

Audiology Must Take its Rightful Place on the Autism Team

By Carol A. Lau

The incidence of Autism Spectrum Disorders (ASD) has reached epidemic proportions in modern society. Autism is estimated to affect approximately one in every 150 American children, and that rate climbs to almost one in every 94 boys. That means approximately 1.5 million Americans have some degree of ASD, according to the 2006 Autism Prevalence Report from the Autism and Developmental Disabilities Monitoring Network at the Centers for Disease Control and Prevention. (See FastLinks.)

Those with ASD suffer from impaired social relationships, impoverished or deviant language skills, and preoccupations with restricted interests and behavior patterns. (DSM-IV Criteria, Autistic Disorder.) ASD children are often also diagnosed with a comorbid Sensory Processing Disorder (SPD), an impairment in the processing of somatosensory inputs (tactile, proprioceptive, olfactory, kinesthetic, taste), vision, and audition. Traditionally, occupational therapists diagnose and treat SPD including auditory processing issues. Development of occupational therapy diagnostic tools, such as the Sensory Profile, routinely includes detailed questions about auditory and listening behaviors.

Eide and Eide fully acknowledge impaired auditory processing as a component of SPD and indeed of ASD. (*The Mislabeled Child*, New York: Hyperion, 2006; personal communication, 2007.) Their book chapter entitled, "Huh? What? Auditory Problems in Children" is the most informative and accurate chapter on hearing loss and auditory processing disorders in children for the public I have read from non-audiologists.

In full-blown ASD where almost no language develops, it becomes necessary to rely on objective evoked potential testing to diagnose auditory processing deficits. Dunn et al found smaller amplitudes on mismatch negativity tests in ASD subjects than typical children especially in the unattended condition. (*J Autism Dev Disord* 2008;38[1]:52.) Russo et al found degraded speech-evoked brainstem responses in ASD children with deficits in timing and frequency encoding abilities. (*Dev Sci* 2009;12[4]:557.)



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These authors also examined speech-evoked responses in quiet and noisy conditions in ASD and typically developing children. (*J Autism Dev Disord* 2009;39[8]:1185.) ASD children presented with delayed timing and reduced amplitude responses in quiet compared with typical children. And the difference between quiet and noise conditions were not as marked in ASD children as in the typical group, which suggests that ASD speech responses in quiet were already severely degraded. They also found that quiet responses of ASD children were almost equivalent to noise responses of the typical group.

In my clinical practice, we have assessed approximately 600 adults and children for APD since 2004. Approximately 75 percent of patients diagnosed with APD in our clinic also have a diagnosis of SPD. About 40 percent of patients diagnosed with APD also had a diagnosis of ASD including high-functioning autism, Asperger's syndrome, and pervasive developmental disorder-non-specific (PDD-NOS). Most of the children assessed were referred to us by occupational therapists specializing in SPD and developmental optometrists who specialize in visual processing.

ASD children display auditory processing symptoms including difficulty tolerating noisy environments, distractibility from listening tasks, distractibility by noise, inability to process lengthy auditory inputs, excessive reaction to loud sounds, speaking with a loud, frequently monotone voice, and a lack of response to spoken language. Parents often describe an acute sense of hearing but an inability to understand or respond to speech — classic descriptions of APD.

I have seen the full range of auditory processing impairments in ASD children including auditory closure, auditory figure-ground, localization, dichotic processing, and temporal pattern perceptual impairments. I have found it more common for ASD children to have multiple areas of processing deficiency.

The severity of APD in my experience can contribute to the severity of ASD where milder degrees of APD (impairment in one processing skill) have been noted in high-functioning ASD, Asperger's syndrome, or PDD-NOS cases involving impairments. More severe and global involvement of the central

auditory system was associated with the typical ASD child with a severe lack of language development. These children generally have several or all of the auditory processing impairments.

ASD children benefit significantly from intense, appropriate auditory training, but may require longer intervention than children with only APD. I have treated approximately 80 children with ASD in our clinic, and have noted the profound effects of appropriate auditory training on those ASD children. We consistently see improvements such as increased verbal output, improved “presence” and engagement in conversations, and improved language pragmatics, attention, and ability to follow instructions.

The American Speech-Language-Hearing Association emphasizes a distinction between APD and ASD, and states that “APD is an auditory disorder that is not the result of higher-order, more global deficit such as autism, mental retardation, attention deficits, or similar impairments.” (See FastLinks for the complete article.)

Such a statement suggests that ASD and APD cannot coexist in the same individual, but I have not found that. I think this statement also implies that audiologists should not be involved with children who have ASD. While I understand the historical development of such a statement, given that there have been several claims that auditory training has cured ASD in the past, I still maintain that audiologists should play a paramount role in treating ASD. It is time for audiology to take its rightful place on the ASD professional team. Other professions

are ahead in their understanding and research of ASD, but are missing a crucial piece of information that audiology can bring to the table. While ASD children may not have APD, they do have impaired auditory processing skills, and the audiology profession must take ownership of this. ■

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- Read the 2006 Autism Prevalence Report from the Autism and Developmental Disabilities Monitoring Network at the Centers for Disease Control and Prevention at <http://1.usa.gov/AutismPrevalence>.
- An article from the American Speech-Language-Hearing Association on the distinction between APD and ASD is available at <http://bit.ly/yg5aeV>.
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