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POWERFUL CONNECTIONS

Interprofessional Auditory Rehabilitation

Meeting the Needs of Adults with Cochlear Implants

Outcomes and Case Studies of Auditory Rehabilitation for Adults with Cochlear Implants

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Outcomes and Case Studies of Auditory Rehabilitation for Adults with Cochlear Implants
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Learner Outcomes

1. Describe the impact of a comprehensive auditory rehabilitation approach for adults with cochlear implants.
2. Identify 1-2 measures that could be reasonably added to clinical practice in a given setting.
3. Provide an example of a patient-centered AR goal based on results of broader assessment measures.

Outline

- **Review of previous webinar series**
- Case studies
- Auditory training resources
- Stakeholders in AR

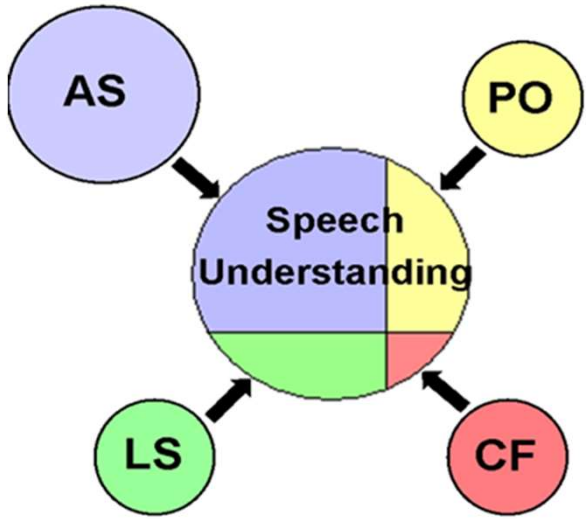
ES58
ES59

Variability in CI Users

- Substantial variability remains in speech recognition among CI users
  - Demographic & audiologic factors explain less than half of variability

Relates to abilities within four areas:

AS: Auditory Sensitivity
PO: Perceptual Organization
LS: Language Skills
CF: Cognitive Factors



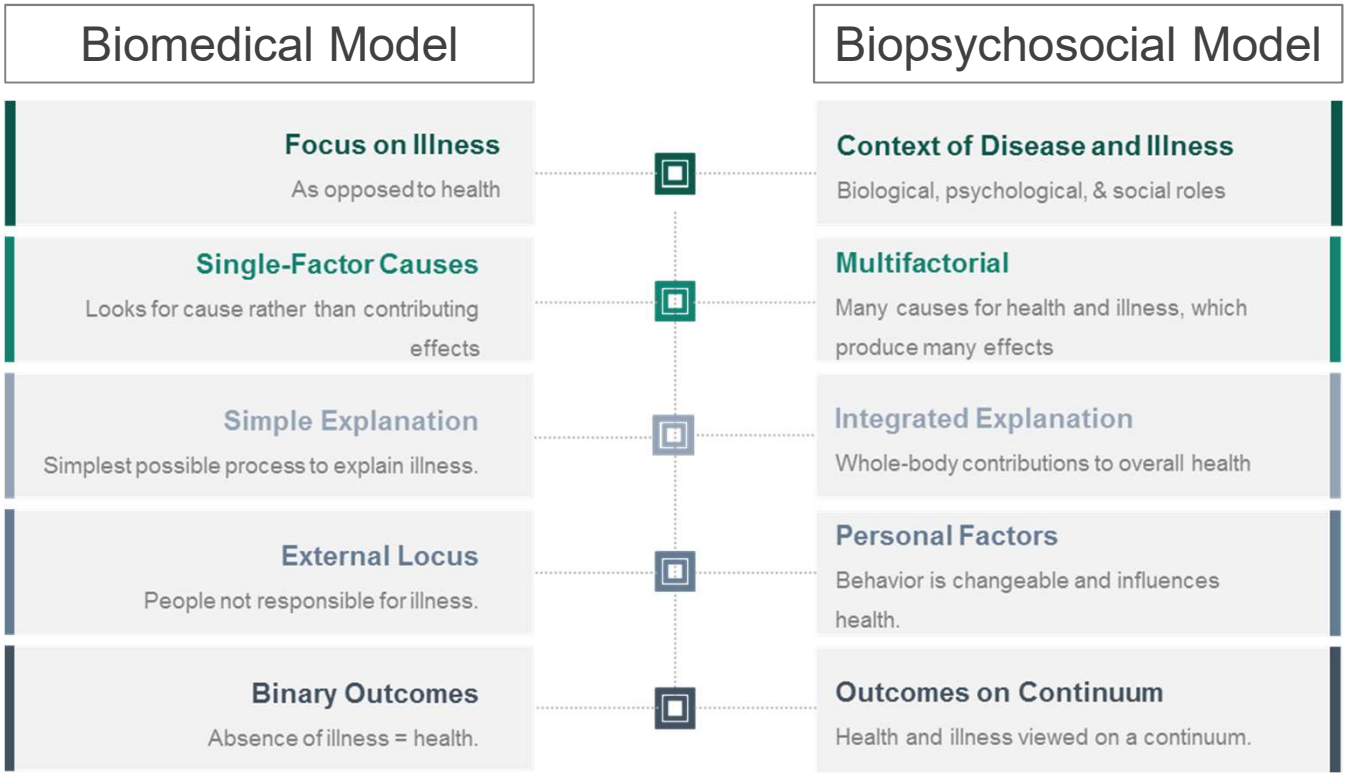
Slide 6

ES58 Kara
Erin Stefancin, 9/2/20

ES59 notes: Patient-centered care looking at a wider scope of skills
Erin Stefancin, 9/2/20

How do our patients define success?

What is AR?
Perspective



What deficits do we see in older adults?

- Speech recognition
- Listening comprehension
- Motivation
- Device knowledge
- Psychosocial function
- Communication confidence
- Listening effort
- Self-efficacy
- Social participation/isolation
- Executive functioning and cognition
- Quality of life

ES87

What is AR?

What does it aim to treat?

Function

- hearing capacity

Activity

- USE of capacity

Participation

- activity in daily life

QOL

- perception of experiences and well-being

Sensory Management

Instruction

Perceptual Training

Counseling

(Boothroyd, 2007)

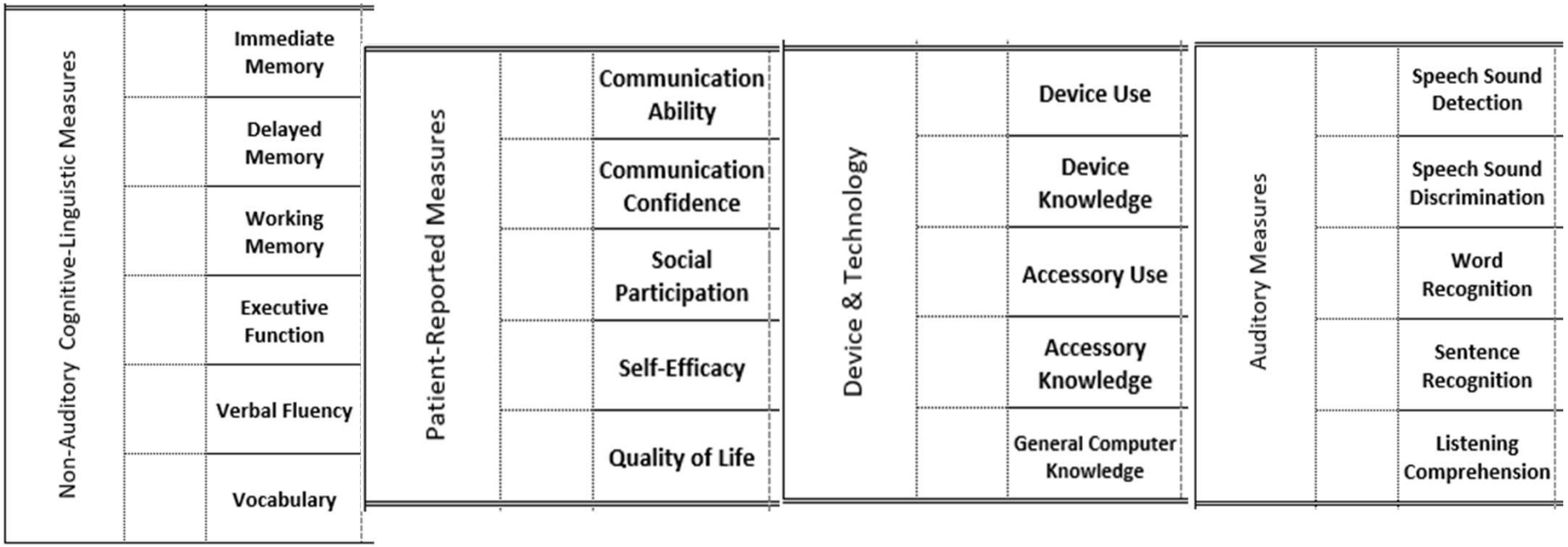
Slide 10

ES87 add this citation into references
Erin Stefancin, 9/18/20

Outline

- Review of previous webinar series
- **Case studies**
- Auditory training resources
- Stakeholders in AR

Case Study Format



Case Study #1: "I'm considering a CI"

Don is an 80 year old male with a 20 year history of bilateral hearing loss and a 9 year history of bilateral hearing aid use. Don is a retired firefighter and enjoys being the "handyman" of his family. Don describes himself as an extrovert and was open to discussing his communication struggles. Don loves spending time at coffee shops and with his 14 grandchildren. Don drives an hour and a half each way for his appointments.

Case Study #1

Pre-CI Evaluation-SLP

AUDITORY REHABILITATION ASSESSMENT

PATIENT: _____ DATE: _____

	✓	Skill Assessed	Test Material(s)	Score	Strengths	Weaknesses	Notes for AR Goals
Auditory Measures		**Speech Sound Detection**	Audiogram	Bilateral SNHL			
		Speech Sound Discrimination	Ling 6	Bilateral: 4/6	listening in AV conditions	listening in A-only conditions	start with listening in AV conditon
		Word Recognition	CNC words	Bilateral: 48%			
		Sentence Recognition	AZ Bio Senteces (in quiet)	B: 61% R: 16% L: 39%		listening with individual ears	
		Listening Comprehension	Harvard 12	70%	increased accuracy with context	noise	
stic Measures		**Immediate Memory**	RBANS	below average	paragraphs (context)	list words (no context)	start with listening with context first
		Delayed Memory	RBANS	low average	paragraphs (context)	list words (no context)	

Case Study #1

Pre-CI Evaluation-SLP

AUDITORY REHABILITATION ASSESSMENT

	✓	Skill Assessed	Test Material(s)	Score	Strengths	Weaknesses	Notes for AR Goals
Patient-Reported Measures		**Communication Ability**	PACA	4 (quite a lot)	listening one -on one	listening in groups/ background noise	
		Communication Confidence					
		Social Participation	Social Isolation	2 (usually)	high family support	frequently in quiet vs. speech	
		Self-Efficacy	LSEQ	Basic: 33% Direct: 20% Complex: 7.5%	listening in easier settings	direct & complex listening environments	
		Quality of Life	CIQOL		Communication & Entertainment		

Case Study #1

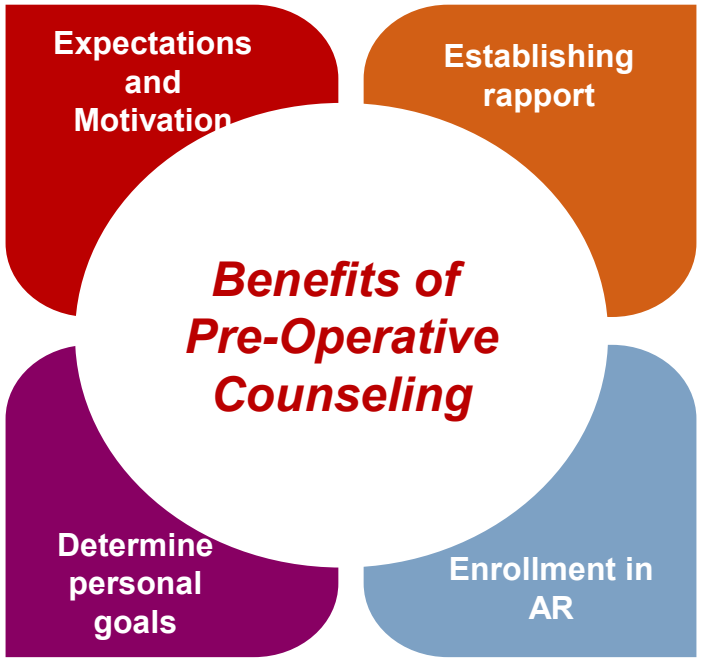
Pre-Op Counseling- Why?

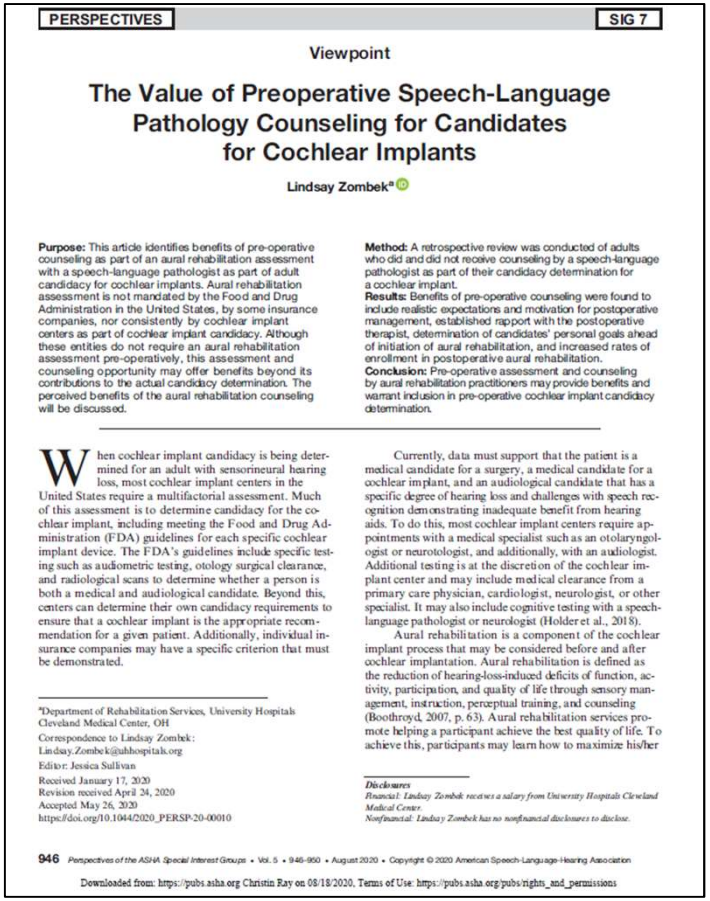
- Not currently mandated (Holmes & Rodriguez, 2007)
- Considered important for CI candidates (Harris et al., 2016)

- *Other potential benefits:*
  - *Familiarity with provider*
  - *More time*
  - *Understanding of learning*

Case Study #1

Pre-Op Counseling- Why?





PERSPECTIVES | SIG 7

Viewpoint

The Value of Preoperative Speech-Language Pathology Counseling for Candidates for Cochlear Implants

Lindsay Zombek[a]

Purpose: This article identifies benefits of pre-operative counseling as part of an aural rehabilitation assessment with a speech-language pathologist as part of adult candidacy for cochlear implants. Aural rehabilitation assessment is not mandated by the Food and Drug Administration in the United States, by some insurance companies, nor consistently by cochlear implant centers as part of cochlear implant candidacy. Although these entities do not require an aural rehabilitation assessment pre-operatively, this assessment and counseling opportunity may offer benefits beyond its contributions to the actual candidacy determination. The perceived benefits of the aural rehabilitation counseling will be discussed.

Method: A retrospective review was conducted of adults who did and did not receive counseling by a speech-language pathologist as part of their candidacy determination for a cochlear implant.
Results: Benefits of pre-operative counseling were found to include realistic expectations and motivation for postoperative management, established rapport with the postoperative therapist, determination of candidates' personal goals ahead of initiation of aural rehabilitation, and increased rates of enrollment in postoperative aural rehabilitation.
Conclusion: Pre-operative assessment and counseling by aural rehabilitation practitioners may provide benefits and warrant inclusion in pre-operative cochlear implant candidacy determination.

When cochlear implant candidacy is being determined for an adult with sensorineural hearing loss, most cochlear implant centers in the United States require a multifactorial assessment. Much of this assessment is to determine candidacy for the cochlear implant, including meeting the Food and Drug Administration (FDA) guidelines for each specific cochlear implant device. The FDA's guidelines include specific testing such as audiometric testing, otology surgical clearance, and radiological scans to determine whether a person is both a medical and audiological candidate. Beyond this, centers can determine their own candidacy requirements to ensure that a cochlear implant is the appropriate recommendation for a given patient. Additionally, individual insurance companies may have a specific criterion that must be demonstrated.

Currently, data must support that the patient is a medical candidate for a surgery, a medical candidate for a cochlear implant, and an audiological candidate that has a specific degree of hearing loss and challenges with speech recognition demonstrating inadequate benefit from hearing aids. To do this, most cochlear implant centers require appointments with a medical specialist such as an otolaryngologist or neurotologist, and additionally, with an audiologist. Additional testing is at the discretion of the cochlear implant center and may include medical clearance from a primary care physician, cardiologist, neurologist, or other specialist. It may also include cognitive testing with a speech-language pathologist or neurologist (Holder et al., 2018).

Aural rehabilitation is a component of the cochlear implant process that may be considered before and after cochlear implantation. Aural rehabilitation is defined as the reduction of hearing-loss-induced deficits of function, activity, participation, and quality of life through sensory management, instruction, perceptual training, and counseling (Boothroyd, 2007, p. 63). Aural rehabilitation services promote helping a participant achieve the best quality of life. To achieve this, participants may learn how to maximize his/her

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Disclosures
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Nonfinancial: Lindsay Zombek has no nonfinancial disclosures to disclose.

(Zombek, 2020)

Case Study #1

Pre-CI vs. Post-CI

- Areas of Change:
  - Az Bio Sentences & CNC Words
  - No change in cognitive-linguistic functions
  - QoL focus: social
  - Decrease in communication difficulties (from "quite a lot" to "moderate")
  - No significant change in LSEQ score
  - Social isolation from usually (2) to sometimes (3)

	Pre-CI Evaluation	Post-CI Evaluation
Hearing Tech	R: Phonak Audeo B50 L: Phonak Audeo B50	R: Naida CI L: Phonak Audeo B50
Aided Speech Recognition	**AzBio Sentences (Quiet)** BL:61% Right only: 16% Left only: 39% **CNC** Phonemes correct: 48%	**AzBio Sentences (Quiet)** BL: 71% Right only: 21% Left only: 40% **CNC** Phonemes correct: 69%
Cognitive-Linguistic Function	**Immediate Memory** *below average*	**Immediate Memory** *below average*
	Language *average*	**Language** *average*
	Delayed Memory *average*	**Delayed Memory** *average*
Patient-Reported Outcome Measures	**Quality of Life (CIQOL35)** *Areas of reported difficulties: Social, Listening Effort*	**Quality of Life (CIQOL35)** *Areas of reported difficulty: Social*
	Patient Assessment of Communication Abilities (PACA) *4: Quite a lot of difficulty*	**Patient Assessment of Communication Abilities (PACA)** *3: Moderate difficulty*
	Listening Self-Efficacy Questionnaire (LSEQ) Basic: 33% Directed Listening: 20% Complex Listening: 7.5%	**Listening Self-Efficacy Questionnaire (LSEQ)** Basic: 30% Directed Listening: 25% Complex Listening: 10%
	Social Isolation *2: Usually*	**Social Isolation** *3: Sometimes*

Case Study #1

Rehab plan

Auditory Rehabilitation Plan of Care
GOALS & ACTIVITIES

	Skills Assessed	Sample Goals	Activities*
Cognitive-Linguistic Measures	*Immediate Memory* *Delayed Memory* *Executive Function* *Verbal Fluency* *Vocabulary*	"Answer X% of simple questions presented in X condition with/without background noise with less than X repetitions" "Follow X-step directions in the auditory/auditory-visual, quiet/noise condition with X% accuracy" "Identify the topic and name 1-2 word clues within sentence and paragraph descriptions with X% accuracy" "Repeat a sentence with a disclosed or nondisclosed topic in the X condition with X% accuracy.	• Trivia questions- practice responding to simple questions about areas of interest (e.g., cars, food, animals, etc.) • Sentence completion tasks (e.g., "We need to get in the ___") • I-Spy with picture/object identification (e.g., "it is round and hangs on the wall") • Writing appointment times on a calendar • Filling in the blank for expected and unexpected words in sentences • Identifying the topic of a sentence given (sentence: "My favorite color is green, but I also like blue") • Repeating sentences with given topic

Auditory Rehabilitation Plan of Care
GOALS & ACTIVITIES

	Skills Assessed	Sample Goals	Activities*
Patient Reported Measures	*Communication Ability* *Communication Confidence* *Social Participation* *Self-Efficacy* *Quality of Life*	"Report X% increase in participation at (specified target scenario e.g., church, family dinner, book club)" "Report X% increase in 2/3 patient reported goals (utilizing COSI) after X weeks" "Report increased QoL evidenced by a CIQOL Global score of >X" "Increase communication confidence evidenced by a PACA score >X" "Report decreased listening effort in a specified target scenario (e.g., restaurants, listening on the phone)" "Identify and utilize X/X communication strategies (e.g., asking for clarification)"	• Listening practice similar to relevant situations with supported auditory training (e.g., Telephone with Confidence, Sound Success, live-voice activities) • Discussion of communication strategies and when/where to utilize them • Discussion of a "healthy listening environment" and how to create that environment for a given individual's situation and needs

Case Study #1

Rehab plan

Goal	How this goal was targeted
One-on-one conversation in quiet without lip-reading	• Trivia questions- practice responding to simple questions about areas of interest (e.g., cars, food, animals, etc.) • Sentence completion tasks (e.g., “We need to get in the ___”)
One-on-one conversations with background noise	• Sound success with background noise • Going to restaurants with wife & reviewing the topics they could discuss ahead of time
Speech understanding with the telephone on speaker	• Telephone with Confidence programming (with auditory-only condition) • Setting up a call with a son/daughter to talk about their day

ES64

Case Study #1

Telehealth Considerations

(Blaiser et al., 2013; Cason et al., 2012; Wesarg et al., 2010)

Slide 21

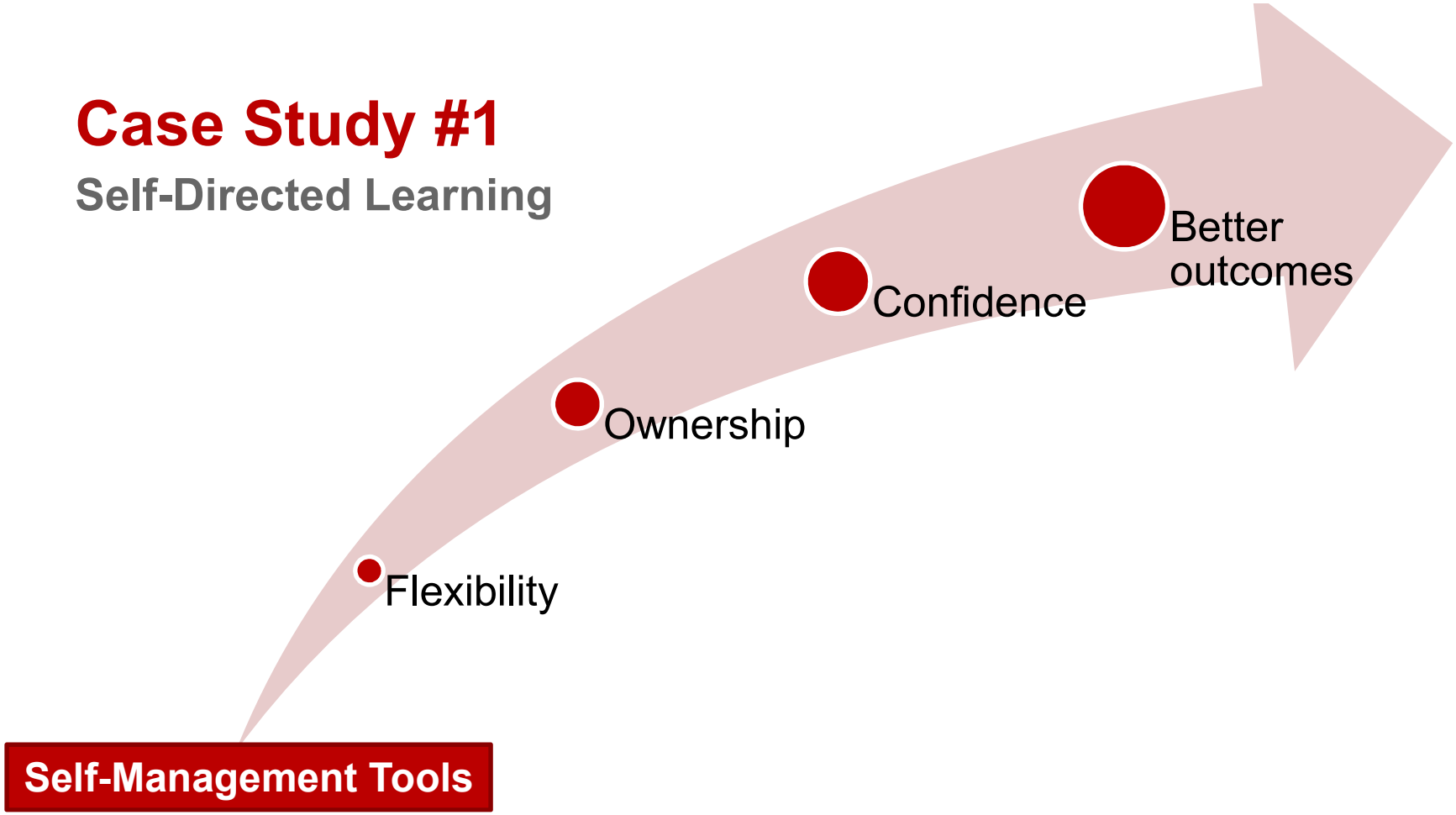
ES64

-conversations in quiet without lip reading (on Sound Success to mimic the phone with the video off)
-add background noise with sound success

Erin Stefancin, 9/9/20

Case Study #1

Self-Directed Learning



Self-Management Tools

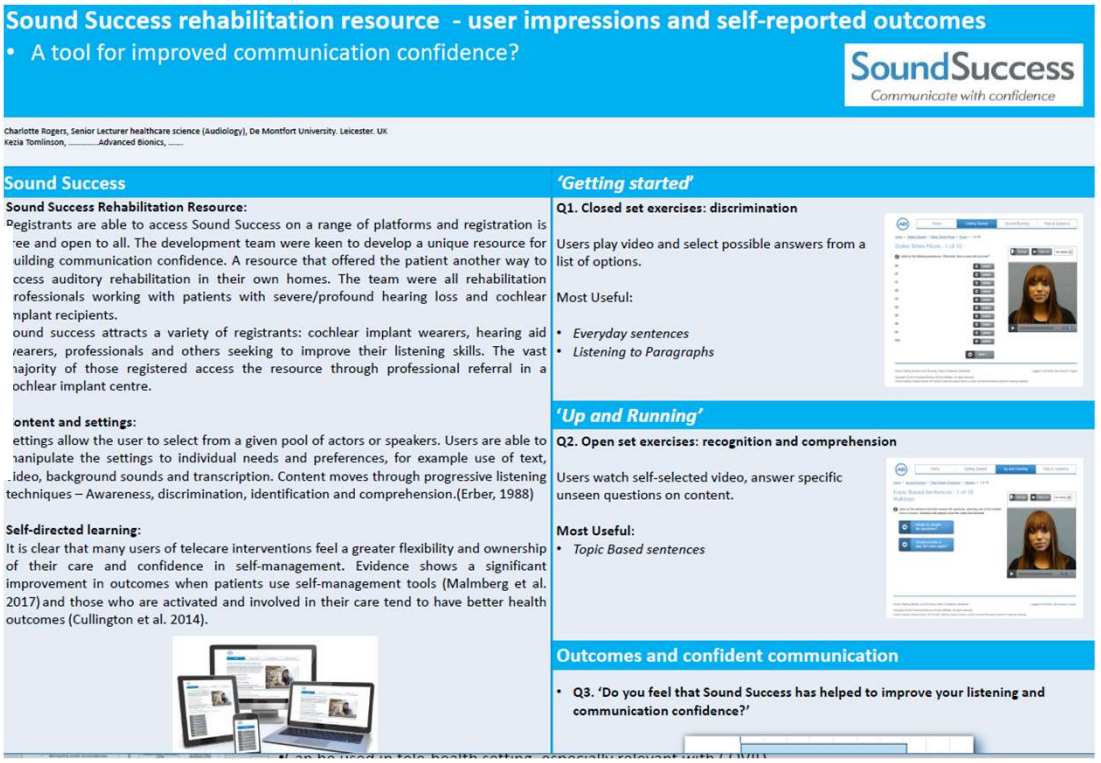
(Malmberg et al., 2017; Cullington et al., 2014)

Case Study #1

Self-Directed Learning

SoundSuccess™

Communicate with confidence



Sound Success rehabilitation resource - user impressions and self-reported outcomes

- A tool for improved communication confidence?

SoundSuccess
Communicate with confidence

Charlotte Rogers, Senior Lecturer healthcare science (Audiology), De Montfort University. Leicester. UK
Kezia Tomlinson, ...Advanced Bionics, ...

Sound Success

Sound Success Rehabilitation Resource:

Registrants are able to access Sound Success on a range of platforms and registration is ree and open to all. The development team were keen to develop a unique resource for uilding communication confidence. A resource that offered the patient another way to ccess auditory rehabilitation in their own homes. The team were all rehabilitation rofessionals working with patients with severe/profound hearing loss and cochlear nplant recipients.

ound success attracts a variety of registrants: cochlear implant wearers, hearing aid rearers, professionals and others seeking to improve their listening skills. The vast ajority of those registered access the resource through professional referral in a ochlear implant centre.

ontent and settings:

ettings allow the user to select from a given pool of actors or speakers. Users are able to anipulate the settings to individual needs and preferences, for example use of text, ideo, background sounds and transcription. Content moves through progressive listening techniques – Awareness, discrimination, identification and comprehension.(Erber, 1988)

Self-directed learning:

It is clear that many users of telecare interventions feel a greater flexibility and ownership of their care and confidence in self-management. Evidence shows a significant improvement in outcomes when patients use self-management tools (Malmberg et al. 2017) and those who are activated and involved in their care tend to have better health outcomes (Cullington et al. 2014).

'Getting started'

Q1. Closed set exercises: discrimination

Users play video and select possible answers from a list of options.

Most Useful:

- *Everyday sentences*
- *Listening to Paragraphs*

'Up and Running'

Q2. Open set exercises: recognition and comprehension

Users watch self-selected video, answer specific unseen questions on content.

Most Useful:

- *Topic Based sentences*

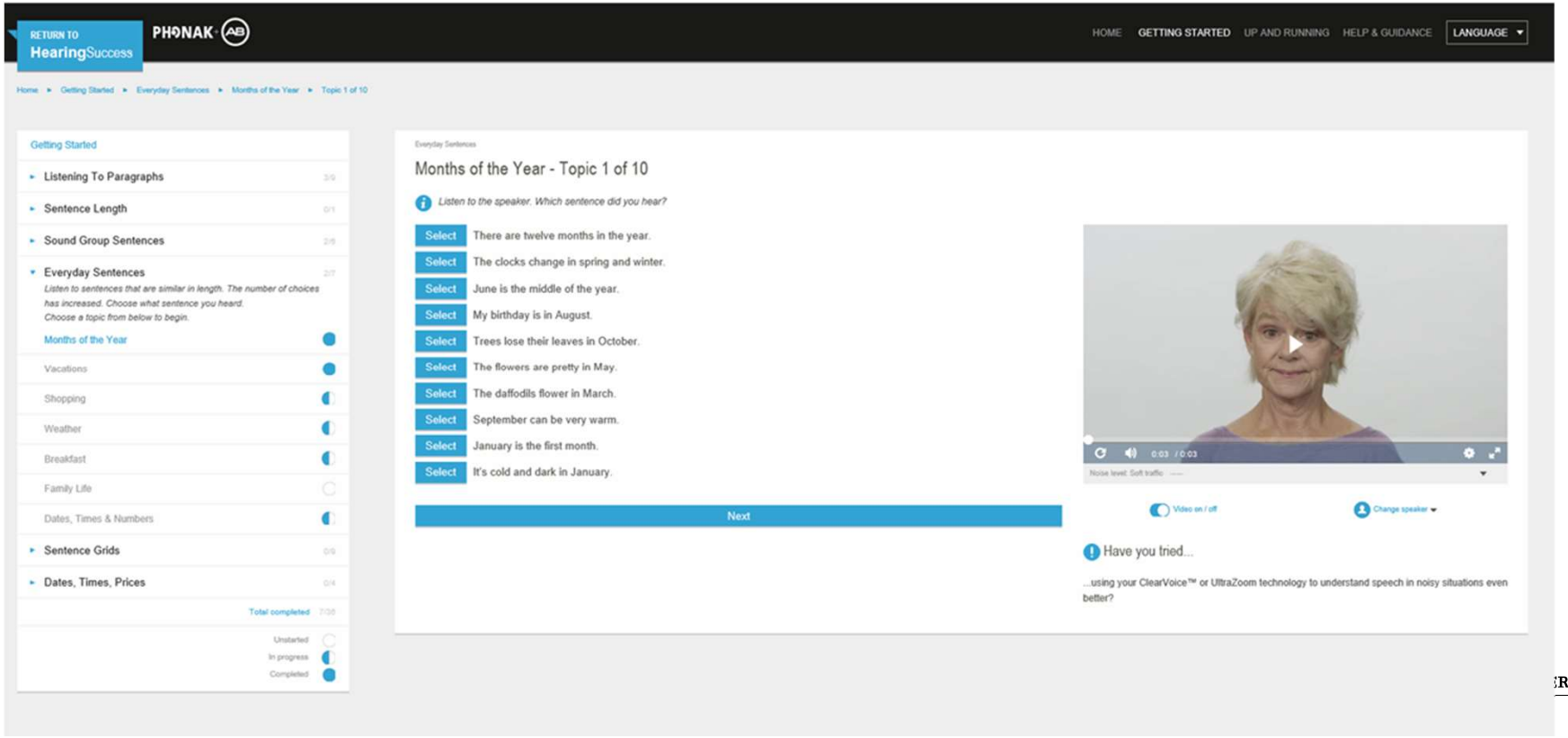
Outcomes and confident communication

- **Q3. 'Do you feel that Sound Success has helped to improve your listening and communication confidence?'**

(Malmberg et al., 2017; Cullington et al., 2014)

Case Study #1

Sound Success



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Case Study #1

1 vs. 6 months Post

- Areas of Change:
  - Az Bio Sentences & CNC Words
  - No change in cognitive-linguistic functions
  - QoL focus: social
  - Maintaining communication abilities
  - Increased listening self-efficacy confidence
  - Maintaining social connectedness

	Pre-CAR Evaluation	Post-CAR Evaluation
Hearing Technology	R: Naida CI L: Unaided	R: Naida CI L: Unaided
Aided Speech Recognition	**AzBio Sentences (Quiet)** BL: 22% **CNC** Phonemes correct: 30%	**AzBio Sentences (Quiet)** BL: 60% **CNC** Phonemes correct: 45%
Cognitive-Linguistic Function	**Immediate Memory** *Below average*	**Immediate Memory** *Below average*
	Language *average*	**Language** *average*
	Working Memory *average*	**Working Memory** *average*
Patient-Reported Outcome Measures	**Quality of Life (CIQOL35)** *Areas of reported difficulty: Emotional, Social & Communication*	**Quality of Life (CIQOL35)** *Areas of reported difficulty: Emotional, Social & Communication*
	Patient Assessment of Communication Abilities (PACA) *4: Quite a lot of difficulty*	**Patient Assessment of Communication Abilities (PACA)** *3: Moderate difficulty*
	Listening Self-Efficacy Questionnaire (LSEQ) Basic: 55% Directed Listening: 25% Complex Listening: 10%	**Listening Self-Efficacy Questionnaire (LSEQ)** Basic: 60% Directed Listening: 50% Complex Listening: 20%
	Social Isolation *3. Sometimes*	**Social Isolation** *3. Sometimes*

ES67

Case Study Comparisons- Experienced Users

"Good Performer"	"Poor Performer"
64 year old female	85 year old male
3 years post CI	3 years post CI
Progressive HL	Sudden HL
Bimodal: Naida + Hearing Aid	Naida CI
Good Performer 90% AzBio (quiet) & 80% CNC (quiet)	Poor Performer 12%: AzBio (quiet) & 32% CNC (quiet)
SIngle, social, enjoys music	Married, retired, enjoys traveling
High expectations, motivated	Frustrated, somewhat apathetic

ES67 Incorporate successful and work-in-progress patients (unrealistic expectations, not understanding connection between sensory and brain input, spouse reactions, etc.)

Erin Stefancin, 9/9/20

ES66

Evaluation Comparisons- Experienced Users

ES65

	"Good Performer"	"Poor Performer"
Technology	Naida CI + hearing aid	Naida CI
Listening Comprehension	90% accuracy in quiet	65% accuracy in quiet
Immediate Memory	Above average	Low average
Delayed Memory	Above average	Low average
Communication Abilities	Moderate difficulty: High-level communication needs	Quite a lot of difficulty: Frustrated with communication
Self-Efficacy	Basic listening: 65% Complex listening: 25%	Basic listening:55% Complex Listening: 10%
Social Isolation	Sometimes isolated	Sometimes isolated

ES65 Out good performer had a 20-year progressive hearing loss and his best-aided speech recognition scores were 95% words correct on AzBio sentences in quiet, 80% words correct on AzBio sentences in babble (+5 dB SNR), and 86% phonemes correct in CNC words. Despite being considered a "good performer" by most clinical standards, he reported that his communication difficulties had a negative impact on his quality of life and participation in activities he deemed important.

Erin Stefancin, 9/9/20

ES66 A particular emphasis was placed on providing education about common communication break-downs in noisy environments that occur even for listeners with normal hearing. He was encouraged to talk with his friends about their difficulties and compare these with his own. After doing this, he demonstrated more realistic expectations for himself, though his motivation to improve in certain areas did not wane.

Erin Stefancin, 9/9/20

Case Study Comparisons- Goal Setting

"Good Performer"	"Poor Performer"
Speech understanding with music	Conversation with 1 or 2 people in quiet
Conversation in noise with multiple people (examples: restaurants, bowling alley)	Conversation with 1 person (husband) in noise (at a restaurant)
Enhance recognition in noise using remote microphone	Describe differences among programs and when to use
Conversation on telephone using streaming via Roger transmitter	Speech understanding on the telephone on speaker phone with familiar listeners

ES85
ES86

Slide 28

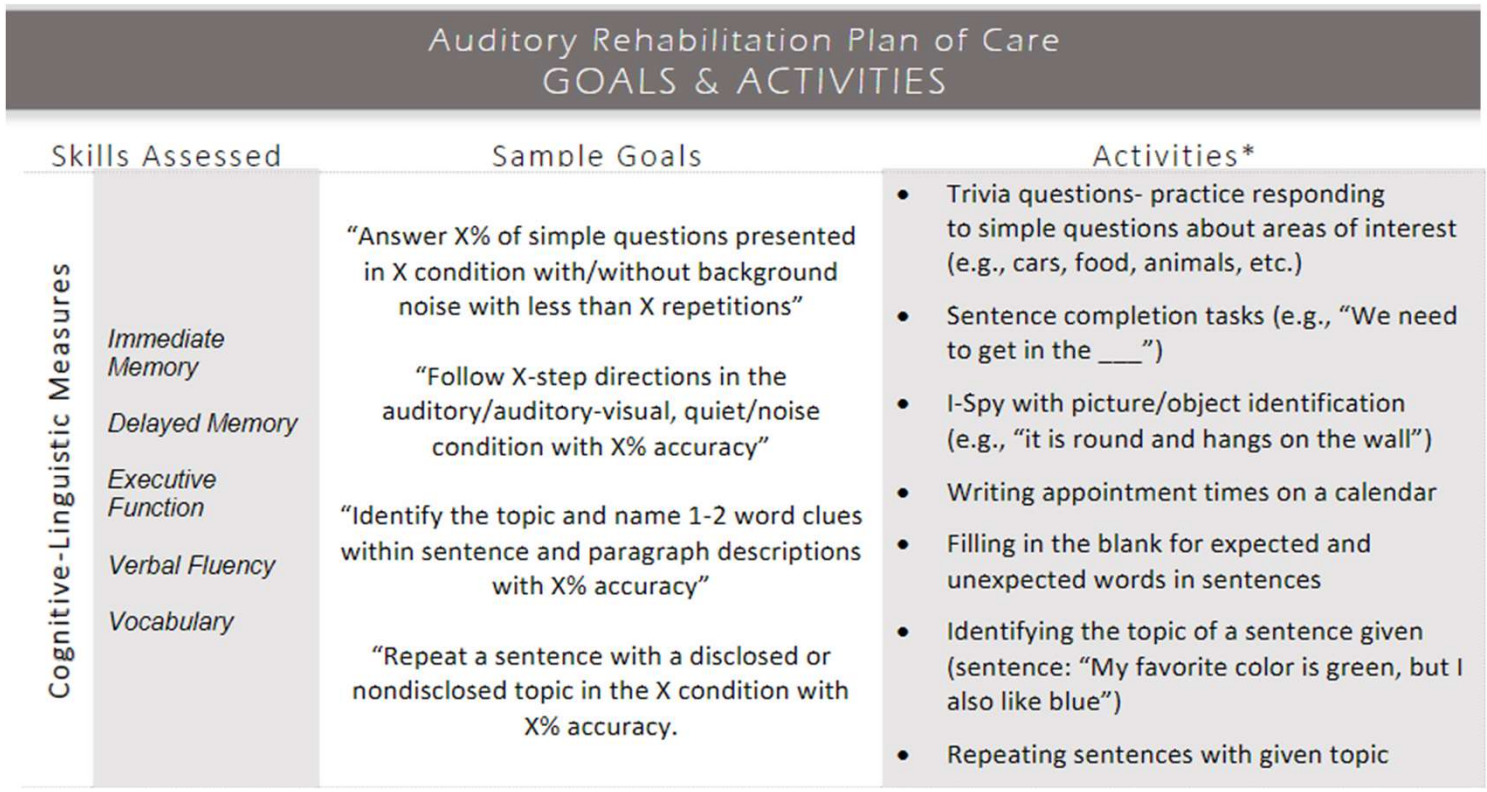
ES85 maybe for telephone with enhanced speech recognition with a roger pen/phone streaming
Erin Stefancin, 9/16/20

ES86 poor performer not interested in technology
Erin Stefancin, 9/16/20

Outline

- Review of previous webinar series
- Case studies
- **Auditory training resources**
- Stakeholders in AR

Goals & Activities- AR Toolkit



Auditory Rehabilitation Plan of Care
GOALS & ACTIVITIES

	Skills Assessed	Sample Goals	Activities*
Cognitive-Linguistic Measures	*Immediate Memory* *Delayed Memory* *Executive Function* *Verbal Fluency* *Vocabulary*	"Answer X% of simple questions presented in X condition with/without background noise with less than X repetitions" "Follow X-step directions in the auditory/auditory-visual, quiet/noise condition with X% accuracy" "Identify the topic and name 1-2 word clues within sentence and paragraph descriptions with X% accuracy" "Repeat a sentence with a disclosed or nondisclosed topic in the X condition with X% accuracy.	• Trivia questions- practice responding to simple questions about areas of interest (e.g., cars, food, animals, etc.) • Sentence completion tasks (e.g., "We need to get in the ___") • I-Spy with picture/object identification (e.g., "it is round and hangs on the wall") • Writing appointment times on a calendar • Filling in the blank for expected and unexpected words in sentences • Identifying the topic of a sentence given (sentence: "My favorite color is green, but I also like blue") • Repeating sentences with given topic

Goals & Activities- AR Toolkit

Auditory Rehabilitation Plan of Care
GOALS & ACTIVITIES

Skills Assessed		Sample Goals	Activities*
Patient Reported Measures		"Report X% increase in participation at (specified target scenario e.g., church, family dinner, book club)"	• Listening practice similar to relevant situations with supported auditory training (e.g., Telephone with Confidence, Sound Success, live-voice activities) • Discussion of communication strategies and when/where to utilize them • Discussion of a "healthy listening environment" and how to create that environment for a given individual's situation and needs
	Communication Ability	"Report X% increase in 2/3 patient reported goals (utilizing COSI) after X weeks"	
	Communication Confidence	"Report increased QoL evidenced by a CIQOL Global score of >X"	
	Social Participation	"Increase communication confidence evidenced by a PACA score >X"	
	Self-Efficacy	"Report decreased listening effort in a specified target scenario (e.g., restaurants, listening on the phone)"	
	Quality of Life	"Identify and utilize X/X communication strategies (e.g., asking for clarification)"	

AR Activities: Free Online Resources & Apps

Free Resources to Practice Listening Skills

APPS FOR ANDROID and IOS

AB Clix*	*Provides drills to improve skills in quiet and noisy environments*
I-Angel Sound**	*An interactive auditory training program*
Hear Coach*	*Provides listening games that challenge both cognitive and auditory skills*
rehAB Catalogue App*	*Uniquely designed rehabilitation resources for people with hearing loss*
C&O	*A game to improve your listening skills*
IELTS Listening*	*Provides listening activities with transcripts and exercises*
Learn English Listening**	*Practice listening to vocabulary words and conversations*
Shazam*	*Listen to music with closed captioning for visual support*

*Android and iOS (Apple) compatible
**iOS (Apple) compatible only
*iPad compatible only

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ONLINE RESOURCES

Angel Sound
A self-paced program that allows you to practice your listening skills at home
angelsound.tigerspeech.com

The Listening Room
Activities and resources to support the development of speech, language and listening skills
thelisteningroom.com

Soundscape
Provides games to practice listening skills
medel.com/us/soundscape/

Audio Concentration/Matching Game
An auditory-only concentration and matching game
manythings.org/ac/

SoundSuccess
Self-paced, functional auditory activities that are designed to make listening easier as you train your brain to make sense of what you hear.
abrehabportal.com

Randall's ESL Cyber Listening Lab
General listening quizzes that allow listeners to hear everyday conversations
esl-lab.com

Daily ESL: Conversation Starters for English Students
Audio recordings to listen to and read along with written text
dailyesl.com

English Language Listening Lab Online
Provides games to practice listening skills
elllo.org/games/student_games.htm

Telephone with Confidence
Practice listening on the telephone (options to listen in English and Spanish)
cochlear.com/wps/wcm/connect/us/communication-corner/program-selection/adults.htm

If you would like to learn more ways to target your hearing skills and improve communication, please call **Ohio State Audiology Services** *at* **614-739-0898**.

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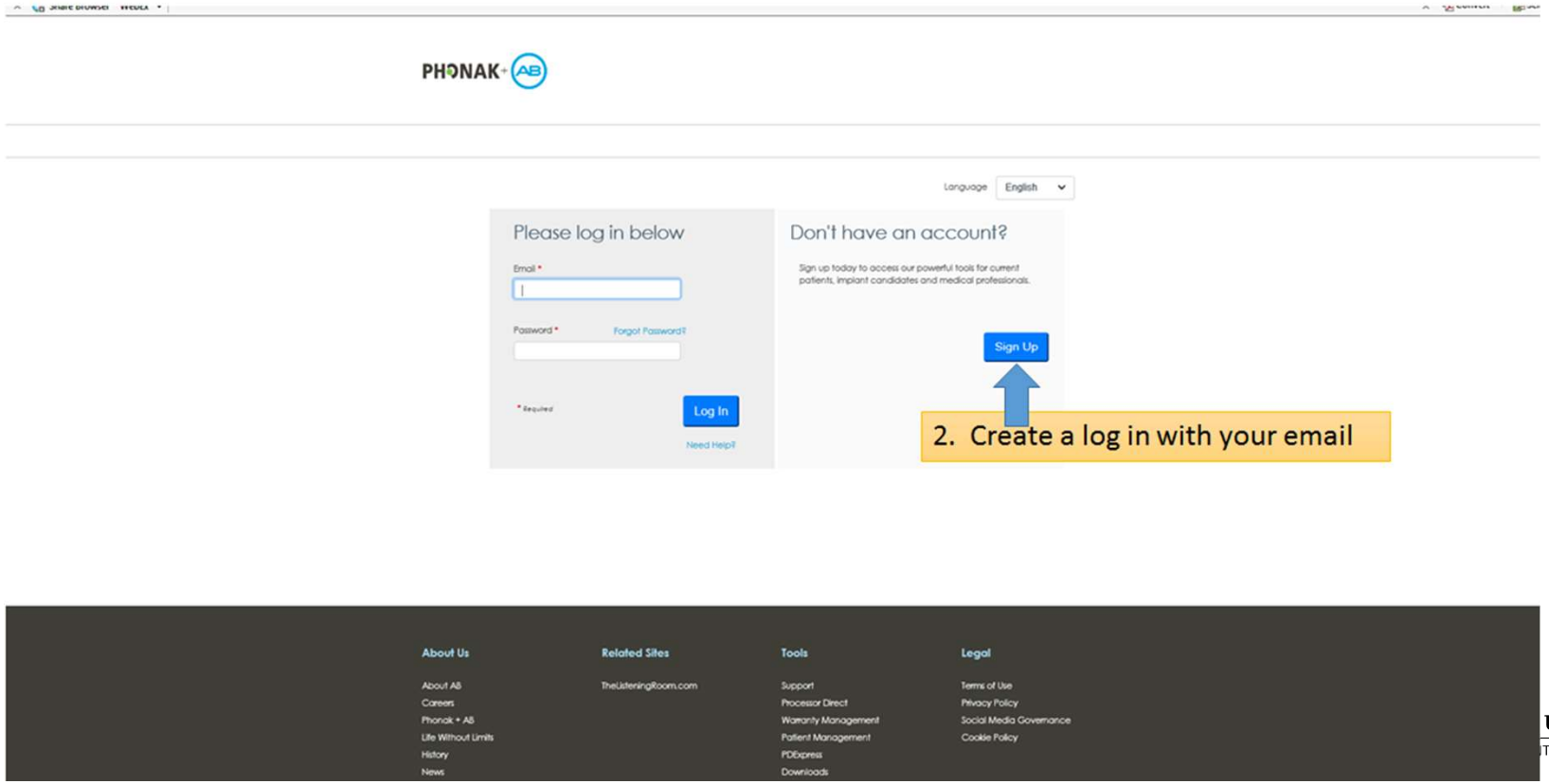
AR Activities: Sound Success

1. ABRehabPortal.com



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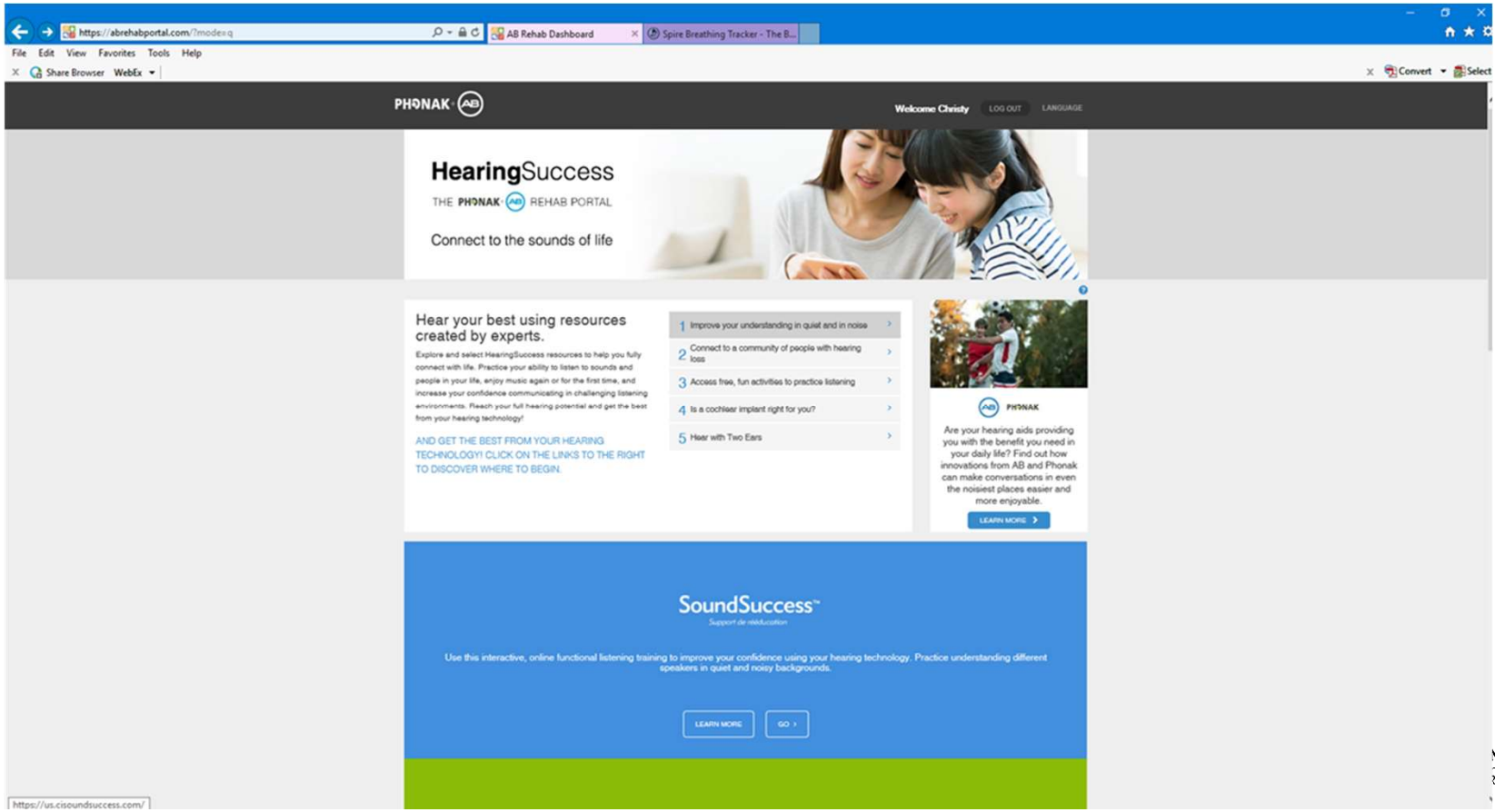
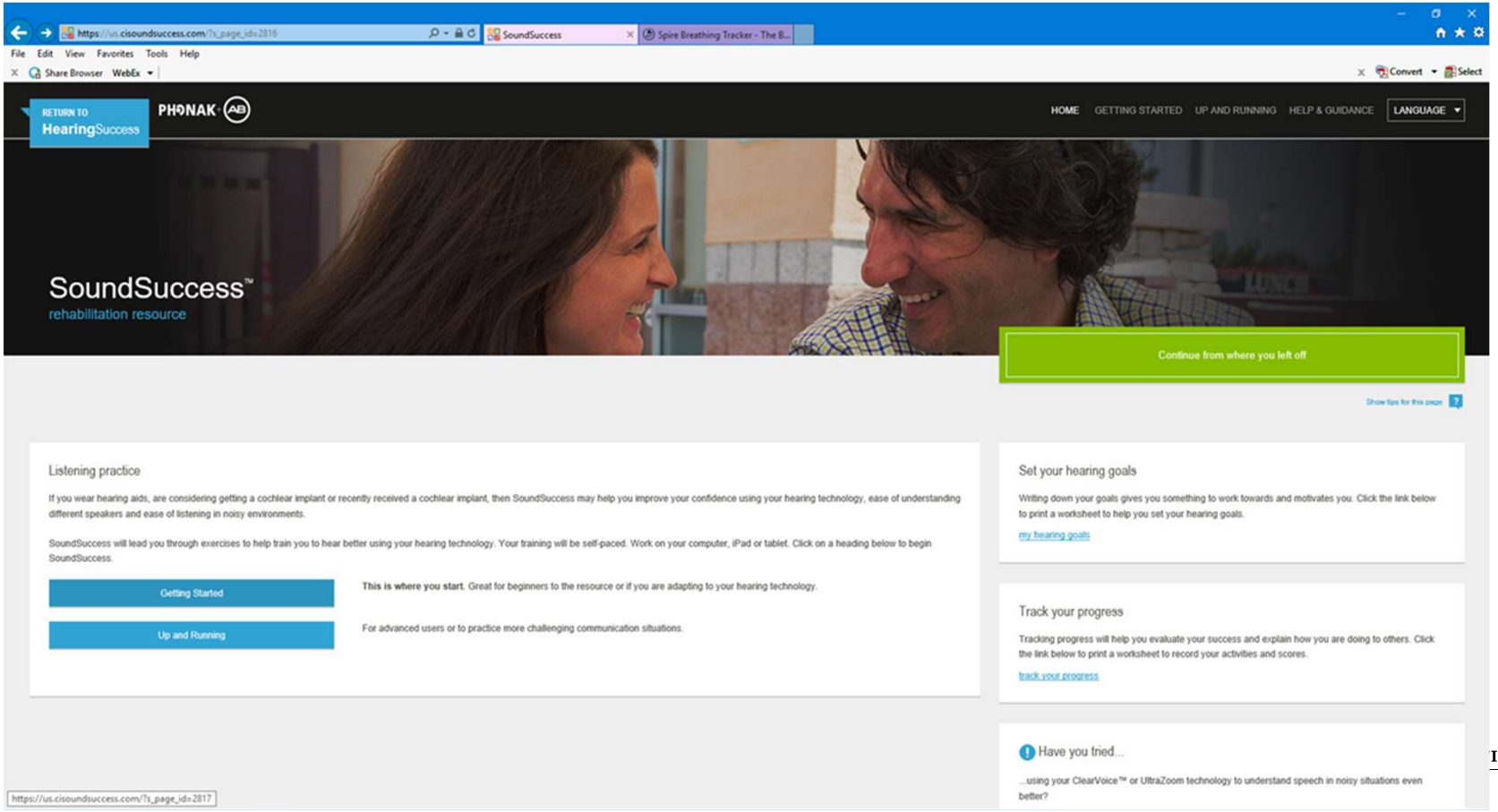
AR Activities: Sound Success



AR Activities: Sound Success



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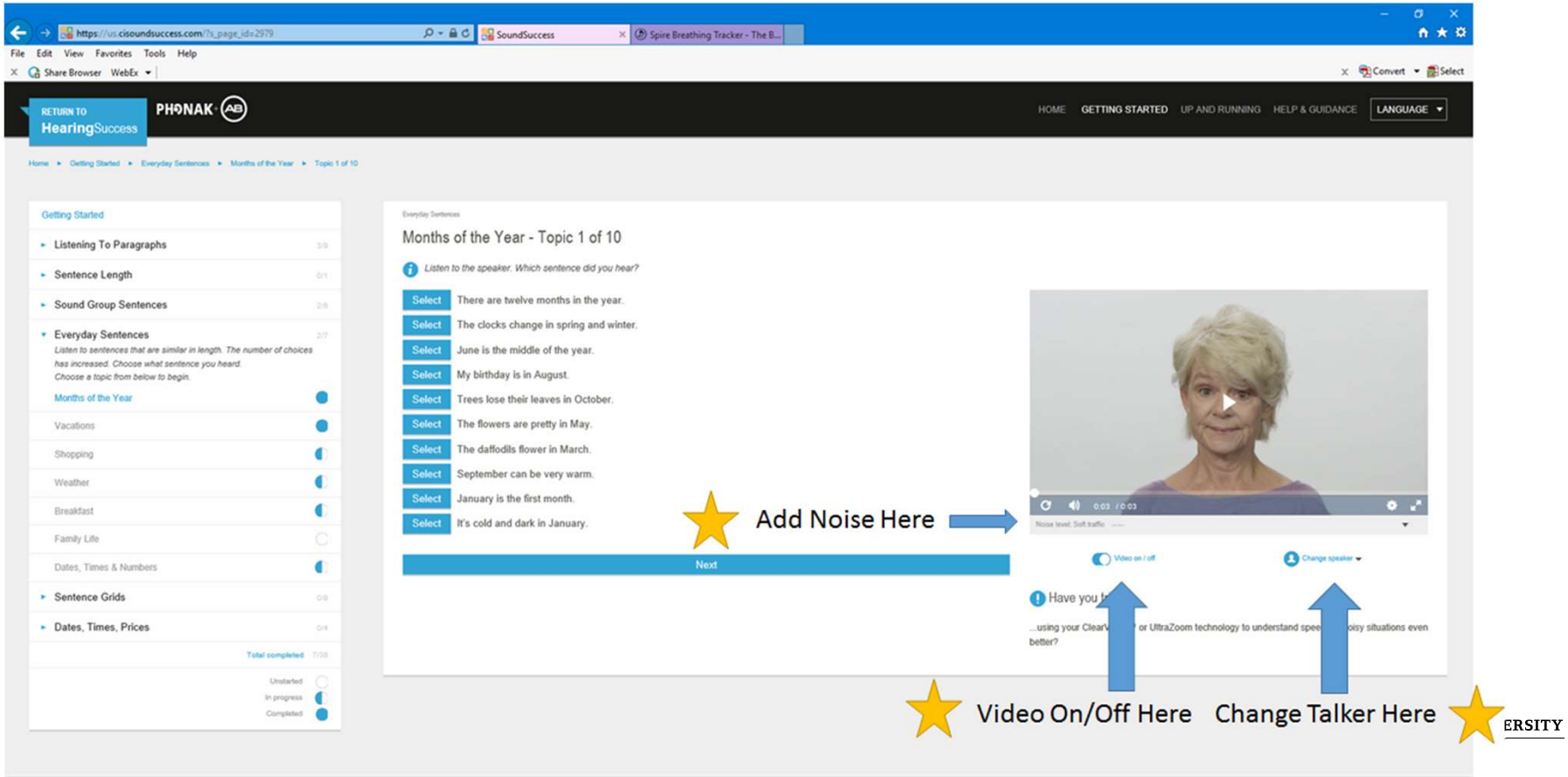
ES77

AR Activities: Sound Success

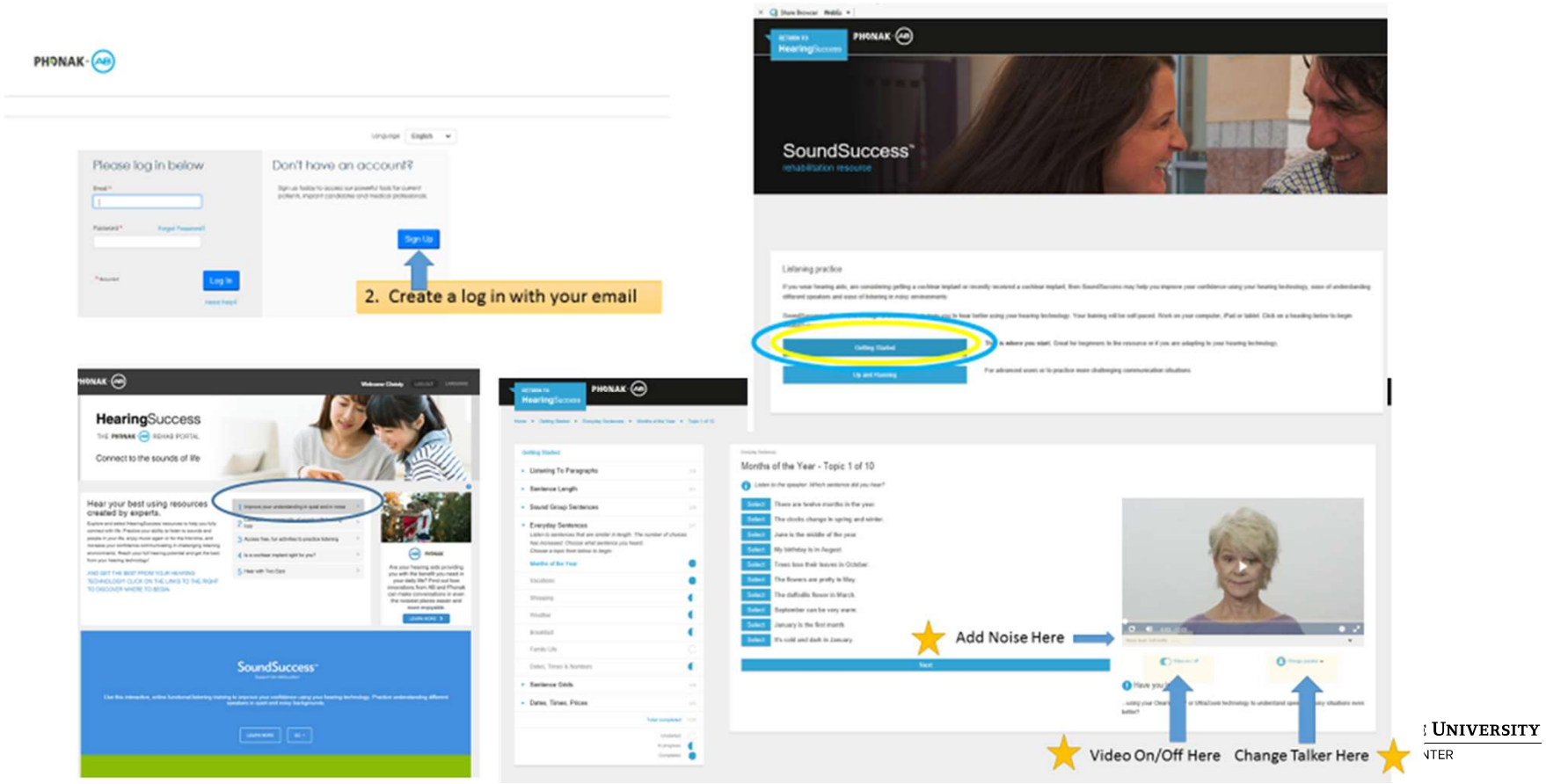


Slide 36

ES77 brief statement that you can choose a speaker

Erin Stefancin, 9/16/20

AR Activities: Sound Success



UNIVERSITY
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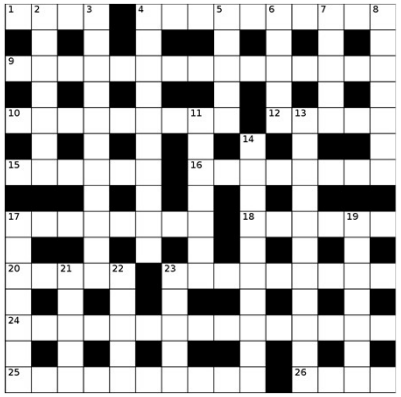
ES82

AR Activities: Non-Technology Options



Slide 38

ES82 the key with non-technology options that we are finding activities every single day (i.e., reading the newspaper)

Find activities they like doing or do everyday and figure out a way to incoporate in task for increased compliance and more time on a task to maximize outcomes.

Erin Stefancin, 9/16/20

ES60

Outline

- Review of previous webinar series
- Case studies
- Auditory training resources
- **Stakeholders in AR**

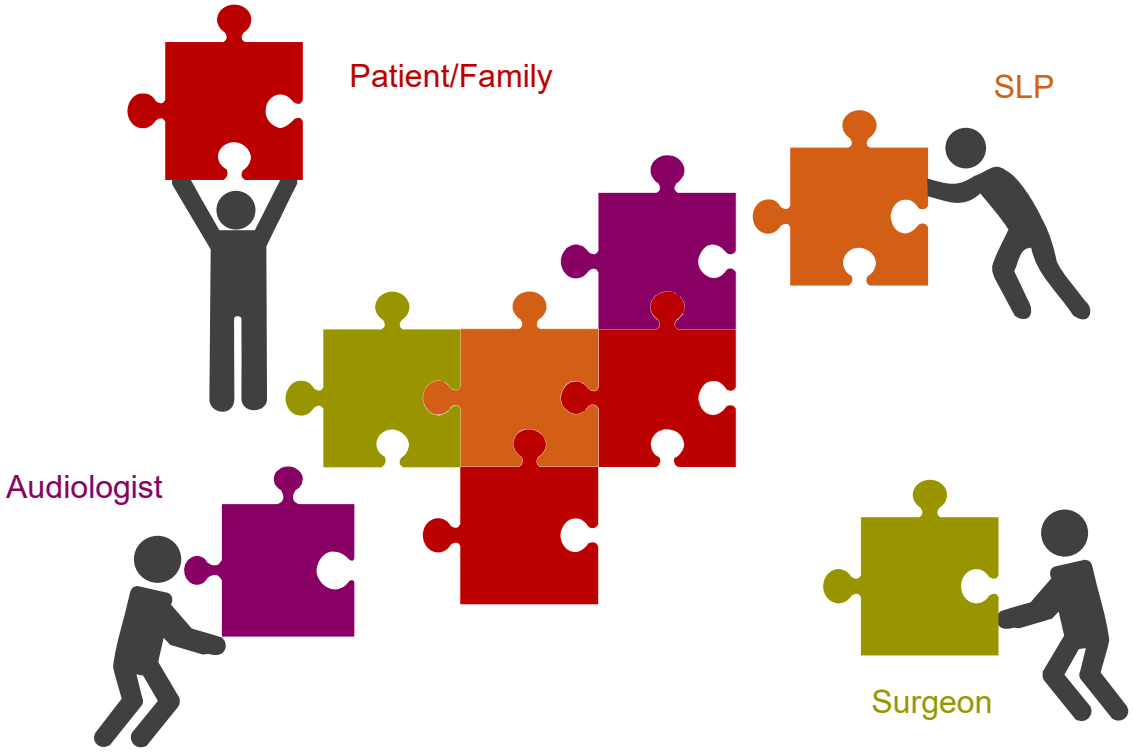
Slide 39

ES60

Patient (how AR helps me?)
Surgeon (how AR helps me?)
Pre-op evals & post-op options for hitting a wall
Audiology (how AR helps me?)
Pressure to problem solve & carryover/reinforcement
Time/billing & expectations (self-efficacy)

Erin Stefancin, 9/2/20

Stakeholders in AR



Surgeon Buy-In

- **Underlying principles:**
  - "Hearing aids and CIs restore 'audibility' but provide a limited representation of speech, so we depend on the **brain** to interpret"
  - We need whole ear-brain system rehabilitation!

Surgeon Buy-In

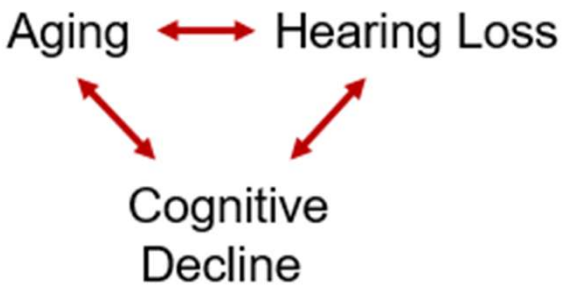
- **Underlying principles:**
  - •“What are we <u>really</u> treating?”

Comprehensive Auditory Rehabilitation

- Speech recognition
- Listening comprehension
- Motivation
- Device knowledge
- Psychosocial function
- Communication confidence
- Listening effort
- Self-efficacy
- Social participation/isolation
- Executive functioning and cognition
- Quality of life

Surgeon Buy-In

- **Underlying principles:**
  - Whom are we treating?”
  - Older adults are the most rapidly growing population of patients receiving CIs



Surgeon Buy-In

- **Practical aspects:**
  - More thorough pre-operative counseling
  - Patient-centered approach – patient satisfaction
  - Another option to offer for “poor performers”
  - Also let the surgeon know about these patients
  - Increase in CI referrals to your program – offer something unique
  - Program efficiency – free up Audiology time with billable services
  - Streamline the process – such as making it standard to refer patients pre-operatively

Audiology Buy-In

- More thorough problem-solving
- Reinforcement of realistic expectations
- Reinforcement of device manipulation skills and training
- Ability to bill for targeted aural rehabilitation

ES74

Company Buy-In: AB Mentor Program

"My AB Mentor Lisa Gish helped me decide to pursue Cochlear Implants. She answered my questions, calmed my anxieties, and told me what a change CIs had made in her life. She was a critical part of my journey."

Dennis Adams (AB bilateral recipient)

Slide 46

ES73 from rachel's email
Erin Stefancin, 9/16/20

ES74 adding in a mentor
Erin Stefancin, 9/16/20

Patient Buy-In

"My therapist was able to benchmark my auditory listening skills, encourage me weekly, and give me valuable information to take back to my cochlear implant audiologist in order to make necessary adjustments to my cochlear implant."

Carrie Spangler, Au.D., CCC-A (bimodal AB recipient)

"My primary rehab techniques were listening to audiobooks while following along in the print versions and watching scripted TV with closed captions...I'm hearing and enjoying music in whole new ways."

Dennis Adams (bilateral AB recipient)

Patient Buy-In

"SoundSuccess from Advanced Bionics is a fantastic option for individuals who want to improve their listening skills through focused practice. Whether you are new to your device(s) or want to improve your auditory skills, this audiologist and bilateral AB recipient approves!"

Tina C. (AB recipient)

"I view it as similar to going to the gym. You get a muscle in shape, but if you stop training the muscle quickly goes back to the original state. These days I do SoundSuccess twice a week. I enjoy it. With SoundSuccess I am able to make the practice as challenging as I want. I can add noise or hide the lip reading from the video. It's a great way to stay in shape. "

Bruce Wiseman (bimodal AB recipient)

AR Toolkit

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Toolkit: Advanced Bionics HearingSuccess

HearingSuccess

LISTENING PRACTICE TIPS & RESOURCES

Are you newly implanted? Did you recently get a new program, upgraded processor, or perhaps just want to improve your listening skills with your cochlear implant (CI)? Do you have limited access to internet? We are here for you!

Practice as much as you can. Repeated, focused practice is needed for the brain to process how sounds and words are heard. Practice will make communication easier. Your AB family of recipients provided this information from their own personal experiences in aural rehabilitation.

ADVANCED BIONICS
POWERFUL CONNECTIONS

PROGRESS YOUR LISTENING PRACTICE FROM EASY TO CHALLENGING:

Start with listening activities where success is gained easily and confidence builds. When practicing, remember that at first you want to keep things simple. Then start working in the zone of challenge and try more challenging activities. When creating listening activities at home remember this chart:

EASIER	MORE CHALLENGING
Listening in quiet (at home in a quiet room)	Listening with competing noise (background noise or a restaurant)
Listening to someone speak while reading captions or text	Listening to someone speak without captions or text
Live voices, deeper voices	Phone or recorded voices
Speaking to someone who is familiar to you	Speaking to someone who is unfamiliar to you
Speaking to someone who speaks clearly, is facing you and closer to you	Speaking to someone who is not speaking clearly, not facing you and standing at a distance from you
Looking at the speaker	Listening only
Speaking at a slower rate	Speaking more quickly
Listen to words that are very different from each other (birthday party vs. pool)	Listen to words and phrases that are more similar (cat vs hat)
Understanding words, phrases, sentences	Understanding paragraphs, conversations
Fewer choices, looking at the choices	More choices, not looking at the choices
Understanding familiar or known topics	Understanding unfamiliar or unknown topics

Toolkit- AR Assessment (Blank Template)

AUDITORY REHABILITATION ASSESSMENT							
	✓	Skill Assessed	Test Material(s)	Score	Strengths	Weaknesses	Notes for AR Goals
Patient-Reported Measures		Communication Ability					
		Communication Confidence					
		Social Participation					
		Self-Efficacy					
		Quality of Life					
Device & Technology		Device Use					
		Device Knowledge					
		Accessory Use					
		Accessory Knowledge					
		General Computer Knowledge					

COMMENTS:

Toolkit- AR Assessment Tools

AUDITORY REHABILITATION ASSESSMENT TOOLS

ICF Category		Measure	Professional
Body Function	Sound detection	• **Pure tone thresholds** ⊏ Unaided audiogram ⊏ Aided audiogram	Audiologist
		• **Speech sound detection** ⊏ Ling Six Sound Test (Ling, 1976)	SLP or Audiologist
	Sound discrimination	• **Speech sound discrimination** ⊏ Ling Six Sound Test (Ling, 1976) ⊏ Vowel & consonant discrimination • **Word discrimination**	
	Localization of sound	• **Spatial hearing** ⊏ Speech, Spatial and Qualities of Hearing Scale (SSQ; Gatehouse & Noble, 2004)	
	Emotional functions	• **Positive affect; General self-efficacy** ⊏ NIH Toolbox (Emotional) questionnaires (Salsman et al., 2013) • **Hearing-related psychosocial function** ⊏ Cochlear Implant Quality Of Life Profile (CIQOL-35; McRackan et al., 2019) ⊏ Hearing Handicap Index (HHIE; Ventry & Weinstein, 1982) ⊏ Hearing Handicap Index-Significant Other (HHI-SO; Newman & Weinstein, 1986)	
	Cognitive functions; Functions of language	• **Attention; Processing speed; Memory; Verbal fluency; Verbal learning; Vocabulary** ⊏ NIH Toolbox (Cognition) subtests (Weintraub et al., 2013) ⊏ RBANS-H (Claes et al., 2016) ⊏ Cognitive-Linguistic Quick Test (CLQT; Helm-Estabrooks, 2001) • **Reading fluency** ⊏ Test of Word Reading Efficiency- 2nd edition (TOWRE-2; Torgesen et al., 2012) • **Cognitive Screening** (SLP or Audiologist) ⊏ Montreal Cognitive Assessment (MoCA; Nassridene, et al., 2005) ⊏ Hearing-Impaired MoCA (Lin et al., 2017)	SLP
Body Structure	Inner ear; Head and neck region	• **Electrode placement** ⊏ Intraoperative x-ray or fluoroscopy ⊏ Post-operative CT	ENT (Radiologist)
		• **Auditory nerve electrically evoked compound action potential (ECAP)** ⊏ Intraoperative and post-operative neural response telemetry	Audiologist
Activity and Participation	Listening	• **Aided word recognition** ⊏ CNC word lists (Peterson & Lehiste, 1962) • **Aided sentence recognition** ⊏ AzBio sentence lists (Spahr et al., 2012) ⊏ HINT sentence lists (Nilsson, Soli, & Sullivan, 1994)	Audiologist
		• **Listening comprehension** • **Quality of life: effort, entertainment, environmental** ⊏ CIQOL-35 (McRackan et al., 2019) • **Self-efficacy/confidence** ⊏ Listening Self Efficacy Questionnaire (LSEQ; Smith et al., 2011)	SLP or Audiologist
	Communicating; Conversing with people; Interpersonal interactions; Social relationships	• **Communication ability** ⊏ CIQOL-35: Communication (McRackan et al., 2019) ⊏ Personal Assessment of Communication Abilities (PACA; EARTrack, 2015) ⊏ Client Oriented Scale of Improvement (COSI; Dillon, James, & Ginis, 1997) • **Communication confidence** ⊏ Communication Confidence Profile (CCP; Sweetow & Sabes, 2007) ⊏ LSEQ (Smith et al., 2011) ⊏ CIQOL-35 (McRackan et al., 2019) • **Social participation and isolation** ⊏ HHIE (Ventry & Weinstein, 1982) ⊏ Hearing Handicap Index-Significant Other (HHI-SO; Newman & Weinstein, 1986) ⊏ NIH Toolbox (Emotion) questionnaires (Salsman et al., 2013)	
	Communication device use	• **Time spent wearing device; environments** ⊏ Data logging	
	Solving problems; Handling stress	• **Self-efficacy, perceived stress** ⊏ NIH Toolbox (Emotion) questionnaires (Salsman et al., 2013)	

Toolkit- CI Skills Checklist & Resources

COCHLEAR IMPLANT SKILLS CHECKLIST

	Identify the main components of the CI
	Remove and attach or charge the battery
	Remove and attach the cable to the processor
	Turn the processor on/off
	Place the processor on/off
	Change programs, volume, settings (on device or remote per patient preference)
	Clean CI components (processor, coil, magnet etc.)
	Use telecoil with phone (as applicable)
	Pair device and accessories using Bluetooth

Comments:

Advanced Bionics	Cochlear Americas	Med El
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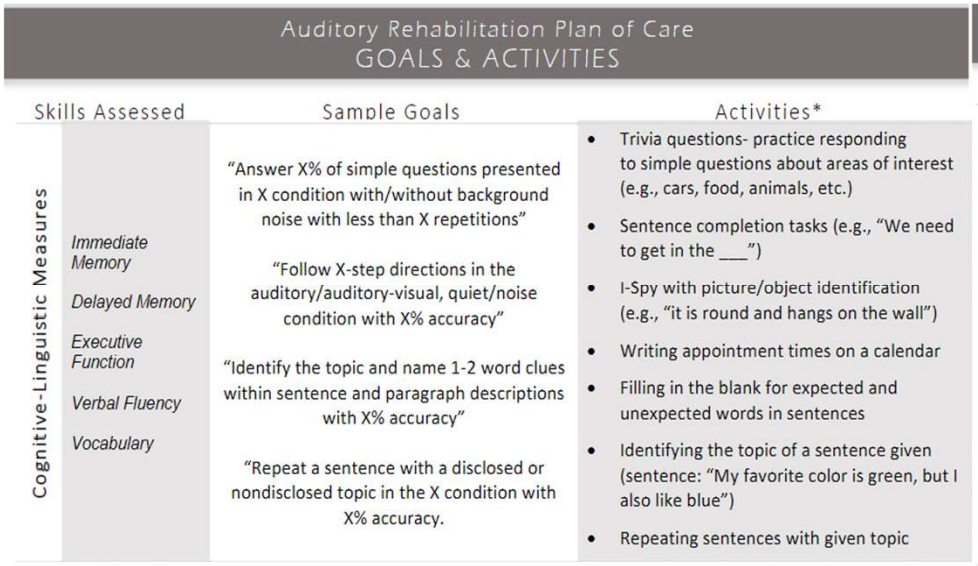
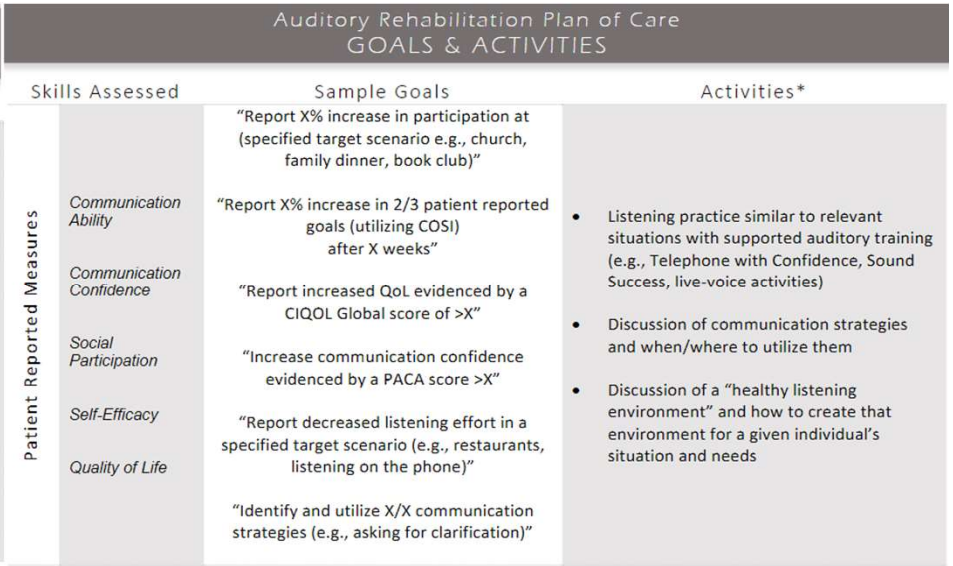
Email: customerservice@advancedbionics.com	Email: customer@cochlear.com	Email: customerservice.us@medel.com
Website: https://advancedbionics.com/sg/en/home/support/troubleshooting-guide.html	Website: https://www.cochlear.com/us/en/home/ongoing-care-and-support/device-support	Website: https://www.medel.com/en-us/support?titel=troubleshooting-guide&=

Toolkit: AR Goals & Activities



Auditory Rehabilitation Plan of Care
GOALS & ACTIVITIES

Skills Assessed		Sample Goals	Activities*
Cognitive-Linguistic Measures	*Immediate Memory* *Delayed Memory* *Executive Function* *Verbal Fluency* *Vocabulary*	"Answer X% of simple questions presented in X condition with/without background noise with less than X repetitions" "Follow X-step directions in the auditory/auditory-visual, quiet/noise condition with X% accuracy" "Identify the topic and name 1-2 word clues within sentence and paragraph descriptions with X% accuracy" "Repeat a sentence with a disclosed or nondisclosed topic in the X condition with X% accuracy.	• Trivia questions- practice responding to simple questions about areas of interest (e.g., cars, food, animals, etc.) • Sentence completion tasks (e.g., "We need to get in the ___") • I-Spy with picture/object identification (e.g., "it is round and hangs on the wall") • Writing appointment times on a calendar • Filling in the blank for expected and unexpected words in sentences • Identifying the topic of a sentence given (sentence: "My favorite color is green, but I also like blue") • Repeating sentences with given topic



Auditory Rehabilitation Plan of Care
GOALS & ACTIVITIES

Skills Assessed		Sample Goals	Activities*
Patient Reported Measures	*Communication Ability* *Communication Confidence* *Social Participation* *Self-Efficacy* *Quality of Life*	"Report X% increase in participation at (specified target scenario e.g., church, family dinner, book club)" "Report X% increase in 2/3 patient reported goals (utilizing COSI) after X weeks" "Report increased QoL evidenced by a CIQOL Global score of >X" "Increase communication confidence evidenced by a PACA score >X" "Report decreased listening effort in a specified target scenario (e.g., restaurants, listening on the phone)" "Identify and utilize X/X communication strategies (e.g., asking for clarification)"	• Listening practice similar to relevant situations with supported auditory training (e.g., Telephone with Confidence, Sound Success, live-voice activities) • Discussion of communication strategies and when/where to utilize them • Discussion of a "healthy listening environment" and how to create that environment for a given individual's situation and needs

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Questions?

Thank you for joining us!

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