclaims, "Mickey!" These scenarios demonstrate the child's profound revelation that printed symbols have meaning attached to them. These steps

need not be formally taught; rather, this awareness develops naturally and serves as a fundamental step in the child's unfolding journey toward literacy achievement.

According to Paulson and Moats (2010), early literacy is comprised of three fundamental components:

1. Oral language,
2. Phonological awareness, and
3. Print knowledge.

Due to the breadth of the topic of literacy, this discussion is limited to that of phonological awareness. However, phonological awareness must be integrated within the context of a comprehensive reading approach to be effective.

Phonological awareness is a familiar term to audiologists. However, because the typical graduate training program lacks coursework in the area of literacy, perhaps the typical audiologist lacks a working knowledge of its connection to literacy achievement. Paulson and Moats (2010) describe *phonological awareness* as an "awareness of the sound structures of spoken language and represents an ability to reflect on and consciously manipulate syllables and sounds of speech" (p. 113). In other words, phonological awareness is the ability to hear the sounds of spoken language (i.e., word, syllable, or smaller units), think about them, and manipulate or "play" with them. From this definition, phonological awareness is unmistakably an auditory-based set of skills with a rather broad linguistic focus; it includes an awareness of larger chunks of spoken language such as words and syllables as well as an awareness of the smallest units of spoken language (Armbruster et al, 2003).

Another familiar and related term is *phonemic awareness*, which involves the ability to be aware of and consciously manipulate the smallest units of speech sounds within words (phonemes). While the term phonemic awareness is frequently used interchangeably with the term phonological awareness, they are distinct (Cunningham et al, 1998). Phonological awareness exists as a continuum of sub-skills, from simple to complex, and is much broader in its linguistic domain, including other characteristics of sound such as intonation (Armbruster et al, 2003). It begins with noticing the large chunks of spoken language (i.e., words and syllables) and progresses to thinking about and later manipulating (playing with) the individual sounds within words (phonemic awareness) (Armbruster et al, 2003).

One familiar example of a lower-level phonological awareness skill is that of rhyming, which begins at around the age of two years and involves listening to

what is *similar* within two or more words. Conversely, as a child's phonological awareness skills develop, the child also becomes more astute at learning to hear the *differences* between the sound patterns of words (words that do not rhyme). Being able to hear and pay attention to these similarities and differences is at the heart of phonemic awareness (Paulson and Moats, 2010). An example of phonemic awareness is that of blending. At this level of phonological complexity, children attain the skill of combining individual phonemes to form words. When presented with the sounds /t/, /i/, and /p/, a child shows his competence in blending phonemes by responding with the word *tip*.

Children getting ready to enter kindergarten (around age five) should be able to blend orally presented phonemes to form words (Paulson and Moats, 2010). As is evident, phonemic blending prepares the child to begin to decode (read/sound out) novel words.

In addition to development of the other components of early literacy (oral language and print knowledge), research

has demonstrated that phonological awareness instruction early on in a child's life, and more specifically, phonemic awareness instruction, contributes positively to his or her reading and spelling achievement (National Institute of Child Health and Human Development [NICHD], 2000).

Some consider the early literacy/literacy phase to begin at birth (for the normal hearing child), when the newborn begins to clearly hear spoken language. As cited in English (in press), Dehaene (2009) reports that continual daily stimulation of the auditory neural pathways with the sounds of spoken language will be required over the first five to six years of life before a child is even ready to begin the process of formal literacy instruction.

Audiological Management

From an audiological standpoint, the first order of business is to provide optimal auditory accessibility to the sounds of spoken language as early in the child's life as possible through appropriate hearing technology. The task of *priming* must entail constant stimulation of speech sounds via "incessant listening and then attention to/thinking about the differences and similarities in speech sounds (phonemic awareness)" (English, in press). We often use the phrase *consistent hearing aid use*. However, the term *relentless* more accurately captures the amount of spoken language stimulation that the developing brain will require during the critical first five to six years if the child is to stand a chance at developing literacy skills that will be on par with normal hearing peers.

Obviously, an accurate acoustical representation of these speech sounds is vital since what is heard by the child will imprint accurate or inaccurate phonological structures in the child's developing brain. Inconsistent use of hearing devices will surely lead to inaccuracies in how phonemes (and larger units of oral language—i.e., words) are represented leading to flawed or delayed *phonological representations* (Sullivan, 2009). As cited in Sullivan (2009), Studdert-Kennedy determined in 2002 that poor speech perception gives rise both to "fuzzy" or "under-specified" lexical and phonological representation that eventually yield negative consequences upon reading and spelling. Arguably, failure to provide consistent (relentless) auditory stimulation early on in life will surely reap grave consequences upon a child's literacy development. This early deprivation will lead to academic challenges that will be difficult for the CHI to recover from. Clearly, it is imperative that audiological counseling incorporate discussion regarding the detrimental effects of inconsistent hearing aid use upon literacy development.



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Support Early Literacy Development

Although speech-language pathologists, early interventionists (EIs), and early childhood educators are directly involved in early literacy instruction, we recommend that audiologists be members of the child's literacy team. This may begin with a shift in counseling focus from discussion of hearing as a means to speech and language development toward hearing as necessary for developing (early) literacy skills. The importance of a child being ready to learn to read when he or she enters kindergarten immediately resonates with parents and with it, the realization of the need for consistent, daily amplification and assistive technology use. Counseling in this manner is more effective since parental resolve is not coerced. Following are four easy strategies for audiologists:

1. Encourage Parents to Read to Their Child

Explain to parents that before the child even learns to read, there are essential early literacy skills that the child must attain prior to kindergarten. These skills do not result from formally "teaching reading." Instead, they occur prior to and are necessary for literacy success. Most caregivers already acknowledge the importance of reading aloud to their child on a regular basis to foster later reading skills and typically do this naturally; audiologists should encourage this practice to strengthen the motivated parents' resolve. Audiologists can also provide lists of age-appropriate books; these are typically available at the local library.

2. Discuss the Concept of Listening to Speech Sounds as a Precursor to Literacy

While the actual phrase *phonological/phonemic awareness* itself may or may not be necessary to relay to caregivers, a few basic points can be shared in a simplified manner. Audiologists can begin by sharing that before learning to read, a child must, simply put, *listen incessantly*. For most parents, reading to their child is the automatic default strategy in an effort to get the child reading-ready. While there is indisputable benefit to reading aloud to a child, a necessary preliminary step is first having the child simply listen to spoken language—all the time, even during non-reading activities.

Caregivers must understand that reading-readiness mandates all day, every day, listening to conversation at optimal levels, through the use of appropriately fit hearing technologies. They must understand that learning to read, beginning with infancy, is more than just pointing out the sounds associated with letters in a picture book; instead, a child must listen as early in life as possible thousands of times over to sounds that comprise their native tongue.

This "listening to conversation" will prepare the brain to begin to hear the "sameness" and the "differentness" of words, the entry point to the early stages of phonological awareness. In addition, the ability to detect this "sameness" between words is at the heart of noticing rhyming words.

3. Explore At-Home Early Literacy Strategies

Some of the early phonological skills such as rhyming are things that parents already do with their child. A typical two- to three-year-old toddler who has had the good fortune of consistent auditory access to spoken language begins to acquire the skill of attending to and noticing rhyming words, which accounts for their delight with Dr. Seuss rhyming books and nursery rhymes. Over the next few years, the child will hone his rhyming skills, progressing from noticing rhyming words to spontaneously producing rhyming words roughly between the ages of four to six years.

Parents and children together engaging in these intentional and explicit listening activities will improve the child's readiness for later reading. Furthermore, by educating parents regarding phonological awareness and in-home strategies, the frequency of these in-home activities may increase along with parents' motivation to get to the next step. Broadening the counseling focus to include phonological awareness may increase the probability that the child will enter kindergarten ready to read.

4. Use Counseling Aids

The American Academy of Audiology (Academy) has published a brochure titled *Hear to Read: The Connection Between Hearing and First-Grade Reading* (2009). This valuable tool maintains that children need consistent auditory access to speech before they will be ready to read between the ages of five and six years and provides practical suggestions that parents can implement to promote reading-readiness in their child who has hearing loss.

An additional brochure and poster written for parents, called *Getting Ready for Reading and Writing* (2010), published by the American Speech-Language-Hearing Association, includes tips for helping children get ready to read and write, early literacy milestones and timelines, and suggestions for parent-child interactions to facilitate early literacy.

The audiologist might consider creating a handout depicting a timeline of the progression of phonological awareness skills acquisition. Appendix A provides one such example that has been adapted from the Paulson and Moats (2010) tables. This handout can be used as a clinical tool during the audiological counseling portion of routine hearing/hearing aid checks and would serve as a reminder for audiologists to discuss listening and phonological

awareness skills development routinely with families also prepares parents for the next step in literacy development.

Conclusion

Being able to share information about phonological awareness helps audiologists educate parents concerning the hearing-reading connection and what they can do to maximize their child's literacy outcome. Audiologists can also provide families with at-home, daily auditory-based strategies that incorporate phonological awareness activities. Often, in their noble efforts to prepare their child to read, parents focus on aspects of early literacy such as teaching the child letter names, the sounds that they represent, and familiar words that begin with the corresponding letter. While these efforts are meritorious, audiologists can educate parents that much of reading-readiness is also tied to simply listening to and playing with the sounds of spoken language.

While not a new concept, the addition of phonological awareness to our repertoire of EI strategies has been virtually nonexistent. All audiologists have a general sense that the work we do will affect a child's reading outcomes. However, there are measures that we as practitioners can take to directly impact literacy outcomes from a child's earliest stages in life. By having meaningful discussions with caregivers about the impact of assisting their child in playing with the sounds of language, literacy research suggests that major dividends in the child's literacy outcomes are possible. 🎧

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