


beyond expectations


Management Strategies Following a Diagnosis of (C)APD

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So Now What?


- **You have your diagnosis.**
 - Testing is complete
 - All signs point to (C)APD
 - The child is on YOUR caseload
- **What are you going to do now?**



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You need to know...


- **Different clinics will “type,” “profile,” or “categorize” (C)APD with their children:**
 - Buffalo Model/ Katz
 - Bellis/Ferre Model
 - Musiek, Jerger, et al.



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Buffalo Model/ Katz


- **Four main categories (long standing)**
 - Decoding Category
 - Tolerance-Fading Memory Category
 - Integration Category
 - Organization Category



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Bellis/Ferre Model

- **Historically, described their 5 “test profiles”**
 - **Primary (C)APD types**
 - Auditory decoding deficit
 - Integration deficit
 - Prosodic deficit
 - **Secondary (C)APD types**
 - Associative deficit
 - Output-organization deficit (Ferre recently reported they have dropped this category)



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Musiek, et al

- **Not really interested in categorizing with labels or names.**
 - Interested in the neurophysiological aspects of the problem
- **Wants objective means of testing to supplement subjective (MLR, ABR, fMRI, etc).**
- **Treats the problems the child is exhibiting from the case history and the test battery.**

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Other terms being used...

- Deborah Moncrieff at Pittsburgh discusses the term “**Binaural Integration Auditory Processing Disorders.**”

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AP Categories/Profiles

- These terms are not always used in all clinics.
- According to some, these categories are not mutually exclusive.
 - Some children can be classified with more than one category (overlap seen during testing).

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Encourage you to read...

- Jutras, B., Loubert, M., Dupuis, J.L., Marcoux, C., Dumont, V., & Baril, M. (2007). **Applicability of central auditory processing models. *American Journal of Audiology*, 16, 100-106.**
 - University of Montreal
 - St. Justine Pediatric Research Hosp. -Montreal

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Jutras, et al. (2007)

- They examined the applicability of the Buffalo Model and the Bellis/Ferre Model. (N=48)
- Found that more children were classified into at least one category of the Buffalo Model. (Not unusual since based on SSW.)
- The majority of the children in this study remained unclassified under the Bellis/Ferre Model.

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Authors Concluded...

- **Concluded that these models “are inadequate for clinical use and must be further refined.”**
- **“...the models are not yet entirely up to scratch...”**

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Authors Concluded...

- It is imperative to evaluate life habits, as well as the physical, social, and cultural environment.
- Use questionnaires such as the **LIFE-H** (Fougeyrollas, et al. 1998) and the **Environmental Quality Appraisal for Children with Communication Disorders** (Croteau, 2007) to identify life habits and obstacles in the person’s environment.
- Provides better treatments for individuals with CAPD and helps them engage in a more active social life.

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It is important to keep in mind three things...

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- **Any management, treatment, or therapy for (C)APD should:**
 - come from an accurate diagnosis
 - be based on specific auditory deficits and functional behaviors
 - be in multidisciplinary agreement

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Auditory Processing Categories

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AP Categories Discussed Here
HANDOUT

- **Decoding Category**
 - (Auditory Decoding Deficit)
- **Tolerance-Fading Memory Category**
 - (Associative Deficit)
- **Integration Category**
 - (Associative Deficit)
- **Organization Category**
 - (Output-Organization Deficit)

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Decoding Category

- **This category refers to individuals who have difficulty in accurately and quickly processing what is heard.**
- **These kids have problems keeping up with the flow of communication.**

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Decoding Category

- **Includes children who have problems processing at the phonemic level.**
 - /Sh/ + /uh/ + /t/= shut
- **Have poor phonic abilities and difficulty with reading and spelling.**
- **Possible history of speech problems in early school years (poor articulation).**
- **Often have “receptive language problems.” (Peabody Picture Vocabulary Test)**
- **Impaired discrimination, closure, and temporal resolution.**

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Tolerance-Fading Memory Category

- **This category refers to individuals who have problems understanding speech in adverse listening conditions (in poor S/N).**
- **These individuals also tend to display short-term memory weaknesses.**

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Tolerance-Fading Memory Category

- **Includes children who have both difficulty in blocking out background noise and poor short term memory.**
 - Often react negatively in noisy environments
- **Distractible and possibly hypo- or hyper-active.**
 - Poor attention/very distractable
- **Difficulties with reading comprehension.**
- **Problems with oral and written expression.**
 - Poor handwriting
- **However, spelling and phonic skills are normal, in pure cases.**

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Integration Category

- ***Integration* refers to the bringing together of modalities – auditory and visual, and combining left and right hemisphere function.**
- **So, this category refers to individuals who have problems integrating auditory information with other functions, such as vision.**

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Integration Category

- **These children often have other labels – learning disabled, dyslexic.**
- **They are often poor readers, having severe reading and spelling problems.**
- **They may exhibit difficulty with multimodal tasks.**
- **They may exhibit word-finding problems.**
- **Oral and written expressive language problems.**

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Two Types

- **There are different subgroups of this integration category (see handout)**
 - **Type I – most typical group**
 - **Type II – academically more successful than Type I group**

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Organization Category

- **This category refers to individuals who have problems with reversals and sequencing.**
- **These children are often described as being very disorganized.**

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Organization Category

- Have difficulty organizing and sequencing information.
- Fatigue easily when listening, due to exerting energy from trying to organize themselves.
- Have generally messy, disheveled appearance.
- Easily frustrated, due to fatigue.
- Often take shortcuts to reduce the strain of listening.

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No matter what the “type” or “category” may be...

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- You should be managing the “symptoms” or the “specific behaviors.”
- You should be working on the weaknesses AND with the strengths of these children.
- You should be aware that some of these children are going to mature (physiologically) out of their auditory problems.

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Management and Intervention Strategies

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Intervention/Management of (C)APD

- Like assessment of APD, management **should be multidisciplinary in nature.**
 - Speech-Language Pathologists****
 - Psychologists/Neuropsychologists
 - Audiologists
 - Learning disabilities specialists
 - Teachers
 - Parents/Grandparents/Foster Parents/Caregivers

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Intervention/Management of (C)APD

- Can be broken into three broad categories:
 - Environment /Classroom Modifications
 - Remediation Activities
 - Compensatory Strategies

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Intervention/Management of (C)APD

- **Bottom-Up Treatment** (Chermak & Musiek, 2007)
 - Auditory training
 - Signal enhancement
 - Environmental modifications
- **Top-Down Treatment**
 - Language strategies
 - Cognitive strategies
 - Metacognitive strategies
 - Classroom, instructional, and learning strategies
 - Workplace, recreational, and home accommodations

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Environment & Classroom Modifications

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- **Environmental *and* classroom modifications are teaching suggestions designed to improve the child's access to auditory information.**

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Environmental Modifications

- **Change acoustics**
 - Add carpeting on floor (throw rugs, if not wall-to-wall)
 - Use smaller rooms, if possible
 - Newer windows to prevent outdoor noises
 - Solid, well-fitting doors
 - Tennis balls or felt on feet of chairs
 - Draperies, cushions, soft surfaces, acoustic tiles
 - Install amplification system in room

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Note!

- **The best thing about this type of modification is that it benefits ALL students, normal hearing, hearing impaired, (C)APD, language delayed, attention deficit, etc...**

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Classroom Modifications

- **Provide a note-taker or allow child to record lectures**
- **Use preferential seating/ proximity to speaker**
- **Check frequently for child's understanding**
- **Use of multi-modality cues and hands-on demonstrations**
- **Pre-teach new information and vocabulary**
- **Repeat/rephrase information when appropriate**
- **Practice and use "clear speech," as well as "clear directions"**

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Classroom Modifications (cont.)

- Use a “buddy system”
- Use positive reinforcement liberally
- Avoid auditory fatigue (take breaks, do something besides listening tasks, etc)
- Consider an alternative placement*
 - The mainstream classroom may not always be the “least restrictive environment” for every child
 - Placing a child in a different type of classroom is not always a bad thing

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Note!

- As Teri Bellis and others always point out, the appropriateness of these classroom modifications is entirely child (and symptom) dependent.
- Avoid the use of over-generalized lists of suggestions – they are not ALL appropriate for every child.

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Remediation Activities

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Remediation Activities

- Remediation techniques are designed to enhance discrimination, interhemispheric transfer of information, and associated neuroauditory functions.
 - Auditory Closure Activities***
 - Dichotic Listening Training
 - Phoneme Awareness Training
 - Prosody Training
 - Temporal Patterning Training
 - Interhemispheric Exercises

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*** Medwetsky, Riddle, & Katz (2009)

- List Decoding Therapies and Speech-in-Noise Desensitization Training as the two most important components of management for working with “most” cases of (C)APD.
 - “Provide these basic therapies first to facilitate the learning and use of higher cognitive approaches.”

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Auditory Closure Training

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Auditory Closure

- **Definition:**
 - The ability of the listener to use intrinsic and extrinsic redundancy skills to fill in missing or distorted auditory information.
 - The ability to recognize the whole message, even with missing or distorted auditory information.

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Auditory Closure

- **Audiologic Assessment:**
 - Tests of monaural low-redundancy speech
 - Filtered Speech
 - Time-Compressed Speech
 - Tests of auditory performance with competing acoustic signals
 - Binaural separation – Competing Sentences
 - Binaural integration – Dichotic Digits

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Auditory Closure Activities

- **Purpose:**
 - To teach the child how to fill in missing or distorted components of a message so that the child understands the whole/entire message.

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Includes “Speech-in-Noise Training”

- **Purpose:**
 - To teach the child how to listen in the presence of background noise or in less than ideal listening situations.

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May Include “Dichotic Listening Training”

- **Purpose:**
 - To teach the child to use both ears; to listen for important information and to tune out unimportant information.

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Activity Suggestions

- Activities should go from “easiest” (most familiar subject matter) to “hardest” (new information).
- Start with omitted words, move to omitted syllables, move to omitted phonemes.
- Teach child how to use the content to predict the missing part.

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Activity Suggestions

- Nursery Rhymes: (Easy/Most familiar)
 - “The itsy, bitsy spider went up the water _____.”
 - “Jack and Jill went up the _____.”
- Prompts can be used:
 - “What word comes next?” “What rhymes with ‘out’?” “What is this song about?”

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Activity Suggestions

- Stories (Medium/ A little harder)
 - “Jack climbed up the _____.”
 - “The seven _____ guarded Snow White’s glass casket day and night.”
- Prompts can again be used:
 - “What did Jack climb to get up to the Giant’s castle?” “What is this story about?”

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Activity Suggestions

- New sentences – no stories/no theme (Hardest/totally novel)
 - “The horse walked into the _____.” (barn/stall)
 - “Jarrod _____ the cereal from his bowl.” (ate, spooned)

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Mad Libs

- Mad Libs – on-line version now
 - Tells child what to plug in (noun, verb, noise, etc)
 - Can use for built-in missing information AND vocabulary (use with different intentions)
 - Can be used in conjunction with metalinguistic training to discuss adverbs, adjectives, nouns, etc...

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Mad Lib

- Copyrighted material missing

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Another Mad Lib

- Copyrighted material missing

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Activity Suggestions

- Omitting syllables
 - Syllables are harder than words
 - Again, going from easier to harder is recommended (omit ending syllable, then beginning syllable)
 - “There are 5 days in the workweek and 2 days in the week____”

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Activity Suggestions

- Move to only one word being the contextual clue:
 - “Sports: base____, fenc____, ten____”
 - “Colors: yel____, saph____, pur____, mar____”
 - “Months: ____uary, ____ember, ____ober”

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Activity Suggestions

- Omit Phonemes**
 - Use recordings, since live-voice is too difficult
 - Go from easiest to hardest
 - Phonemes in sentences to phonemes in words (with general categories for context)
 - “I like to watch _ele_ision.”
 - “Animals: tige_, leo_ard, ele_ant, _onkey.”

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Activity Suggestions

- For Speech-in-Noise Training
 - Work with the child while noise is in the background
 - Soft initially, louder as child succeeds
 - Instrumental music, to music with words, to books on tape

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Activity Suggestions

- Combinations –
 - With background music, omit words from known stories or nursery rhymes
- Use common therapy materials while at the library, out near the playground, in a room close to traffic noise, band hall, etc...

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Additional Activity Suggestions

- Localization training
 - Since closure problems can result in difficulty understanding speech in noise, and brainstem problems can create lateralization/localization problems, training a child to localize to sound in the environment may help, and may create a higher/harder level of mastery.

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Additional Activity Suggestions

- Localization training
 - Can be done in quiet room or sound booth
 - Speakers placed throughout room/ sound sources placed throughout room
 - Stimuli should be varied, going from easy to hard
 - Environmental sounds to speech
 - Just identifying source to understanding source

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Localization training

- Blindfold the child and instruct him to point to the location of the sound source (1st – noises, 2nd speech) while roaming around the room.
 - Increase difficulty by decreasing the length of the utterance or the intensity of the utterance.
 - Increase difficulty by moving outdoors for greater distances.

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Additional Activity Suggestions

- Distraction Activities
 - Have others come in during therapy sessions
 - Have people carry on conversation out in hall
 - Take the child to the library and have the session there (when something is going on)

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Additional Activity Suggestions

- Vocabulary building/enrichment
 - If a child is simply unfamiliar with a word, the ability to “fill in the missing information” is not going to be there.
 - Building familiarity with a word or subject matter helps the child’s ability to fill in information.

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Phoneme/Phonological Awareness Training

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Phoneme Awareness

- **Definition:**
 - **The ability of a listener to decode phonemes and discriminate speech sounds.**

Phonological Awareness requires...

- “... the ability to ... manipulate the structure of an utterance as distinct from its meaning” (Stackhouse & Wells, 1997)
- “... that children treat speech as an object and that they shift their attention away from the content of speech to the form of speech.” (Yopp, 1992)
 - Haircut
 - Sunday

Phoneme/Phonological Awareness

- Audiologic Assessment:**
 - No specific (traditional) test
 - Many traditional APD tests would show problems in this area
 - History information could pick up the problem
 - SLP evaluation could pick up the problem

Phoneme/Phonological Awareness Training

- Purpose:**
 - To teach the child how to develop accurate phonemic representation and speech-to-print skills.

Progression of Development → Overlapping Stages

Size of the Unit of Spoken Language
Larger Units → Smaller Units

Word I like peanut butter.	Syllable pea-nut butt-er	Onset-Rime s-it c-at b-all st-ar	Phoneme s-i-t c-a-t b-a-l-l s-t-ar
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Cognitive Operation Required
Blending → Deletion (Anthony et al., 2003)

Is Phonological Awareness instruction effective?

- PA instruction resulted in gains in PA, reading, and spelling. ($d = 0.73$, Bus & van IJzendoorn, 1999; $d = 0.86$, Ehri et al., 2001)
- Instruction works best:
 - In small groups rather than 1:1 or whole class
 - In pre-K and K rather than later
 - Focused on small set of skills
 - Included use of letters
 - Total duration of 5-18 hours
 - Systematic and explicit

Phonological Awareness Instruction Price & Ruscher (2006)

- Small group PA lessons to teach specific skills
- Practice embedded within print activities – including book reading

Activity Suggestions


- Syllable Instruction
 - Syllable Manipulatives
 - Syllable Tasks (blending, segmenting, completion, deletion)
- Rhyming Instruction
 - Rhyming Manipulatives
 - Flip Books, Dice, Onset Rime, Sound Talk
- Phoneme Instruction
 - Phoneme Manipulatives
 - Elkonin cards, Books with one syllable words,
 - Sound Chaining

Why address syllables??

1. Helps students attend to form separately from meaning.
2. Larger chunks of speech make PA tasks easier.
3. Allows students to learn the *vocabulary* and *tasks* involved.
 - Blend these together "meat"...(pause) "ball." (blending)
 - What are the 3 syllable parts in the word "fantastic"? (segmenting)
 - What is "meatball" if we take away "meat"? (deleting)

Syllables – Manipulatives

Caterpillar



Syllables–Tasks

Blending: What word is this? "Kang...ga...roo"

Segmenting: Clap the syllables in "alligator"

Completion: /spi-/der/
(use only 2-syllable words for this task)

Deletion: What's spider without /der/?

Rhyme

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Rhyme – Manipulatives

Card Push

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Rhyme – Manipulatives Flip Books, Dice



The image shows four dice arranged in a 2x2 grid. The top-left die is red and shows 'at'. The top-right die is yellow and shows 'in'. The bottom-left die is red and shows 'all'. The bottom-right die is yellow and shows 'ip'.

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Onset-Rime

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Sound Talk – example from McFadden

(McFadden, 1998, p. 10)

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And later on the same page...

(McFadden, 1998, p. 10)

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Phonemes

- MOST of the instructional time for Phonological Awareness for school-age students should be at the phoneme level!!

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Phonemes

- Start with CV words
- Initially choose words that begin with sounds that can be held out – m, r, sh, s, z, f, w
 - Moo
 - Row
- Move on to CVC words (again, start with continuous sounds)
 - Mouse
 - Man
- Then move to words with clusters – CCV (blue), CCVC (black), CVCC (lamp), CCVCC (stamp), CCCVC (splash)

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Phonemes – Manipulatives
Elkonin Cards

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Phonemes →
Books with 1-syllable words

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Phonemes

/tr/
Trot
Trip
Tropp
Troll


/sn/
Snarl
Snort

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Sound Chaining

- Sound chains
 - Each child represents a sound
 - Use magnetic letters
- Sound chaining with magnetic letters
 - No vowel change: cat → sat → sad → mad → math → bath → back → black
 - Change in vowel sound: sit → sip → rip → trip → trick → track → rack → rock → lock → block → black

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Activity Suggestions

- Phonemic Synthesis Therapy Kit
 - 15 recorded lessons
 - Manual, picture book, score/response/summary forms
 - Distributed by Precision Acoustics (Vancouver, WA)

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Prosody Training

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Prosody

- **Definition:**
 - The ability of a listener to recognize acoustic contours.
 - The ability to recognize and use prosodic aspects of speech, such as intonation, stress, and rhythm.

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Prosody

- **Audiologic Assessment:**
 - Tests of temporal ordering abilities or sequence of auditory stimuli.
 - Pitch Pattern
 - Frequency Pattern
 - Duration Pattern

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Prosody Training

- **Purpose:**
 - To teach the child to recognize and use prosodic aspects (intonation, rhythm, stress) of speech.
 - To get child to focus on the main/correct topic of the conversation.
 - To reduce the monotonic tendencies of language and reading.

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Activity Suggestions

- Syllabic Stress Games
- Work on describing the differences that syllabic stress changes make to the meaning of ideas.
 - Describe thoroughly
 - Lead step-by-step through these processes

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Syllabic Stress Games

- Start at word level, move to the sentence level
 - Convict versus Convict
 - Project versus Project
 - Present versus Present
 - Record versus Record

**If the child is not familiar with the words, work on vocabulary building first.

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Additional Activity Suggestions

- Therapy materials traditionally used for foreign dialects (accent reduction) are good to use with these children.

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Activity Suggestions

- Read out loud, over exaggerating every aspect of prosody in the beginning, then back down and slowly become more natural with speech.
 - Clinician models
 - Child imitates
- Work on tone of voice.
- Work on exaggeration of vocal and non-vocal cues.
 - Get the parents doing this, too!

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Activity Suggestions

- Work on meaning of message/intent of message:
 - “**You** cannot ride your bike with them.”
 - Emphasis on ‘you’ implies that rejection of that person, but other people may be able to ride with the group.
 - “You cannot ride your bike with **them**.”
 - Emphasis on the “them” implies that the person is welcome to ride a bike, but not with this group.

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Activity Suggestions

- Since these children may hear a sentence as a string of equally stressed words, comprehension may be lacking – they are not able to pick up the **key words** within a message.
- Work on listening specifically for the main idea (object, subject, or the verb)

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Activity Suggestions

- **DAILY READING**
 - Specifically focus on use of animated voice
 - Clinician models
 - Child imitates
 - Teach parents to do this at home
 - Parent initially reads
 - Child takes over with parent guidance

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Activity Suggestions

- For older children:
 - Suggest joining local child acting group
 - Work on NONVERBAL CUES
 - Suggest reading out loud for groups (plays, church functions, local radio program, etc...)

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Temporal Patterning Training

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Temporal Patterning

- Temporal Patterning Training is closely related to Prosody Training
 - More “basic”
- Temporal training should be worked on **before** prosody training.
- Many believe that all individuals with (C)APD have some problem with temporal processing.

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- If the child you are working with has significant difficulty with discriminating subtle changes in stress or rhythm, or is unable to sequence information, you should probably START with temporal pattern training, then go back to prosody training.

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Temporal Patterning

- **Definition:**
 - The ability of a listener to detect aspects of non-speech discrimination and acoustic contours of a signal (localization/lateralization).
 - Temporal aspects of audition are critical for the ability to discriminate speech, perceive prosody changes, appreciate music.

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Temporal Patterning

- **Audiologic Assessment:**
 - Tests of temporal masking, temporal integration/summation, gap detection (temporal resolution) and electrophysiologic measures.
 - Gap Detection Test
 - MLR, MMN, P300

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Temporal Patterning Training

- **Purpose:**
 - To teach the child how to discriminate differences in rhythmic patterns of auditory stimuli, and how to analyze those patterns and imitate what is heard.

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Activity Suggestions

- As mentioned before, clinicians need to transition these children from easiest to hardest and from non-speech to speech auditory stimuli.
- **GOAL:** With rhythmic patterns of auditory stimuli, the child should first discriminate differences, then analyze differences, then imitate differences.

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Activity Suggestions

- Frequency Pattern/Duration Pattern “Practice”
 - Use the test recordings (two tones, then three tones) to work on improving the child’s ability to detect and label the “high-high-low” or “long-short-long”
 - Non-verbal (very basic) training

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Activity Suggestions

- Use the “Gap Detection Test” as a form of training.
- Gap Detection Test “Practice”
- Gaps-in-Noise Test “Practice”
- **Handout**

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Why is the perception of “silent intervals” important?

- It is critical for the perception of speech and music.
- Provides insight into the temporal resolution of the auditory system.
- Word recognition in noise: poorer speech recognition correlates with poor gap detection (Snell, 2000; Snell, et al. 2002)

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Activity Suggestions

- Tapping on Table
- Keyboard Playing
 - Have child replicate your cadence patterns
 - Two or three frequencies
 - Similar to “Simon” concept
 - Work in duration patterns
 - Work up to 7 or 8 elements

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Activity Suggestions

- **Word Level**
 - Discriminate Differences
 - Tap, Tape, Tap or Lick, Lack, Lick (easier)
 - Pen, Pin, Pen (harder)
- **Sentence Level**
 - Simply pick out the stressed word
 - “Jim is riding the horse.” “Jim is riding the horse.”
 - “Jim is riding the horse.” “Jim is riding the horse.”


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Activity Suggestions


- Word Gap/Pause Games (temporal aspects)
- Work on the sentence level with patterns and “gaps” or pauses :
 - The family was intense yesterday.
 - The family was in tents yesterday.
 - I saw the hot dog by the fire.
 - I saw the hotdog by the fire.
 - I saw the snow drift by the house.
 - I saw the snowdrift by the house.

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Then go back to Prosody Training


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Interhemispheric Transfer

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Interhemispheric Transfer

- **Definition:**
 - The ability of a listener with normal neuromaturation (myelination) to transfer information across the corpus callosum, from the right to left hemisphere and back.

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Interhemispheric Transfer

- **Audiologic Assessment:**
 - Electrophysiologic measures
 - MLR, LLR, MMN, P300
 - Latencies and asymmetries

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Interhemispheric Exercises

- **Purpose:**
 - To stimulate the child's CC to improve interhemispheric transfer of information between the right and left hemispheres of the brain.

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Activity Suggestions

Interhemispheric Exercises

- **Verbal-to-motor transfers** (instructed to find an object in a bag with left hand)
- **Motor-to-verbal transfers** (finds an object with the left hand and then has to verbally state what it is)
- **Motor transfers** (throwing a ball from hand to hand; dropping ball from right hand and kicking with left foot)

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Activity Suggestions

- **Music activities****
 - Dichotic Melodies
 - Name that Tune
 - Extracting lyrics from songs
 - Playing the piano
- **Art and pattern recognition activities**

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Activity Suggestions

- **Informal Auditory Training using Multimodal Interhemispheric Transfer**
 - Writing to dictation (older children)
 - Verbally describe picture while drawing
 - Singing
 - Picture pointing (by non-dominant hand) to an auditory command
 - Books on tape with competition (mentioned earlier!)
 - Video games requiring bimanual and visual hemifield skills

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Activity Suggestions

- **DIID** (Chermak & Musiek, 2007, p. 328)
- Will be discussing this later.
- Because interhemispheric transfer (IT) of information underlies binaural hearing and binaural processing, exercises to train IT using interaural offsets and intensity differences leads to improved auditory behavior.

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Compensatory Strategies

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Compensatory Strategies

- **Definition:**
 - Methodologies which a child can be taught to learn how to compensate for the problems he/she experiences on a day-to-day basis at home and in the classroom.
 - Techniques by which an individual can communicate with and relate with others in an easier, more efficient manner.

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Compensatory Strategies

- Teaching the child or adult to become an active listener rather than a passive listener.
- Prompting the individual to accept responsibility for his/her listening comprehension.
- Teaching the child to use strategies for determining and retaining the content and meaning of a message.

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Compensatory Strategies

- Include:
 - **Developing Listening Strategies**
 - **Developing Linguistic abilities**
 - **Developing Metalinguistic abilities** (language awareness, ability to think about language)
 - **Developing Metacognitive abilities** (ability to reflect or think about thinking)
- These strategies are intended to help the child actively monitor and self-regulate his or her own message comprehension abilities.

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Listening Strategy Activities

- Teach to Listen for (and learn to take notes on):
 - Main ideas
 - Supporting details
- Visualization strategies
 - Visualizing & Verbalizing (Nanci Bell)

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Listening Strategy Activities

- Short newspaper articles – match the titles to the text
- Word sorts (teaching hierarchy – semantically based)
 - Use curricular vocabulary
 - Initially make the categories obvious
 - Increase difficulty

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Listening Strategy Activities

- Identify the object in a photo based on a description (Visualizing & Verbalizing activities)
- Barrier Games – Referential Communication
 - Initially with SLP giving precise directions
 - Later with speaker giving directions with missing information

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Linguistic Strategy Activities

- **Assisting in retention of complex messages with:**
 - **Chunking** – breaking long messages into smaller component parts and grouping like concepts together
 - **Verbal rehearsal** – repetition and reauditorization of a message – i.e., phone number memorization)
 - **Paraphrasing** – re-stating the message in his/her own words

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Developing Metalinguistic Skills

- **Training in the rules of the language**
 - Specific training in use and meaning of tag words (first, last, next, before)
 - Specific training in causal words (because, since)
 - Specific training in adversative terms (but, however, although)

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Metalinguistic Activities Causal Words

- Jon did not attend the karate demonstration last week because he was busy writing his papers for class. (behavior → explanation)
- Because Jon was busy writing his papers for class, he did not attend the karate demonstration last week. (explanation → behavior)

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Metalinguistic Activities Adversative Terms

- Jon wanted to attend the karate demonstration last week; however, he had two papers to write for class.
- Although Jon wanted to attend the karate demonstration last week, he had two papers to write for class.

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Metalinguistic Activities

- Teach Story Grammar
 - Components of a Story: Setting, characters, problem, attempts to solve the problem, final resolution
 - Story Grammar Marker (or other similar products)

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Metalinguistic Activities

- Teach Expository Text Structures
 - Procedural descriptions, explain/inform on a topic
 - Components of an expository text:
 - Presentation of topic,
 - description of attributes,
 - events/activities characteristic of the topic,
 - comparisons/contrasts between members of a class,
 - final summary (optional) (Kamberelis, 1999; Pappas, 1991, 1993, 2006)

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Metacognitive Activities

- Patricia McAleer Hamaguchi, SLP
- 2 books- “A Metacognitive Program for Treating Auditory Processing Disorders” and “It’s Time to Listen: Metacognitive Activities for Improving Auditory Processing in the Classroom.”
 - Target grp: 6yrs old and older

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Other Compensatory Strategies

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- **Other strategies that can be used with every child/adult who has (C)APD are:**
 - **Increase motivation** (rewards & success).
 - **Returning control of the situation to the child.**
 - Self-monitoring and repair strategies**
 - **Educate the child or adult regarding the nature of his/her disorder.**

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Self-Monitoring and Repair Strategies

- **“Responding to Oral Directions”**
 - Robert A. Mancuso
 - book and CD
 - “teaches students to identify unclear directions and to ask for clarification appropriately”
 - Gives IEP goals

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FURTHER MANAGEMENT OPTIONS

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Other Management Approaches

- **Amplification Systems (Group and Individual FMs)**
 - Improves signal-to-noise ratios
 - Provides a higher fidelity speech signal
 - Keep children with HL in a “least restrictive environment”
 - Cost effective, due to fewer personnel needed to service the target students

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MARRS (Mainstream Amplification Resource Room Study) (1995)

- Amplification system improved S/N by 10 dB
- Target children performed better on academic performance tests than did control children after 3 years of following

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Other Management Approaches

- **Unilateral Earplugs**
 - An earplug is used to “reduce the adverse influence of an offending ear” (the ear with reduced performance scores on AP testing)
 - Theory is that an individual’s poor perception in one auditory channel may interfere with the better channel from the other ear
 - If there are severe problems in only one ear, this may provide effective treatment
 - Used with schizophrenic, LD, & brain damaged individuals

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Other Management Approaches

- **Bilateral Earplugs**
 - Used for individuals who report or exhibit severe distractibility, especially while reading or writing.
 - Also used with people who are hyper-sensitive to background noise.
 - Recommendation is to wear two plugs only in these situations. (Medwetsky, Riddle, & Katz, 2009)

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Other Management Approaches

- **External Organizational Aids**
 - Calendars
 - Filing systems
 - Notebooks
 - Computerized diaries and schedule book
- Anything that may help the child to remember and sequence instructions and to separate steps of a larger project into discrete units to be dealt with one at a time.

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Other Management Approaches

- **Auditory Training**
- Needs to be:
 - Frequent
 - Intense
 - Challenging (target 30% to 70% correct)
- Needs to maximize neuroplasticity
 - Listener needs to be actively participating
 - Reinforcement is needed for long-term results

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Auditory Training

- **Informal Activities**
 - Musical Chairs (vigilance)
 - Telephone Game (“gossip game”)
 - Nursery Rhymes
 - Simon Says, Red Rover (following directives)
 - Reading Aloud (Poetry)

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Auditory Training

- **Informal Activities**
 - Red Light, Green Light (vigilance)
 - Blind Man’s Bluff; Marco Polo (localization)
 - Password (vocabulary building)
 - Tribond (metalinguistic skills)
 - What do Florida, a locksmith, & a piano share in common? (keys)
 - What do buffaloes, cell phones, & nomads share in common? (they all roam)

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Auditory Training

- **Commercially Available Programs**
 - Earobics
 - Fast ForWord
- **Drawbacks**
 - Expensive
 - Offered in only a few facilities
 - “Trains child for test-taking only”

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Auditory Training

- **DIID – Dichotic Interaural Intensity Difference Training** (Musiek & Schochat, 1998) **HANDOUT**
 - A form of auditory training activity, using dichotic test materials and a 2-channel audiometer.
 - Used in instances when a left-ear deficit on dichotic speech tasks is identified.
 - Both binaural integration and separation tasks can be used in DIID training.

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DIID – Dichotic Interaural Intensity Difference Training

- The technique directs the stimuli to the stronger ear (RE) at a reduced level, while maintaining a higher intensity level to the poorer ear (LE).
- Louder signal to left ear, scores increase.
- Authors suggest 3-4 training sessions per week of 20-30 minutes a piece.

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- **Commercial Games supporting auditory training (batteries needed!)**
 - SIMON
 - BOP IT
 - DANCE MACHINE
 - BIG MOUTH

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Computer-Assisted Therapies

- Many interactive computer-based programs exist now (esp. for auditory training purposes).
- This form of therapy uses multi-sensory stimulation (good from some, not for others)
- **PROS:** maintains interest of child, reinforces immediately, provides frequent and intense stimulation to the auditory pathway.

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Computer-Assisted Therapies

- **Still not enough research in this area.**
- **CONS:**
 - We don't really know what this type of therapy does for individuals or who (what symptoms) it is most appropriate for.

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Listening and Auditory Processing Instruction – Pro-Ed Catalog

- Betty Lou Kratoville – “Listen, My Children, and You shall Hear (3rd ed).
 - To develop listening skills, auditory memory, vocabulary, and imagination
 - Preschool to 12th grade
- Melanie D. McDonald & Ann Shaw-King – “Learning to Listen, Listening to Learn”
 - Multi-level activity sheets
 - Explains internal and external reasons for ineffective listening

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Other Management Approaches

(Chermak & Musiek, 2007)

- Musical Training- p. 329
- musical training "is an enjoyable activity that taxes timing skills and the act of singing emphasizes the sound patterns of speech"
- Multiple studies' findings discussed
- Copyrighted material missing

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Sources of Auditory Training Materials

(Chermak & Musiek, 2008)

- (C)AP Tests
- Tonal and Speech Materials for Auditory Perceptual Assessment (VA CD)
- Generate Your Own Materials
 - ECOS/Win
 - Experimental Generator & Controller for Windows
 - Cool Edit

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Sources of Auditory Training Materials

(Chermak & Musiek, 2008)

- Cochlear Implant Training
 - *Sound and Beyond*
- Speech Discrimination Tests
 - Minimal Pairs Test; Wepman Auditory Discrimination Test
- ESL Tests/Training Materials
- Seashore Measures of Musical Talent

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Auditory-Language Processing Software

(attention, memory, auditory processing, phonological awareness)

- www.braintrain.com
- www.laureatelearning.com
- www.parrotsoftware.com
- www.scientificlearning.com
- www.cogcon.com
- www.edmark.com
- and more.....