

Auditory Processing Disorder

Hints to Decrease Frustration and Increase Comprehension

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Auditory Processing Quick N' Slick

- “What the **brain** does with what the **ears** hear.”
 - Dr. Jack Katz, audiologist
- When there is an error in this process we call it an *Auditory Processing Disorder*.
 - Professionals who currently work in the trenches call it APD.

Hearing Testing

- Two basic functions of hearing that are extremely important: sensitivity and processing.
- Sensitivity refers to the softest sounds an ear can hear
 - Beep! Beep!
- This testing does NOT identify what the brain does with what the ears hear or, more simply, auditory processing ability.

Typical vs. Non-typical Auditory Processing

- Individual speech sounds last on average 40 milliseconds
- Typical children process speech at this rate with 90% and higher accuracy
- Children with APD process sounds lasting 450 milliseconds with 90% accuracy, then drop to 65% accuracy once sounds last less than 100 milliseconds
- Speech is the fastest type of input our brain must process - children with APD may process speech with less than 65% accuracy even in quiet environments!

Symptoms and Warning Signs

- difficulty understanding speech in background noise
 - misunderstanding messages
 - responding inconsistently or inappropriately
 - frequently asking that information be repeated
 - difficulty attending and avoiding distraction
 - difficulty following complex auditory directions
 - difficulty with sound localization
 - reduced musical and singing skills
 - reading, spelling and learning problems
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- Warning Signs/Factors: Family history of APD, Chronic ear infections, Dyslexia, Traumatic Brain Injury, Autism Spectrum Disorder, articulation difficulties that do not resolve themselves, being called a “Selective Listener”, and other unknown reasons.

Prevalence

- Chermak and Musiek (1997) estimated that 2-3% of children have APD
- Cooper (1991) estimated 10-20% have APD
- Neurological disorders or brain injuries only account for 5% of diagnosed cases

Comorbid Conditions

- Can look like ADHD – but is caused by difficulty with auditory/verbal input, not with attention alone
- Can coexist with ADHD or other disorders
- Children with CAPD may not follow directions, may respond slowly (or not at all) to questions, may be distracted easily, may mispronounce words (but does not necessarily have a “speech” issue)

Buffalo Model: 4 Subcategories

- **Decoding (DEC)**
 - Quickly and accurately digesting speech
- **Tolerance-Fading Memory (TFM)**
 - Understanding speech in noise, poor short-term memory
- **Integration (INT)**
 - Difficulties combining auditory and visual information
- **Organization (ORG)**
 - Maintaining proper sequence and keeping self organized
- The best part about APD, is neural plasticity!

How we test for APD

- Speech in Noise testing: We see how each ear does (individually) in quiet and noise and make comparisons.
- Staggered Spondaic Word test: We see how the ears (and their associated auditory pathways) work together.
 - For example:
 - Rock Chalk
 - Jay Hawk
- Phonemic Synthesis test: We see how children can take speech sounds, presented one at a time, and put them together to make words.

Discussion of Diagnostics

- Complaint of some: APD is over diagnosed / many children with this diagnosis actually have other issues and not a true APD
- Argument:
 - Clinicians benefit from all diagnostic information and the conclusions drawn from them
 - If a child does not technically fit the true Dx criteria due to the presence of another disorder, such as ASD, intervention still improves when we have that diagnostic data
 - Research has a different aim than intervention and diagnostics should be liberal if it can benefit the child

A Closer Look at Decoding

- Associated Communication and Academic Problems
 - Delayed responses
 - Word finding
 - Developing clear speech
 - Understanding what is said, receptive language
 - Phonics, spelling, oral reading / word accuracy
 - Grammatical morphemes
- Best tip: Slow down!
- Remediation: Retraining the person to interpret sounds of their language using auditory input.

A Closer Look at Tolerance-Fading Memory

- Associated Communication and Academic Problems
 - Understanding with noise or competing signals
 - Anxiety
 - Easily distracted
 - Reading comprehension difficulties
 - Expressive language
- Best tip: Remove the following statement from your daily life...
 - “I’m only going to tell you this once.”
- Remediation: Words in Noise training and Short Term, Auditory Memory activities.

A Closer Look at Organization

- Associated Communication and Academic Problems
 - Reversals
 - Messy, regularly lose things
 - Reduced spelling skills
 - Difficulty organizing ideas or thoughts
- Best tip: Count off steps in directions
- Remediation: Working on sequencing and teaching organizational strategies in ways that appeal to the person.

A Closer Look at Integration

- Associated Communication and Academic Problems
 - Auditory - Visual Integration problems
 - Extremely long delays
 - Dyslexia
 - Severe reading and spelling difficulties
- Best tip: Show the child concrete examples before moving onto abstract ideas.
- Remediation: Binaural integration training

Tips Based on Age: <2 years

- Key: Meeting milestones
 - Babbling at 6 months
 - Saying first words at or before 1 year of age
 - Speaking in sentences before the age of two
- Tips:
 - Get down on the child's level and be entertaining with speech sounds like you would an animal's sounds
 - Make it a multi-sensory experience

Tips Based on Age: Age 2-5 years

- Key: Language development
- Tips
 - When you hear the child confusing sounds, repeat the word back with special emphasis
 - If certain sounds continue to be confused, spend an entire week focusing on a single sound and make it a part of every routine (e.g., bread, big, bounce.)
 - The next week, focus on the other sound (e.g., dance, dark, dig)
 - Use brief instructions with slow and clear speech
- Activity: Playing games using 1 step, 2 step, and 3 step directions

Tips Based on Age: 5-7 years

- Key: Reading ability
- Tips:
 - Best hint: Say the sounds for what they are- not what we remember them being!
 - When the child does fail to comply with instructions, please assume that it is most likely a failure to understand the instructions as opposed to defiance/lack of compliance.

Tips Based on Age: 7-14 years

- Key: Communicative confidence
- Tips:
 - Get attention before speaking.
 - If you are unsure if they understand what you are saying, give the opportunity to ask questions or ask if they need further clarification.
 - Teach children how to repair when there is a breakdown.
 - Not just “Huh?” and “What?”
 - Help teachers understand: class participation through answering questions can be extremely stressful for children with APD.
 - If class participation needs to be increased, it would be kind to tell them (maybe a day) in advance which question you will have him answer in class so that he will feel confident and competent in front of his peers.

Tips Based on Age: 14-18 years

- Key: Learning to deal with superiors
- Tips:
 - Be aware of background noise. They will have a harder time hearing and understanding you if there are other things going on. If the point is important, it may be best to talk to him in a quiet place.
 - Try not to “call them out” in front of peers. Increasing anxiety to speech will not be beneficial.
 - Show the teen examples of the “finished product” if there is a new task to do. They may be able to understand what you would like to have him do if he has a sample to learn from.

APD Shout-outs

- Christine Brennan, M.A., CCC-SLP
- Sarah King, Au.D. of Midwest Ear Institute
- Jack Katz, Ph.D. of Auditory Processing Service
- International Dyslexia Association: Kansas/Missouri Branch



Questions?



Thank You for Listening

Please feel free to contact me for more information or for copies of this presentation.

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