



The Importance of Listening

Sight and hearing are the two most important senses through which a child learns as he/she grows and develops:

- When a baby is born, his auditory abilities are limited to instinctual response to sound (i.e., a startle to a loud sound or a coo or slight smile when he hears his mother's voice).
- As the child grows, his brain starts to make connections to learn from the sounds that he hears.
- By the time a baby is 3 months of age, he should start looking towards familiar sounds and vocalizing voluntarily.
- At 6 months of age, the baby recognizes his name, understands common words ("no," "bye-bye") and begins to imitate speech. This is also the time at which he starts to apply meaning to sounds (i.e., makes a barking sound when he sees a dog or looks towards the door when the door bell rings).
- There is a rapid development of these auditory skills as the child's brain starts to organize and make sense of the auditory experiences that he hears.

The difference between hearing & listening

There is more to hearing than just the physical ability of the ears to transmit sounds to the brain. In fact, there is a whole series of important functions that must occur for the brain to clearly process what it has heard. As a result, audiologists tend to refer to hearing and listening as two separate functions:

- Hearing is the actual physiological and anatomical function of the ear itself
- Listening is what the brain does with that information (also known as auditory processing)

What is Auditory Processing?

Auditory processing refers to one's ability to listen effectively. When the auditory system develops appropriately and without interruptions, the following skills reach peak ability around 18 years of age:

- Listening in background noise (including filtering out background noise)
- Listening with both ears
 - Combining information from both ears (imagine listening to stereo headphones)
 - Separating out different information from each ear (imagine listening on the phone with background noise)
- Understanding accented or distorted speech, including speech with missing parts (i.e., poor recordings)
- Sound discrimination (helps with irony, sarcasm and humor as well as subtle meanings of speech)
- Localization of sound
- Auditory memory



- Auditory attention
- Auditory synthesis (the ability to synthesize sounds into words – critical for reading)
- Auditory analysis (distinguishing subtle changes to words that change their meaning by altering tense)
- Auditory association (i.e., attaching meaning to words)

Why auditory development may be delayed or result in auditory processing disorder (APD)

There are multiple reasons for auditory development delay and/or disorder. One of the most common is auditory deprivation set up by recurrent or chronic ear infections in childhood. When a child develops an ear infection, the middle ear system fills with fluid. Many children can experience chronic fluid that never or infrequently turns into an ear infection that would be treated with antibiotics or ear tubes, which means the fluid goes undetected for longer periods of time and the deprivation effect is more severe.

When the middle ear space is filled with fluid, the child hears as if he is under water. Sounds are reduced and muffled distorting speech models, depriving the listener of important auditory experiences for the brain to stay on track developmentally. Other common causes of auditory processing disorder include permanent hearing loss, family history of auditory processing difficulties, brain damage, head injury and/or other learning disabilities.

Co-existing sensory disorders that may be confused with APD

There are many possible co-existing disorders that one may see with auditory processing disorder:

- Sensory integration dysfunction
- Executive dysfunction
- Attention deficit hyperactivity disorder (ADHD)
- Dyslexia
- Behavior disorder
- Depression/anxiety

One of the most common co-existing disorders is language disorder.

Language is different from speech. Speech is the actual motor functioning that occurs to produce a verbal response (fluency, articulation, etc...). Language is what happens in the brain to apply meaning to what is spoken or heard. When the language centers of the brain are not receiving a clear signal from the auditory centers, further breakdowns in language development can occur.