

Auditory Processing Disorder, Dyslexia, or Both?

Working around an underlying auditory processing problem can make it difficult to make good progress with dyslexia therapy.

Individuals with Auditory Processing Disorder (APD) will pass a basic hearing test but they have an abnormality in their auditory neurological system that causes a breakdown in the brain's ability to accurately and efficiently process sounds and language. This can make it hard to distinguish small sound differences within words, remember what was heard, and keep up with ongoing speech, especially when there is background noise or when more than one person is talking.

Individuals with developmental dyslexia have an abnormality in the word analysis pathways that interferes with their ability to convert written words into spoken words. Research suggests that developmental dyslexia may be too complex to be explained by just one causal factor. Theories have suggested different subtypes, and there can be multiple causal factors within each dyslexic individual. There is considerable research evidence that the core deficit in many children with developmental dyslexia is a phonological processing deficit. This contributes to difficulty understanding the way words are made up of sounds (phonemes) and how these sounds are mapped onto their written counterparts (graphemes). Phonological processing problems in individuals with dyslexia are related to 1) a weakness in phonological awareness (understanding sounds and oral language patterns within words), 2) phonological memory (holding on to speech-based information in short-term memory), and/or 3) rapid automatized naming (quickly identifying and naming a series of common stimuli such as letters, numbers, colors, or objects). This often shows up in the subtests of the reading and writing assessments.

Comparison of Symptoms

Auditory Processing Disorder (APD)	Dyslexia
Difficulty processing sound	Difficulty manipulating language either verbally and/or when reading and spelling
Difficulty recognizing subtle differences in sounds (i.e hearing the difference in short -i- and short -e-)	Difficulty with phonological processing and may also have problems with larger units of sounds (i.e identifying the number of words and syllables)
Difficulty distinguishing between verbally presented sounds or words. May hear fees instead of flees , poor instead of pour , or pig instead of big .	Difficulty manipulating sounds in words. Change the "p" in "pig" to "b" and you get the word "big." Remove the "l" from fleas and you get "fees"
May have difficulty with spelling, reading, and understanding information presented verbally	May have difficulty with spelling, reading, and understanding information presented in print
May have difficulty understanding stories heard unless they are brief and have illustrations.	Good understanding of stories read aloud to them.
Fatigue easily when listening	Fatigue easily when reading
Need more time to process information heard	Difficulty processing what they read
Difficulty following directions orally	Difficulty following written directions
Spelling errors tend to be omissions or the wrong sound (i.e blump/blunt)	May spell words phonetically but far from being correct (i.e. frens/friends)



According to the International Dyslexia Association:

"Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge."

The prevalence of auditory processing disorder in individuals with dyslexia has been found to be up to 70%.

Research indicates children with dyslexia exhibit difficulty processing rapid frequency and timing characteristics of phonemes (Burns 2013); difficulties with slow auditory sampling affecting syllable perception (Goswami 2011); speech perception in noise deficits (Ziegler et al. 2009); poor performance on dichotic tests (Moncrief and Black 2008; Moncrief et al. 2004); and show poor consistency of the auditory brainstem response to speech stimuli (Hornickel et al. 2012).

Although there is general agreement among scientific researchers that a neurologically based phonological coding deficit along with other types of language problems underlies most problems learning to read, there remains debate as to the cause of these difficulties. Phonological deficits may be a symptom of other underlying deficits involving auditory or visual processing. Research suggests that in many cases an auditory processing deficit underlies the phonological deficit since children with APD have trouble discriminating speech sounds. Remediation should be specifically targeted for the individual child's deficit pattern.

There are different types of APD but areas of auditory processing that are most likely to show performance deficits on APD tests include temporal/timing sequencing of information (as assessed by pitch pattern tests and tests using quick changes in sounds), auditory figure ground problems (as assessed by different speech in noise tests) and interaural asymmetry in competition (as assessed by dichotic listening tests). Other deficits may appear in some dyslexic children, but in the majority of dyslexic children these are the primary areas where auditory processing weaknesses will be found.

Because APD is an umbrella term for a number of separate deficits, symptoms will vary from child to child

APD causes symptoms of listening problems even with normal results from a basic hearing assessment:

- Difficulty following multiple or lengthy oral instructions
- Difficulty understanding speech with competing talkers or background noise
- Difficulty hearing when a signal is not clear or is 'degraded' (i.e soft, rapid or distorted speech, accented speech, speech in reverberant environments, speech over the phone)
- Mishearing auditory information
- Being overwhelmed by complex or noisy auditory environments (i.e. classrooms, parties, shopping malls)
- Slowness in processing and responding to auditory information
- Inconsistent or inappropriate responses to spoken requests for information
- Frequent requests for repetition and/or rephrasing of information, saying "what" or "huh" often
- Difficulty attending to and remembering spoken information
- Sensitivity to soft sounds in the environment most people do not notice
- Listening fatigue
- Difficulty interpreting prosody and tone of voice cues that underlie emotion, humor, and sarcasm and may be likely to interpret messages literally.
- Poor listening skills and difficulty maintaining attention when listening to verbal information
- Preference for loud television volume

**For more information on Auditory Processing Disorder,
contact Auditory Processing Center at 601-488-4189,
info@auditorycenter.com, or visit www.auditorycenter.com**



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