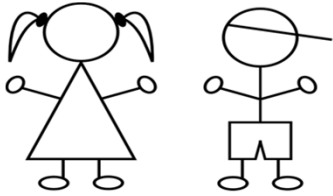


Treatment for Auditory Processing Disorder: The EARSS Program



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What is Auditory Processing Disorder?

- NOT a problem with hearing acuity
- Many children (and adults) experience auditory processing difficulties – not necessarily APD
- ASHA defn: APD refers to difficulties in the perceptual processing of auditory information in the CNS as demonstrated by poor performance in one or more of the following skills...

APD Skill Areas

- SOUND LOCALIZATION
 - Where is the sound in space
 - Direction and distance
- SOUND LATERALIZATION
 - Sounds in “internal” space
 - Recognizing when sound is presented to one ear or the other

APD Skill Areas

- AUDITORY DISCRIMINATION
 - Ability to notice, compare and distinguish the distinct & separate sounds
 - May be verbal (language-phonemes) or other sounds
 - Related to temporal processing of pitch, volume and timing

APD Skill Areas

- AUDITORY PATTERN RECOGNITION
 - Ability to determine similarities and differences in the pattern of sounds
 - Involves various aspects of timing and the ability to fuse information together (auditory integration).
- TEMPORAL ASPECTS OF AUDITION
 - Ability to process acoustic signals over time
 - Involves order, integration or resolving signals

APD Skill Areas

- AUDITORY PERFORMANCE IN COMPETING ACOUSTIC SIGNALS
 - Ability to perceive speech or other sounds when another signal is present
 - Competing signals include background noise (e.g., white noise), competing speech and/or competing sounds.
- AUDITORY PERFORMANCE WITH DEGRADED ACOUSTIC SIGNALS
 - Ability to perceive a signal when some information is missing

Diagnosis:
Screening
Tools

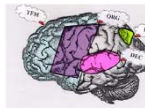
- Who can screen? Those trained in assessment with a master's degree (Audiologists, SLPs, Teachers, Specialists)
- Auditory Skills Assessment (ASA)
 - Ages 3;6 to 6;11 years
 - 5 to 15 minutes to administer
 - Speech Discrimination in Noise, Mimicry, Blending, Rhyming, Tonal Discrimination & Patterning
 - \$196 (pearsonassessments.com)

Diagnosis:
Screening
Tools

- SCAN-3:C
 - Ages 5 - 12 years
 - Use screening portion
 - \$270 (pearsonassessments.com)
 - Areas: Gap Detection, Auditory Figure Ground (+8 SNR), and Competing Words
- Differential Screening Test for Processing
 - Ages 6 – 12 years
 - 35 minutes to administer
 - Includes 8 subtests for acoustic skills (e.g., temporal patterning), acoustic-linguistic skills (e.g., phonemic manipulation), & linguistic skills (e.g., antonyms)

Diagnosis:
Assessment

- Must be by an audiologist who is trained to assess auditory processing skills
- 4 Categories of APD
 - Decoding
 - Tolerance Fading Memory
 - Organization
 - Integration
- Categories drive treatment decisions



Test Battery

- Standard Spondaic Words (SSW) Test*
 - Phonemic Synthesis (PS) Test*
 - Words in Noise Test (WINT)*
 - Buffalo Model Questionnaire (BMQ)*
 - SCAN-3
 - Filtered Words
 - Competing Words
 - Competing Sentences
 - Also supplementary test: Time Compressed Sentences
 - Frequency Pattern Test
- *indicates Buffalo Model components

EARSS Program - Beginnings

- Working with children with APD
- Jack Katz and Larry Medwetsky, Audiologists
 - The Buffalo Model
- KSHA Conference in 2011
- Additional training
- Jeanane Ferre, Audiologist
 - M³ Model
- Kansas State University Speech and Hearing Center – The Enhancing Auditory Responses to Speech Stimuli (EARSS) Program

M³ Model (Ferre, 1998) & The EARSS Program

- **Message:** Quality/characteristics of the signal
 - Changes in "what we hear" impact communication
- **Medium:** Quality of listening environment
 - Changes in listening environment affect communication
- **Me:** Listening behavior (attitudes, strategies, and skills) individual brings to the listening environment
 - Changes in listening behavior affect communication

EARSS:
"Message"

- Phoneme training program (PTP)
- Phonemic synthesis (PS) therapy
- Short Term Auditory Memory (STAM) training – tolerance fading memory
- Dichotic Offset Training (DOT) – binaural integration
- Temporal Patterning

Phonemic
Training
Program

- Skill area: recognizing/discriminating sounds (phonemes)
- First session – introduce new sounds (3-4 phonemes)
 - Start with the *most challenging* sounds (gathered from CAP assessments)
 - No visual cues (lower face is obscured)
- Subsequent sessions – review previous sounds, introduce new sounds
- Continue until all sounds have been practiced

Phonemic
Synthesis
Therapy

- Skill area: Blending phonemes into words
 - Example: /k/... /o/... /l/... /d/ → "cold"
- Assessment: Phonemic Synthesis Test
- Sequence of 15 lessons presented via CD (commercially available)
- Gradual increase in difficulty
- For EARSS – target level and completion level for each lesson are used

STAM Training

- Goal: Increase working memory by one unit (e.g., digit, word)
- Assess starting level (can use STAM test or CLPT)
- Start STAM training where child is successful
- General sequence: digits → words → alternate digits & words
- Some STAM lists provided but then generate our own

DOT Training

- Addresses binaural integration
- 4 Letters presented, Offsets range from 500ms to 0ms, Sets are Left Ear First or Right Ear First



- Data sheets commercially available, recordings/CDs made at K-State (female speaker used)

Temporal Patterning

- Incorporated into EARSS during Summer 2014 sessions
- Assessment indicated deficits in temporal patterning
- Differential Processing Training Program (commercially available) used for data collection
- All recordings/CDs made by Dr. Burnett with two piano notes (one high, one low)
- This is NOT part of initial sessions, added in after child is successful at other tasks
- Pitch variation – 1:1 to 5:5 Discrimination, then 1:1 to 5:5 Discrimination in Noise (~ +10SNR)

EARSS:
"Medium"

- Noise tolerance training (Words-in-Noise Training)
- Modifying environment/compensatory techniques

Words in Noise
Training

- WINT CD (commercially available) for CD player
- For EARSS, presented to the sound field or via headphones
- 7 tracks: each track starts with no background noise, then background noise is introduced at +12 SNR until it reaches +0 SNR.
- Background noise is a conversation among several speakers, but you can't understand what is being said
- EARSS – one track per session (generally 7-8 minutes in length)
- Overall percent accuracy is measured as well as performance at each SNR level

Modifying
Environment/
Compensatory
Strategies

- Goal: Educate child & family about options and encourage them to try things
- Examples:
 - Preferential Seating
 - Environmental Acoustics/Noise Reduction
 - Rephrasing
 - Attention-getting
 - FM systems
 - Classroom instruction/Peers

EARSS:
"Me"

- Includes:
 - Speechreading
 - Self-advocacy
 - Attribution training
- EARSS Goal: Increase child's self-awareness
- Ask the child to attend to positive and negative experiences during the week
- Talk about and implement strategies

Recommended
Resources

- American Speech-Language-Hearing Association (asha.org)
 - ASHA 2007 Ad Hoc Committee on the Role of the Speech-Language Pathologist in Identifying and Treating Children with Auditory Processing Disorders
- American Academy of Audiology (audiology.org)
- When the Brain Can't Hear by Terri J. Bellis
- The Sound of Hope by Lois K. Heymann
- Dr. Jack Katz, Buffalo Model (jackkatzphd.com)
- Dr. Jeanane M. Ferre, M³ Model (dr-ferre.com)

Questions/
Comments?



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