

Rehabilitation: What Should I Be Doing?

HLAA 2018

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Disclosure Statement

Relevant financial relationship(s) and relevant nonfinancial relationship(s)

I have the following relevant relationships in the products or services described, reviewed, evaluated or compared in this presentation.

MaryKay is an employee of MED-EL Corporation

- Why should I consider aural rehabilitation?
- Holistic approach to aural rehabilitation
- Specific exercises and practice

Objectives

Adults and Aural Rehabilitation

- Speech Perception
- Speech Intelligibility
- Music Appreciation
- Cognition
- Quality of Life



Speech Perception

- Trained adults initially on 75 words (easy and hard) : found improved ability to recognize those words in noise in open-set condition
- Added another 75 words: found same results and maintained ability from first 75 words
- Generalized well to unfamiliar talkers
- Improved performance for recognizing trained words when embedded within a sentence
- Did not find improvement for running speech
- Discussion: If this training protocol was extended further to incorporate more individual words, particularly commonly used words, there is potential for improvements in running speech

Burke MH, Humes LE. Effects of long-term training on aided speech-recognition performance in noise in older adults. J Speech Lang Hear Res. 2008;51(3):759-771.

Speech Intelligibility

- Participants received speech therapy for two 1-hour sessions per week (4 – 5 weeks)
- Therapy: imitate CV sequences with target sound, then to word imitation and spontaneous production
- All participants improved productions of the target speech sounds at the conversational speech level even though treatment focused on single-word productions (ranged from 12.7 to 83.3 percentage points)
- Results support overall effectiveness and efficiency of a behavioral speech therapy program in increasing percent correct speech sound production in adult cochlear implant recipients
- Speech should be part of therapy if warranted

Pomaville FM, Kladopoulos CN. The effects of behavioral speech therapy on speech sound production with adults who have cochlear implants. J Speech Lang Hear Res. 2013;Apr;56(2):531-41.

Music Appreciation

Review of literature

- Musical training may generalize to neural encoding of speech as well as music
- Higher perceptual demands required for music listening (greater precision) may 'fine-tune' the auditory system
- Research suggests that this fine tuning may generalize to skills such as phonological processing, verbal memory, learning mechanisms for language, and lower perceptual thresholds for complex auditory input

Gfeller K, Guthe E, Driscoll V, Brown CJ. A preliminary report of music-based training for adult cochlear implant users: rationales and development. Cochlear Implants International. 2015;16(0 3):S22–S31.

Cognition

Review of literature

Looked at three different studies on adults with hearing loss

- Training phoneme discrimination in quiet
- Training phoneme discrimination in noise
- Directly training working memory
- Results: auditory therapy resulted in generalized improvements in measures of self-reported hearing, competing speech, and complex cognitive tasks. Auditory training should incorporate cognitive tasks.

Ferguson MA, Henshaw H. Auditory training can improve working memory, attention, and communication in adverse conditions for adults with hearing loss. *Frontiers in Psychology*. 2015;6:556.

Quality of Life

CI recipients responded to questionnaire or live interview regarding rehabilitation strategies

Findings suggest those with better performance (word recognition) and better Quality of Life (questionnaire) had:

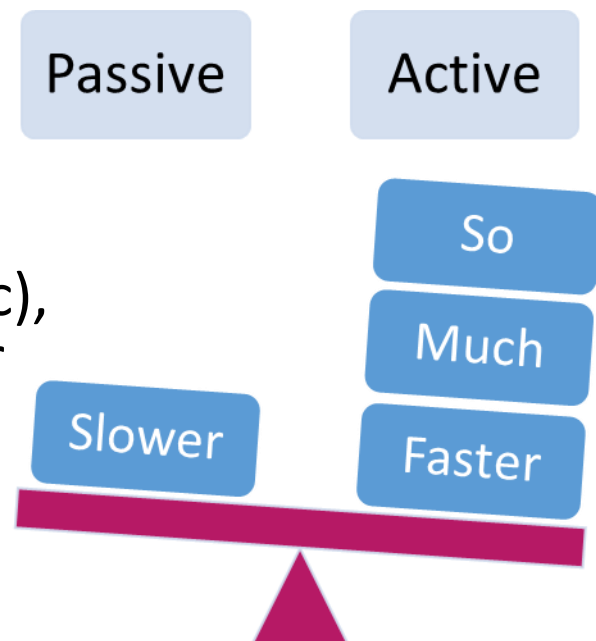
- more motivation to pursue active rehabilitation strategies
- more family support
- participation in CI support groups or meetings
- preoperative understanding/expectation that some work and effort necessary after CI

Harris M, Capretta N, Henning S, et al. Postoperative Rehabilitation Strategies Used by Adults With Cochlear Implants: A Pilot Study. Laryngoscope Investig Otolaryngol. 2016;June1(3):42-48.

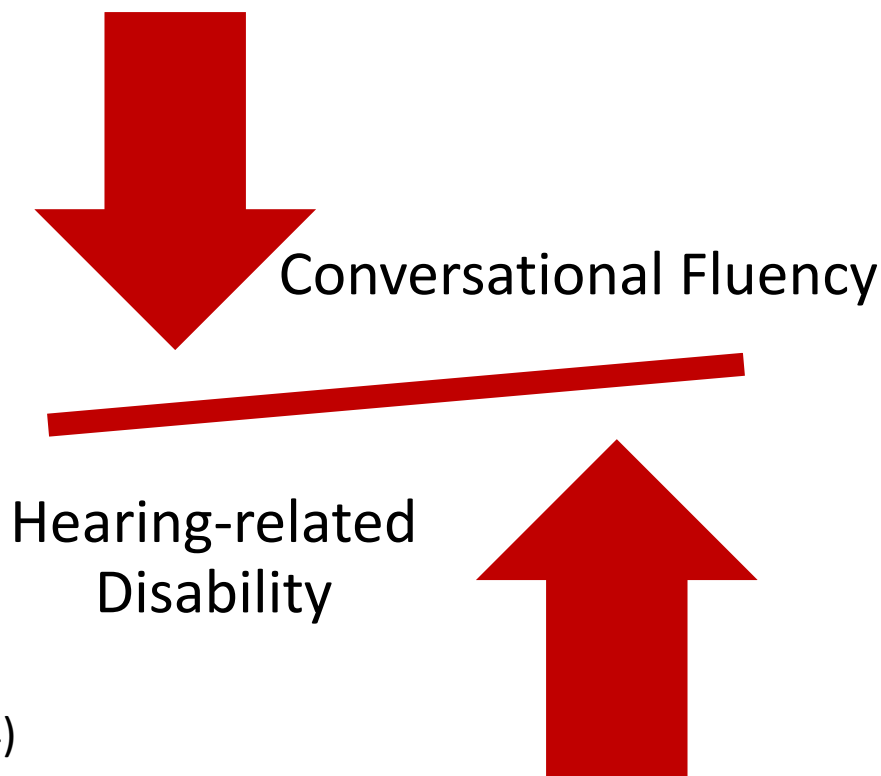
Active is Better

Active Rehabilitation: computerized auditory training programs (ie: audio concentration game www.manythings.org/ac), home practice with guided material (ie: Hear at Home), sessions with professional; being involved

Passive Rehabilitation: watching TV with or without captions, listening to familiar music, conversing with others

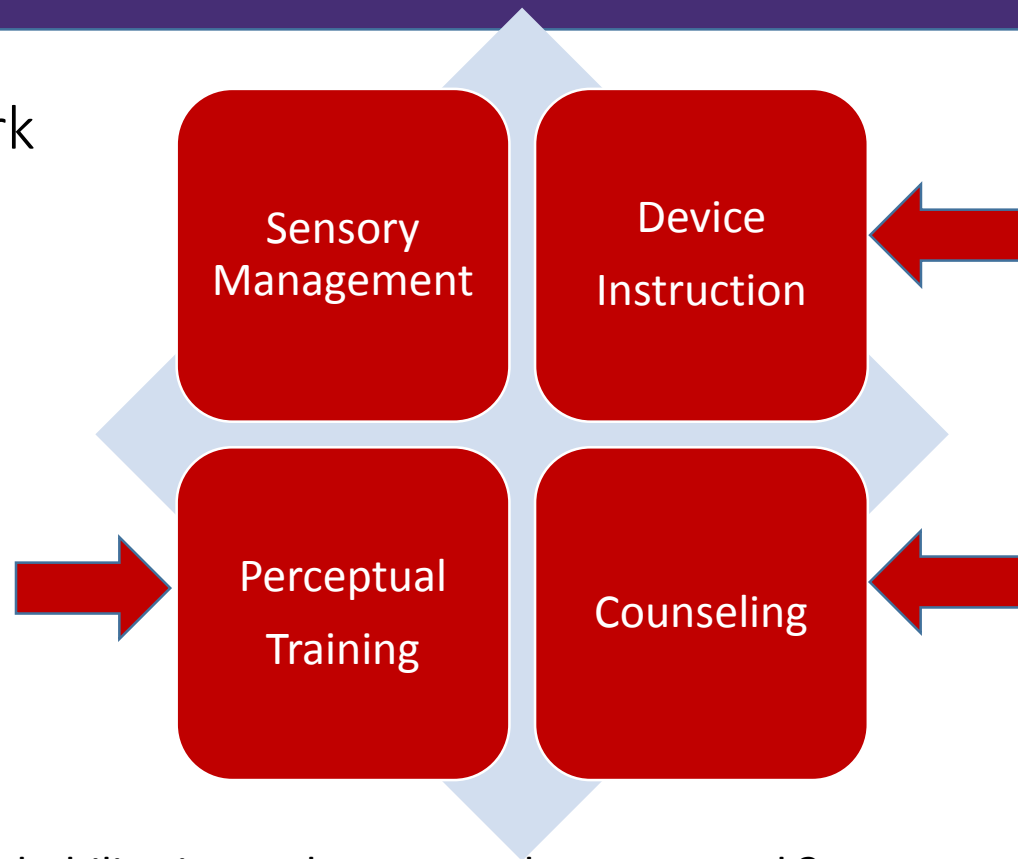


Goal Of Aural Rehabilitation



(Tye-Murray, 2003; 2014)

Holistic Framework



Boothroyd A. Adult Aural Rehabilitation: What Is It and Does It Work?
Trends Amplif. 2007;June11(2):63-71.



Sensory Management

- Identify hearing loss
- Understand hearing loss and its implications
- Obtain appropriate amplification using hearing aids and/or cochlear implants
- Utilize technology (ie: wearing options) accessories and assistive listening devices



Device Instruction

Provide guidance for individual to take ownership and responsibility for his/her hearing loss and technology



Technology



Roger™ 21 with the Roger Clip-On Mic Product Review

Want to hear clearer especially in noisy settings? The Roger™ Clip-On Mic can help you hear every word of the conversation—CI user Megan shares her review!

[READ MORE](#)



Review of the Roger™ 21 with the Roger Pen Wireless Microphone

HANDS ON HEARING

WORKSHOPS FOR MED-EL USERS & CANDIDATES



Counseling





Support

- Family
- Community

A photograph of two women sitting at a table in a bright, modern setting. The woman on the left, with short brown hair, is wearing a dark blue top and a small black hearing aid on her left ear. She is looking towards the woman on the right. The woman on the right has blonde hair and is wearing a grey sweater over a white collared shirt. She is smiling and looking back at the first woman. The background is softly blurred, showing indoor plants and large windows.

Meetup

MED  **EL**

ASHEVILLE, NORTH CAROLINA

October 2017

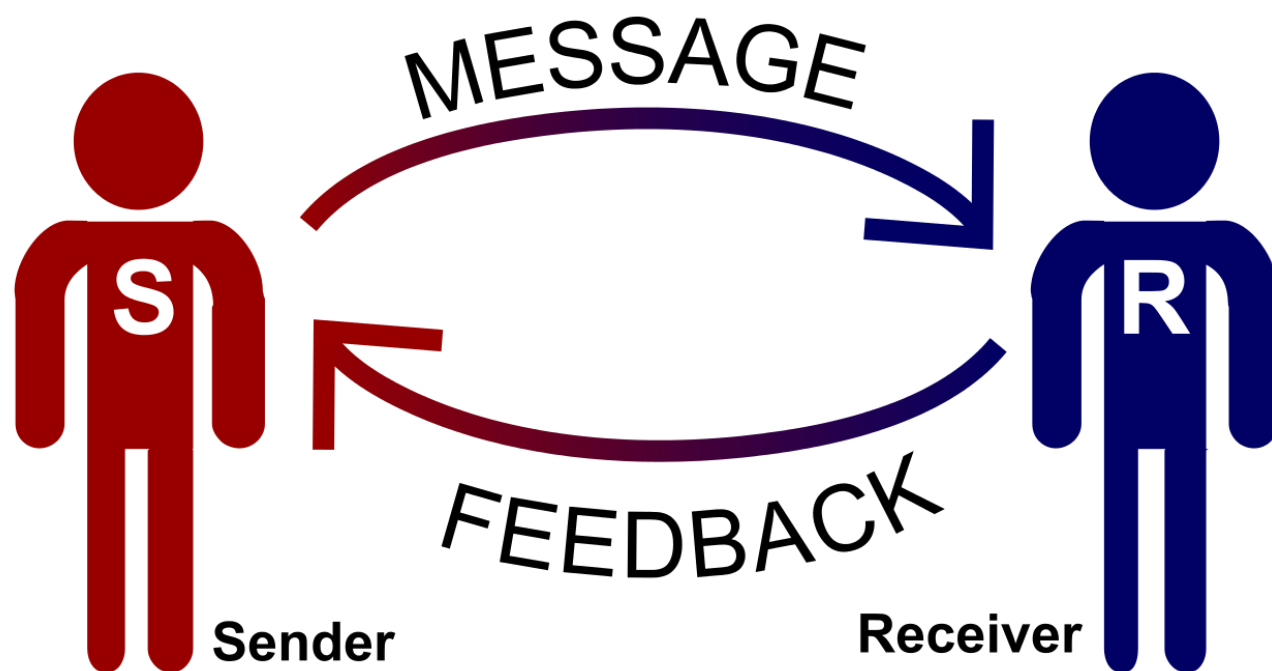
 **HLAA**
Hearing Loss Association of America
2018
CONVENTION
MINNEAPOLIS, MN | JUNE 21-24, 2018





Perceptual Training

Conversational Fluency



Did you
watch the
baseball
game last
night?

Yeah, the
center
fielder made
an amazing
catch.



Conversational Fluency

Did you
watch the
baseball
game last
night?

It's cold
today.



Conversational Fluency?

Auditory Training – Two Types

- Analytic: Specific Sounds
 - Used to focus on missing sounds which are now accessible
 - Working on identification
 - vowel and consonant auditory discrimination
 - Focus on acoustic parts of speech
- Synthetic: Language Based
 - More natural approach to learning how to understand language
 - Uses content and knowledge of specific sounds and words to predict and derive meaning

Easier

Closed Set

Visual

Words/Phrases with
smaller # key words

Dissimilar

Concrete

High

Good

Near

Set Size

Presentation

Utterance Length

Stimulus Similarity

Complexity

Context

Signal-to-Noise Ratio

Distance

Harder

Open Set

Auditory

Complete Sentences with
larger # key words

Similar

Abstract

Low

Poor

Far

Let's Practice



Auditory Training: Specific Sounds

Listen to a list of words and state the ones that have a certain sound in them

Can be listening for initial only, final only or in any position of the word

PRACTICE: listen for /sh/

Listening for a Specific Sound *

- Length
- Words with different vowels and consonants
- Vowels
- Consonants

Auditory Training: Specific Sound Practice
(length difference to specific sound difference)

Bob Mary Tiffany

Auditory Training: Length Difference *



Practice: Sound Discrimination *



Practice: Sound Discrimination *



Practice: Sound Discrimination *

might-mitt-Matt-mutt-mate-meet-moot-mute-moat-met

Auditory Training: Vowel Differences *

Vowel and consonant difference

comb cat cup kiss

Only one consonant difference

stop mop hop cop

Auditory Training:
Consonant Differences *

white light right night might

Auditory Training:
Consonant Differences in sentences *

Definition: individual repeats back sentence verbatim.

- Sentence building
- Topic centered sentences
- Related sentences (ie: story, article)
- Unrelated sentences

Not for assessment

Factors: word familiarity, length of sentence, sentence order

Works on speech discrimination and auditory memory skills
(monitor length and complexity)

Speech Tracking

Topic Centered Sentences: track from familiar theme

Topic: time

- Good for auditory training but also good for cognitive training
 - problem solving, speed of processing information, organizing, memory, attention



Auditory Training: Synthetic – Language Based

- Identification: understand sentences (follow directions)
- Comprehension: answer questions, understand paragraphs of information, abstract information

Language Based



Name	Action	Number	Descriptor	Object
Mary	saw	two	green	raspberries
Molly	bit	five	red	blueberries
John	picked	six	blue	cherries
Jerry	bought	ten	yellow	blackberries

Language Based: Sentence Matrix *

- Answering questions about information presented

Easy: provide multiple choice visual answers

Difficult: auditory only-no cues

Language Based: Sentences*

55111

Language based: Sentences



Language based: Sentences

Auditory Understanding and Recall

- recall of stories (increase in length and complexity)
 - individual's history, current events (read), made up stories, history, informative (enjoyable topic)
- multiple choice questions (recognition versus recall)
- “wh” and open-ended questions
- recall and retell story

Language Based: Paragraphs

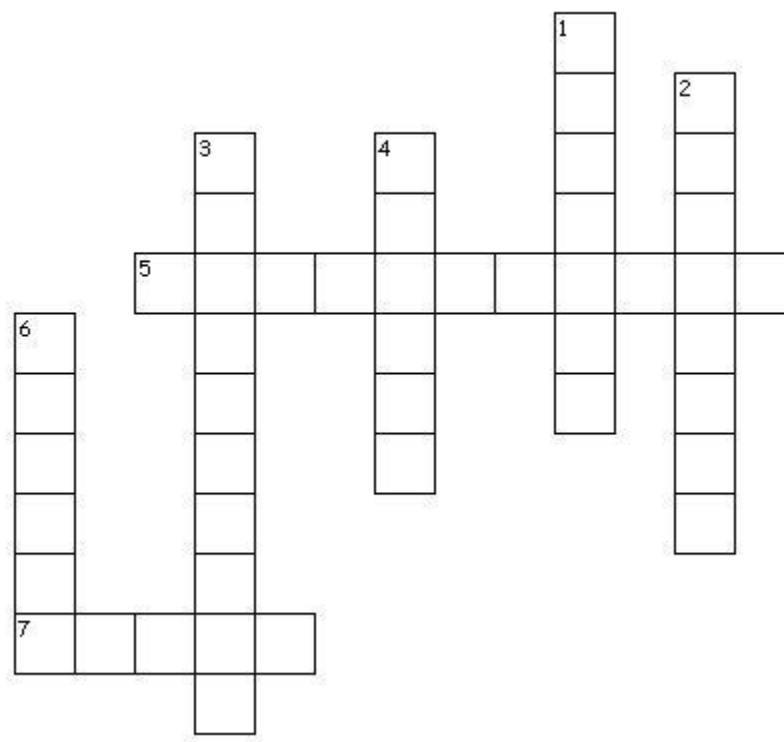
- Listen to a text being read and follow along. Fill in the missing words in the written text as you hear them.

Language Based: Paragraphs

In the fall of 1885, East Coast _____ visited Minnesota and called St. Paul “another Siberia, unfit for _____ habitation.” The Saint Paul Chamber of Commerce responded by hosting a giant _____ carnival replete with food, ice _____, and winter sports. The event was held on and off _____ the years until the St. Paul Winter _____ finally became an official seasonal tradition in _____.

Practice

- Crossword puzzles-visual clues then only as auditory clues



Games

- Why should I consider aural rehabilitation?
- Holistic approach to aural rehabilitation
- Specific exercises and practice

Objectives



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