Auditory Challenges by Craig Stellpflug NDC

The 5 senses, hearing, seeing, touching, tasting and smelling brings input from the environment to the brain. Hearing is a significant input portion of the sensory system that is crucial to developing critical thinking skills and sound social skills as well as language development, balance, motor skills and a sense of location. Hearing challenges and chronic ear infections will make significant changes to the learning and development areas of the brain.

The auditory system is the first of the 5 senses to develop in the womb. Every baby is born with a startle reflex. The newborn's startle reflex responds to every sharp sound that may seem threatening. The auditory neuro pathways in the brain are developed by hearing and cataloging sounds in the environment and most especially during the first two years of life. The auditory function is so intimately tied to neurological development that it affects every system in the body. Even psychological problems can be a product from distorted hearing and errant hearing development.

As the child's cranium grows the first few years, the Eustachian tubes (the tubes that lead from the ears to the throat and drain the ears) lengthen and move from a horizontal position to a downward slant to increase the natural drainage of the ear. One of the most common problems that will affect hearing during critical development windows in early child development is excess fluid behind the eardrums.

Excess fluid behind the eardrum will often result in chronic ear infections that distort the quality of hearing which ultimately affects hearing development. Excess fluid behind the ear drum doesn't always cause ear infections. If the Eustachian tube does not drain properly fluid can accumulate in the ear without causing an infection . Fluid buildup in the ear prevents the drum from vibrating appropriately and distorts the hearing thereby affecting the development of auditory processing.

A tympanogram is a tool that measures the tympanic pressure behind the eardrum. It is a good indicator of a build-up of pressure in the ear and possible infection. Tympanograms are noninvasive and are read by bouncing a sound wave or stream of air off of the ear drum and measuring the rigidity of the ear drum to indicate pressure behind the tympanic membrane. Children with chronic ear infections or pressure build-ups should be monitored frequently until the underlying causes are discovered and dealt with or the child “grows out of it”.

Many ear infections are unobtrusive and generally overlooked as normal and yet recurrent infections can cause major developmental issues. Chronic ear infections can cause a vicious cycle of perversions in the auditory, speech, and learning processes. A simple ear infection can produce excess fluid pressure in the ear and congestion that can also produce sinus infections which can lead to mouth breathing and poor sinus development. Mouth breathing, when added to hearing and speech difficulties will cause deviations and perversions in the tonal processing, resonance processing, speech articulation and phonation ultimately affecting speech development.

A child with a history of excess fluid and/or ear infections will also experience problems isolating sounds from background noises. This child may be able to attend well in a quiet environment, but in a noisy classroom the ability to discriminate sounds deteriorates. Often the inability to discern background noises also leads to behavior issues that are triggered by environmental sounds. The child may have very sensitive hearing so that the slightest noise distracts it or even scares it.

Audiograms are often ordered for children when a hearing difficulty is suspected. Audiograms detect threshold hearing levels that show hearing abilities and losses in each ear. Audiograms produce a graph of what sound frequencies there may be a loss of hearing. The biggest drawback of audiograms is that an audiogram cannot tell if the input of sound is distorted or not.

This is important because there may be frequencies in which a person processes very little information and still detects sounds but presents with no hearing loss detected in the audiogram. Sometimes there are frequencies to which the person is so sensitive that the brain shuts down the offensive input and frequencies in which the sounds are distorted or cannot be distinguished from the background noise. In this case everything is equally loud and becomes a confusing buzz of sound.

Sound distortions can lead to ADD or ADHD labels and a majority of children are on Ritalin or Adderol because of auditory related processing challenges. Children that are extremely sensitive to certain sounds will have behavior breakdowns in noisy environments or put their hands over their ears when other children do not. A child that is hypersensitive to environmental noises cannot go to sleep because of the hum of a fluorescent light transformer in the next room or the sound of the washing machine running at the other end of the house. Some hyper-auditory children can even hear whispered conversations from a long way off.

A child that has extreme auditory distortions and is hyper-auditory often falls under the Pervasive Development Disorder (PDD) spectrum or is labeled autistic. The distortions become a roar like trying to listen to 4 radio programs at the same time and with the volumes turned up all the way. These children often develop auditory sensory play that I call “stimming” or stimulating the brain by making repetitive sounds, banging on things, drowning out noises with music, and banging their heads. These behaviors are either desperate attempts to drown out sounds, and/or they produces feel good endorphins in the brain while also making a desire for even more stimming. They brain eventually shuts out the offensive sounds and the sensory input is so bad the vocabulary output is absent.

The solution for auditory challenges lies in identifying and eliminating the causes of the hearing distortions and aberrant development. Chronic ear

infections have causes that have to be eliminated before the symptoms of infection, distortion and other problems can resolve. Recurring ear infections and the oft resultant antibiotic treatments signal a deeper problem that has to be addressed before normal hearing development can occur. Some overlooked causes of chronic ear infections are fungus, allergies to milk or wheat products, reactions to food colors and additives, bowel and stool problems, environmental sensitivities and even toxic levels of mercury, lead, aluminum and other metals.

Once the foundational aberration in hearing development is restored then normal hearing development can resume on the next higher level. If the causes of hearing distortion at the fundamental levels of development are not dealt with then the struggle to develop the higher levels will remain hindered.