Understanding Auditory Processing Disorders in Children

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In recent years, there has been a dramatic upsurge in professional and public awareness of Auditory Processing Disorders (APD), also referred to as Central Auditory Processing Disorders (CAPD). Unfortunately, this increase in awareness has resulted in a plethora of misconceptions and misinformation, as well as confusion regarding just what is (and isn't) an APD, how APD is diagnosed, and methods of managing and treating the disorder. The term auditory processing often is used loosely by individuals in many different settings to mean many different things, and the label APD has been applied (often incorrectly) to a wide variety of difficulties and disorders. As a result, there are some who question the existence of APD as a distinct diagnostic entity and others who assume that the term APD is applicable to any child or adult who has difficulty listening or understanding spoken language. The purpose of this article is to clarify some of these key issues so that readers are better able to navigate the jungle of information available on the subject in professional and popular literature today.

Terminology and Definitions

In its very broadest sense, APD refers to how the central nervous system (CNS) uses auditory information. However, the CNS is vast and also is responsible for functions such as memory, attention, and language, among others. To avoid confusing APD with other disorders that can affect a person's ability to attend, understand, and remember, it is important to emphasize that APD is an auditory deficit that is not the result of other higher-order cognitive, language, or related disorder.

There are many disorders that can affect a person's ability to understand auditory information. For example, individuals with Attention Deficit/Hyperactivity Disorder (ADHD) may well be poor listeners and have difficulty understanding or remembering verbal information; however, their actual neural processing of auditory input in the CNS is intact. Instead, it is the attention deficit that is impeding their ability to access or use the auditory information that is coming in. Similarly, children with autism may have great difficulty with spoken language comprehension. However, it is the higher-order, global deficit known as autism that is the cause of their difficulties, not a specific auditory dysfunction. Finally, although the terms language processing and auditory processing sometimes are used interchangeably, it is critical to understand that they are not the same thing at all.

For many children and adults with these disorders and others - including mental retardation and sensory integration dysfunction - the listening and comprehension difficulties we often see are due to the higher-order, more global or all-encompassing disorder and not to any specific deficit in the neural processing of auditory stimuli per se. As such, it is not correct to apply the label APD to these individuals, even if many of their behaviors appear very similar to those associated with APD. In some cases, however, APD may co-exist with ADHD or other disorders. In those cases, only careful and accurate diagnosis can assist in disentangling the relative effects of each.

Diagnosing APD

Children with APD may exhibit a variety of listening and related complaints. For example, they may have difficulty understanding speech in noisy environments, following directions, and discriminating (or telling the difference between) similar-sounding speech sounds. Sometimes they may behave as if a hearing loss is present, often asking for repetition or clarification. In school, children with APD may have difficulty with spelling, reading, and understanding information presented verbally in the classroom. Often their performance in classes that don't rely heavily on listening is much better, and they typically are able to complete a task independently once they know what is expected of them. However, it is critical to understand that these same types of symptoms may be apparent in children who do not exhibit APD. Therefore, we should always keep in mind that not all language and learning problems are due to APD, and all cases of APD do not lead to language and learning problems. APD cannot be diagnosed from a symptoms checklist. No matter how many symptoms of APD a child may have, only careful and accurate diagnostics can determine the underlying cause.

A multidisciplinary team approach is critical to fully assess and understand the cluster of problems exhibited by children with APD. Thus, a teacher or educational diagnostician may shed light on academic difficulties; a psychologist may evaluate cognitive functioning in a variety of different areas; a speech-language pathologist may investigate written and oral language, speech, and related capabilities; and so forth. Some of these professionals may actually use test tools that incorporate the terms "auditory processing" or "auditory perception" in their evaluation, and may even suggest that a child exhibits an "auditory processing disorder." Yet it is important to know that, however valuable the information from the multidisciplinary team is in understanding the child's overall areas of strength and weakness, none of the test tools used by these professionals are diagnostic tools for APD, and the actual diagnosis of APD must be made by an audiologist.

To diagnose APD, the audiologist will administer a series of tests in a sound-treated room. These tests require listeners to attend to a variety of signals and to respond to them via repetition,

pushing a button, or in some other way. Other tests that measure the auditory system's physiologic responses to sound may also be administered. Most of the tests of APD require that a child be at least 7 or 8 years of age because the variability in brain function is so marked in younger children that test interpretation may not be possible.

Once a diagnosis of APD is made, the nature of the disorder is determined. There are many types of auditory processing deficits and, because each child is an individual, APD may manifest itself in a variety of ways. Therefore, it is necessary to determine the type of auditory deficit a given child exhibits so that individualized management and treatment activities may be recommended that address his or her specific areas of difficulty.

Treating APD

It is important to understand that there is not one, sure-fire, cure-all method of treating APD. Notwithstanding anecdotal reports of "miracle cures" available in popular literature or on the internet, treatment of APD must be highly individualized and deficit-specific. No matter how successful a particular therapy approach may have been for another child, it does not mean that it will be effective for your child. Therefore, the key to appropriate treatment is accurate and careful diagnosis by an audiologist.

Treatment of APD generally focuses on three primary areas: changing the learning or communication environment, recruiting higher-order skills to help compensate for the disorder, and remediation of the auditory deficit itself. The primary purpose of environmental modifications is to improve access toauditorily presented information. Suggestions may include use of electronic devices that assist listening, teacher-oriented suggestions to improve delivery of information, and other methods of altering the learning environment so that the child with APD can focus his or her attention on the message.

Compensatory strategies usually consist of suggestions for assisting listeners in strengthening central resources (language, problem-solving, memory, attention, other cognitive skills) so that they can be used to help overcome the auditory disorder. In addition, many compensatory strategy approaches teach children with APD to take responsibility for their own listening success or failure and to be an active participant in daily listening activities through a variety of active listening and problem-solving techniques.

Finally, direct treatment of APD seeks to remediate the disorder, itself. There exist a wide variety of treatment activities to address specific auditory deficits. Some may be computer- assisted, others may include one-on-one training with a therapist. Sometimes home-based programs are

appropriate whereas others may require children to attend therapy sessions in school or at a local clinic. Once again, it should be emphasized that there is no one treatment approach that is appropriate for all children with APD. The type, frequency, and intensity of therapy, like all aspects of APD intervention, should be highly individualized and programmed for the specific type of auditory disorder that is present.

The degree to which an individual child's auditory deficits will improve with therapy cannot be determined in advance. Whereas some children with APD experience complete amelioration of their difficulties or seem to "grow out of" their disorders, others may exhibit some residual degree of deficit forever. However, with appropriate intervention, all children with APD can learn to become active participants in their own listening, learning, and communication success rather than hapless (and helpless) victims of an insidious impairment. Thus, when the journey is navigated carefully, accurately, and appropriately, there can be light at the end of the tunnel for the millions of children afflicted with APD.

Key Points:

1. 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.
2. Not all learning, language, and communication deficits are due to APD.
3. No matter how many symptoms of APD a child has, only careful and accurate diagnosis can determine if APD is, indeed, present.
4. Although a multidisciplinary team approach is important in fully understanding the cluster of problems associated with APD, the diagnosis of APD can only be made by an audiologist.
5. Treatment of APD is highly individualized. There is no one treatment approach that is appropriate for all children with APD.

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