

NOW HEAR THIS!

Monitoring your child's hearing health is crucial to optimal development.

By Lynn Carahaly, MA, CCC-SLP

While all of us acknowledge that the ability to hear is important, most people would be surprised by the number of vital functions that the inner ear and hearing systems actually affect. The ability to hear effectively is critically important to overall development, so identifying and addressing problems early on is crucial. So what does this mean for your kids?

According to the American Speech and Hearing Association, the prevalence of speech sound disorders in young children is 8 to 9 percent. Oftentimes, this is compounded by problems with the inner ear and hearing systems. Hearing is imperative, of course, for speech and language development, but also for overall brain development.

Crucial Cochlear-Vestibular System

The inner ear contains two sensory systems—the cochlea for detecting sound and the vestibular system for sensing balance. The cochlea, the sensory organ of hearing, is the

auditory branch of the inner ear. It is lined with approximately 30,000 hair (sensory) cells. The dynamic and spectral range of hearing is broader than any other sensory system. Humans can discern sounds ranging in loudness from a quiet murmur to a cannon shot and spanning over 10 octaves in pitch. If we translate vision to the same scale, we can only see a 10th of the corresponding dynamic intensity from dim to bright and only one "octave" of visual light frequency. The vestibular system of the inner ear is responsible for balance, coordination and awareness of the body's position in space, and it also sends signals to the neural structures that control our eye movements and the muscles that keep us upright.

As if these aren't enough imperative functions, hearing provides information not just for speech sounds and language, but prosody elements as well, which include intonation, vocal stress in speech, the emotional state of a speaker, rhythm and pitch. Due to the impact

the cochlear-vestibular system has on the entire body, therefore, it is easy to see why treating hearing problems is critically important.

Distorted Hearing

Normal auditory stimulation, listening to environmental sounds and language, wires the auditory system to the brain, promoting speech and language development, spatial awareness, vestibular stimulation for coordination and balance and more. If the ears are full of fluid during this developmental process, then this





- Difficulty with speech sound discrimination
- Difficulty comprehending spoken and/or written language
- Problems following directions
- Can be easily distracted in noisy environments
- Hard time following a conversation
- Disorganized and forgetful
- Problems with reading comprehension
- Trouble understanding verbal math problems
- Difficulty reading, spelling and/or writing
- Trouble recalling a story in proper sequence

Auditory Processing problems can closely mimic AD/HD symptoms. If a child is having a hard time processing auditory information, he or she will often appear to not be paying attention. It is like a bad cell phone connection in that the child just doesn't have a good signal. Therefore, he or she does not get all of the information, which can result in inattentive behaviors. Often, children are misdiagnosed with AD/HD when the deficits actually lie more in the auditory system.

Auditory processing difficulties are also a major cause of dyslexia. Neurologists at Yale have examined brain images of children reading. From MRI brain scans, researchers discovered that the auditory/language centers of children who read well light up with lots of blood flowing. Other

wiring takes place under distorted conditions. Ear infections and chronic fluid in the middle ear are a major source of problems with developing good speech and language skills, and can also affect balance, coordination and visual-motor tasks. A child must be able to hear well in order to develop efficient and mature neurological pathways for speech and language development, as well as literacy skills.

Does your child hear fine but listen poorly?

Some parents refer to this as selective hearing. However, your child may truly have trouble listening. While hearing is the ability to detect sound, listening is how the brain processes auditory information. Children with poor auditory processing skills tend to exhibit the following problems:

- Have hard time hearing in noisy environments
- May behave like a child with a hearing loss

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children with less blood flow in those areas had difficulty reading. Studies such as this confirm that children who have a strong ear-brain connection tend to be good readers. Additional studies have concluded that children with multiple ear infections, a speech articulation problem or weaknesses in auditory skills are at risk for having reading disorders.

Promote Phonological Proficiency

Children begin to read with their ears first. We know that early sound play activities such as nursery rhymes and sound-to-word associations such as "D is for dog" all pre-wire the brain for the concept that a letter (visual) is a code for a sound (auditory). Children with strong phonological awareness skills tend to be good readers.

Phonological awareness—the explicit understanding of a word's sound structure—is critical for the efficient decoding of printed words and the ability to form connections between sounds and letters when spelling. It is a multi-level skill that reflects how words can be broken down into smaller units in differing ways. Tasks that require children to segment words into syllables, (syllable-level tasks), identify or produce rhyming words (rhyme-level tasks), identify individual sounds in words, blend sounds to make words or segment words into

their individual sounds (phoneme-level tasks) are all examples of skills that are encompassed under phonological awareness.

Measures of phonological awareness, particularly at the phoneme level, are powerful predictors of reading success and can predict early literacy performance more accurately than variables such as intelligence scores and vocabulary knowledge.

Recommended home activities that enhance phonemic awareness are:

- Phonemic deletion: What word would be left if the "K" sound were taken away from cat?
 - Word-to-word matching: Do pen and pipe begin with the same sound?
 - Blending: What word would we have if we put these sounds together: "S," "A" and "T"?
 - Sound isolation: What is the first sound in rose?
 - Phoneme segmentation: What sounds do you hear in the word "hot"?
 - Phoneme counting: How many sounds do you hear in the word "cake"?
 - Odd word out: What word starts with a different sound: bag, nine, beach, bike?
- If you are concerned about your child's listening skills or overall learning skills, Listening Ears, LLC offers a free screening and complimentary consultation to discuss your child's strengths, weaknesses and recommendations. Call 480-495-3871 for more information.

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Resources:

Listening Ears, LLC

480-495-3871

www.listening-ears.com

Foundations Developmental House, LLC

Lynn Carahaly, MA, CCC-SLP

480-636-1920

www.fdhkids.com

Children's Developmental Workshop, LLC

Tracey Graves, PhD, CCC-SLP

480-607-3801

American Speech and Hearing Association

www.asha.org

Arizona Balance & Hearing Associates

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