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**Auditory Building Blocks:  
Awareness, Discrimination, Patterning**

Ashley S. Garber, M.S. CCC-SLP, LSLC Cert. AVT

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**Introduction**

Cochlear America's Commitment  
to Educational Outreach

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**Our Presenter**

Ashley S. Garber, MS CCC-SLP, LSLC Cert. AVT



–Private practitioner specializing  
in auditory verbal therapy and  
consultation services

–Fifteen years of experience  
working in a variety of settings  
with children and adults with  
hearing loss who use cochlear  
implants

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### Agenda

- Defining auditory functions
  - Awareness
  - Discrimination
  - Patterning
- For each level
  - Assessing – how do you know when a child demonstrates this skill?
  - Teaching – across input and contexts
- Discussion and Questions

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### Parameters of Auditory Skill Development

- Auditory Function
  - The tasks of listening
  - Hierarchical in nature
- Meaningful Input
  - The auditory stimuli presented to a listener from which meaning can be derived
  - Building from environmental and speech sounds to conversation, but not hierarchical
- Situational Context
  - The environment and circumstances in which input occurs

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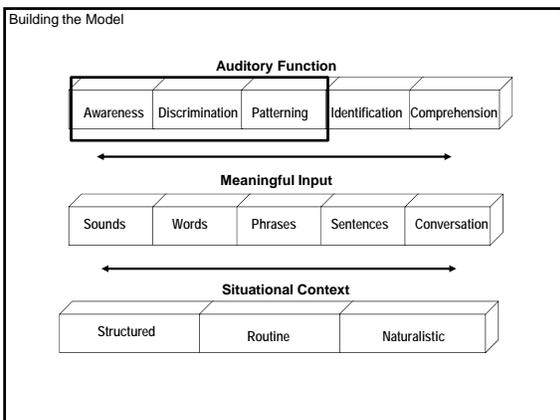
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### Taking Each Level in Turn

- By Definition
- Subskills
- Assessing
  - How will you know when a child demonstrates skill?
- Teaching
  - Strategies
  - Activities
    - Across contexts

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## Awareness

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### By Definition

- Noting the presence of a particular sound or sounds
- Also called “Detection”

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**Awareness**

- Subskills
  - Developing "listening attention"
  - Responding to environmental sounds
    - Loud, medium & soft
    - At close range, a distance of 6-12 ft., a distance >12ft.
  - Responding to speech sounds
    - Loud, conversational level and whispered
    - Vowels
    - Consonants
    - Close range and at a distance
  - Alerting to continuous sound and noting when it stops
    - Speech
    - Non-speech

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**Awareness cont.**

- Subskills, cont.
  - Searching for/localizing to sound
  - Making a conditioned response to sound
    - Play Audiometry
    - Ling 6 Sound check
      - /a/, /i/, /u/, /s/, "sh", /m/

(Estabrooks, 2000, Walker, 1995) 

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**Behaviors that Show Awareness**

- Eye widening
- Cessation of sucking or other movement
- Quieting
- Turning head
- Glancing with eyes
- Startling
- Vocalizing
- Pointing to ear

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### A word about sounds

- Some sounds are within our control
  - Noisemakers
  - Our own speech
  - Some environmental sounds
    - Knocking on the door, etc.
- Some occur unexpectedly
  - An airplane overhead
  - Noise in the hallway
  - A telephone ringing
- Some we can anticipate
  - The 8 o'clock train
  - The microwave going off

  
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### Teaching Awareness Skills

- The "Listen Cue"
  - Point to your ear and say "Listen" prior to introducing sounds in order to encourage the child to attend ("listening attention")
  - Once a sound is made, point again to alert the child to the sound
    - "I heard that ... dog, horn, airplane, talking"
- Pausing and Wait-time are critical
  - Pausing before a sound is made gives the child time to begin listening
  - Especially in the early stages of listening, children may need time to process; to realize that they have heard something
- Work with sounds that are within your control, but alert to the unexpected sounds whenever possible

  
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### Bubbles at the Door

- One adult leaves the room with a jar of bubbles, telling the child to listen for a knock on the door
- The other adult engages the child with a toy but cues her to "listen"
- The adult outside knocks on the door and waits for a response
- The adult inside looks for the child to look up, etc. and then says "I heard it, Knock Knock Knock!" and moves to open the door
- The outside adult blows bubbles for the child when the door opens

  
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### “Something in My Box”

- Which One?
  - Gather two identical boxes (e.g. diaper wipes tubs)
  - Without the child seeing, put an item inside one of the boxes
  - Cue the child to listen, hold both boxes in front of him and shake each box in turn
  - Allow the child to choose which box to open
- Teaching – use facial expressions and “I heard something” to indicate when the box makes sound and when it doesn’t
- Testing – do not indicate to the child which box made a noise until after he/she has tried to find it
- Put toys in any opaque container as a set up for other activities – a perfect opportunity to practice awareness skill

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### Conditioned Play

- A variety of toys/activities lend themselves to this task
  - Blocks and a bucket
  - Stacking cups
  - Rings and a peg
  - Any age appropriate toy with multiple pieces that the child can act on in a repetitive way; preferably a toy with a “reward” built in (e.g. plays a song or flashes lights after all rings are stacked)
- Modeling the activity with the parent as the listener is an effective way to demonstrate the expectations of the game

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- Initially use speech sounds or noisemakers that you are sure the child has previously detected
- Start by modeling a “listening posture” – put the block to your own ear and wait for the sound.
- Say “I hear that” and then drop the block in the bucket when you hear the presented sound
- If the child alerts to the sound but does not drop the block, use hand-over-hand prompting to help her carry through
- Clap your hands saying “You heard it!” as extra reinforcement for the child

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**Go Car Go**

- Wind up toys are very motivating stimulus for awareness activities
- Much like in the conditioned play activity, model for the child that he will wait until he hears "Go!" before letting his car zoom across a table
- Rolling balls across the floor, floating boats across a tub of water, sliding people down a tube, etc. are all variations on this theme



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**Stop and Start Art**

- To target attending to a continuous sound and the cessation of that sound, try these games
  - Give the child a marker to draw a swirling line when he hears your voice go on, and then pick up the pen when you stop vocalizing
  - Put a marker to paper secured onto a Fisher Price Record Player and let the child turn the turntable on and off at the changes in your vocalization to make cool art
- Other games
  - Fly an airplane "aaaaaaa" until your voice stops
  - Float a ghost "woooooo"



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**In Routines**

- Knock on the door before entering preschool each morning
- Ring a bell to indicate that clean up time begins
- “Listen ...stomp, stomp, stomp” “Here comes Daddy up the stairs for bedtime”
- “Listen ... the water’s running! Time for a bath!”

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**Out and About**

- Alert to any unexpected sounds in the environment and then find them
  - Telephone ring
  - Firetruck siren
  - Trashcans crashing down
- Listening walk (Robbins, 1998)
  - Talk a walk for the express purpose of discovering sound and its sources
- Hide sand toys in a container and shake it before bringing each toy out. Make sure to shake it once it is empty as well

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Have you noticed ... while you work to teach and observe awareness skills, you are laying the foundation for discrimination, identification and understanding all at once!

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**Discrimination**

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**By Definition**

- Making judgments as to the similarity or difference between sounds
- The child begins to respond differently to different sounds
- In its truest sense: judgment between **2** sounds

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**Discrimination Subskills**

- Respond differentially to
  - music vs. speech
  - Toys vs. speech
- Respond differentially to
  - Female vs. male voices
  - Angry, sad or happy voices
- Remediation/clarification tasks:
  - Determination if 2 phonemes are the same/different
  - Determination if two utterances are the same/different
    - e.g. flower/flowers

(Estabrooks, 2000, Walker, 1995)

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**Behaviors that Show Discrimination Skill**

- Changes in facial expression, action or demeanor to indicate that something different was heard, e.g.
  - stopping movement when speech interrupts music on the radio
  - laughing when a familiar toy sound is activated
- Indicating “same” vs. “different”
  - By pointing to a picture representation (smile/frown etc.)
  - Verbally

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**Teaching Discrimination**

- By definition, discrimination is most often used for testing or remediation
- For young new listeners, you will most often simply make observations about the child’s responses that will tell you that they are beginning to discriminate between sounds
- For those older listeners who need more of an auditory training model, you might illustrate a same/different task several times to teach the concept before checking for ability

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**Remediation Example**

- While reading a book, you mention the “boy’s back” and the child points to his “bat”
- You might say “Uhoh, listen .... *back* ..... *bat* ... Are those the same or different? *back* ... *bat*...”
- Yep different. Now listen ... *back* (pointing to the boy’s back) ... *bat* (pointing to the baseball bat). You try ... *back*’
- Then repeat the original sentence and go on about your business.

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**Patterning**

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**By Definition**

- Recognizing the features of rate, duration, intensity and pitch that create rhythms in sounds and speech

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**Patterning Subskills**

- Marking syllable number in word imitations
- Noting differences between short and long vocalizations/utterances
- Noting differences between fast and slow speech (or other sounds)
- Noting changes in pitch
- Marking stress changes in speech

(Estabrooks, 2000, Walker, 1995)

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**Patterning Subskills cont.**

- Noting question inflection, tone of voice
- Speaking in a loud voice, whispered voice
- Speaking with a high pitch, low pitch
- Labeling/Identifying voices as sad, angry, happy

  
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**Behaviors that Show Patterning Skill**

- Changing expression or stopping movement when a specific change in the duration, intensity or pitch of a sound occurs (e.g. teacher begins to whisper)
- Vocalizing with beats that match an environmental sound or vocalization (e.g. "uh uh uh" in response to a knock on the door)
- Matching a physical action to the suprasegmentals of a sound (e.g. a boy slides his hand down his leg in response to falling intonation)

  
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**Teaching Patterning**

- Matching movements and visual indicators to speech sounds is an effective way to alert a child to differences in suprasegmentals, e.g.
  - "wheeeee" with a falling intonation pairs with a sliding motion , a playground slide etc.
  - A long string is paired with a continuous sound, a series of beads marks repeated sounds
- As with the other auditory function levels, pausing before and after a sound presentation allows for a child to prepare to listen and then to process what he hears
- This "Wait Time" also allows you time to observe whether a child is responding

  
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### Silly Moves

- Mark the floor of your therapy room or gym with masking tape or other treatments
  - Long strips to “sliiiiiiiiiiiiiiiiide” on
  - Circles to “hop hop hop” into
  - Swirls to “tuuuuuuuurn around” on
  - A line to “STOP!” on
- For teaching/modeling only, play “Follow the Leader”, making sure to cue children to listen before each move
- For assessment, take turns a la “Mother May I”:
  - A single instruction
  - A sequence or pattern of moves

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### Clown Parade

- Using stuffed clowns or other dolls, take turns performing movement tricks
  - Walk walk walk, JUMP!, sliiiiiiide
- Clowns can climb “up, up, up” (with rising intonation) a ladder and then “diiiiive” (with falling tones) into a tub of water, or sliiiiide down a rope



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### Anytime

- As with all other goals, putting patterning into natural contexts is critical
- When reading
  - use high and low pitched voices for various characters (e.g. the 3 bears)
  - Whisper or use a loud voice when appropriate to the action
- Anytime is a great time to pair suprasegmentals with movement
  - Taking a walk
  - Changing a diaper
  - Playing with toys

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### Songs and Fingerplays

- Suprasegmentals are naturally incorporated into music
- Emphasize them when you can
  - “Row Row Row Your Boat” is great fun sung fast or slow, holding hands to row along in time
  - “John Jacob Jingle Hammersmith” builds whispering and shouting into the song
  - “Sooooooo Big” prominently features duration changes

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As often as possible think of these as skills to be *developed* and *observed* rather than as skills to be *tested* or activities to *do*

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### In Summary

- By taking each level of auditory function in turn we can examine its significance and consider our approaches to teaching
- While common practices follows the notion that auditory functions develop first in structured tasks and then move to naturalistic contexts, the cochlear implant allows the possibility of developing skills in naturalistic contexts sooner
- By approaching auditory goals within the context of natural language, we will be encouraging seamless progression through auditory function levels

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**References**



- Estabrooks, W. (2000). Auditory Verbal Practice. *The Listener*, Summer, 2000, 6-29.
- Walker, B. (1995) The Auditory Learning Guide, unpublished.
- Robbins, AM (1998). Lesson Plan for Lilly. In Estabrooks W, ed. *Cochlear Implants for Kids*. Washington, DC: A.G. Bell Association, pp. 153-174.



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**Questions and Discussion**



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**New Parent Resource**



- Practical, applied guidance on specific topics
- Most recent HOPE booklet: *Fun and Games*
  - *Choosing Games and Toys*
  - *Fun Finds: Resources at Your Fingertips*
  - *Optimizing Participation in Summer or After School Activities*
  - *Maximizing Auditory Skills in Outdoor Play*
- Now in the Parent Section of HOPE  
[www.cochlearamericas.com/hope](http://www.cochlearamericas.com/hope)



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**Children with Cochlear Implants:  
The Words and the Music**

- One day introductory level workshops on reading, vocabulary and music
- Two remaining sites: San Diego (CA) on January 25 and Washington (DC) on March 13
- For more information, go to [www.regonline.com/hopeworkshops](http://www.regonline.com/hopeworkshops)
- Or call Sarah Gard at 303.524.6848, [sgard@cochlear.com](mailto:sgard@cochlear.com)



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**Upcoming Online Sessions**

Next Up:  
**Wednesday, October 12, 3:00 pm ET**  
*Cochlear Implant Concepts for NonProgramming Professionals (Professionals)*  
Amy Popp, AuD., Regional Clinical Technical Manager  
Cochlear Americas

**Tuesday October 25, 3 pm ET**  
*Building Blocks: Auditory Identification (Professionals)*  
Ashley S. Garber, M.S., CCC-SLP, LSL Cert. AVT  
Listening and Language Connections, LLC



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**Contact Cochlear Americas**

- For questions about this seminar, contact [agarber@cochlear.com](mailto:agarber@cochlear.com)
- For inquiries and comments regarding HOPE programming, please contact: [dsorkin@cochlear.com](mailto:dsorkin@cochlear.com)
- For a Certificate of Participation, please send your completed Feedback Form to: [hopefeedback@cochlear.com](mailto:hopefeedback@cochlear.com)



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