Would you repeat that?
Strategies for Improving Hearing in Everyday Life
Susan Dennison
President, Association of Retired Faculty
Professor Emerita, Social Work

Betsy Lindsay
Vice President, Association of Retired Faculty
Professor Emerita, Social Work

Vicki McCready
Board Member, Association of Retired Faculty
AP Professor Emerita, Communication Sciences & Disorders
Former Director of Speech and Hearing Center

Kristine Lundgren, Ed.D., CCC-SLP
Professor and Department Chair,
Communication Sciences & Disorders

Lisa McDonald, M.A., CCC-SLP
AP Professor, Speech-Language Pathology
Director, Speech and Hearing Center

Lisa Fox-Thomas, Ph.D., CCC-A
AP Professor, Audiology
Assistant Director and Coordinator of Audiology Services
Speech and Hearing Center
Helpful Zoom Tips

• Microphones and videos can be turned on/off in lower left corner (please wait until Q & A)

• You can post a question or message in the Chat any time during the meeting

• You can participate in the Zoom polls by clicking your chosen answer when prompted

• This meeting is being recorded and can be viewed later.
Agenda

• Everyday Listening Struggles
• Listening Difficulties in the Pandemic Era
• When is Hearing Difficulty a Hearing Problem?
• Options for Improving Communication
• Q & A
ARE YOU THE “LEANER”?  

Do you lean forward to follow conversations?
ARE YOU THE "SHIFTER"?

DO YOU SHIFT YOUR POSITION OR MOVE CLOSER TO HEAR BETTER?
ARE YOU THE "SMILER"?

Do you smile and nod when people are talking because you don’t understand what they are saying?
ARE YOU THE “TALKER”

Do you dominate the conversation, so you don’t have to strain to listen?
ARE YOU THE “ISOLATOR”? 

Do you check out of conversations because you don’t understand?
ARE YOU THE “QUESTIONER”?

DO YOU OFTEN ASK PEOPLE TO REPEAT THEMSELVES?
Would you repeat that?

Everyday Listening Struggles
Everyday Listening Struggles

• Hearing from the other room or in large open spaces

• Social situations such as group gatherings

• Noisy situations such as dining halls and restaurants

• Telephone conversations

• Television programs (especially BBC)
What makes listening difficult?
Difficult Listening Environments

- Distance from the Talker
- Background noise
- Room acoustics
- Lighting
- Distractions
- Multiple Talkers
Talker-related Difficulties

- People who mumble
- “Low talkers”
- People who speak quickly
- People with facial hair
- Heavily accented people
- Women’s / Children’s voices

- Food / Chewing Gum
- Expressiveness
Message Difficulties

• Familiarity with Topic
• Vocabulary Used
• Complexity of Message
• Relevance to Topic
Listener-related Factors

- Speech reading abilities
- Motivation
- Language competence
- Willingness to guess/admit mistakes
- Assertiveness (willingness to ask for help)
- Hearing status
What did you say?

Listening Difficulties in the Pandemic Era
Communicating in the Pandemic Era

• Hearing at a distance
  • Sound level decreases as we move away from a sound source
  • For every doubling of distance, the sound level reduces by 6 dB
  • Soft speech may be inaudible

stay 6+ feet away
Communicating in the Pandemic Era

• Plexiglass Barriers
  • Absorbs and muffles sound
  • Prevents common communication strategies such as leaning in
  • A Canadian Study (2021)* found over 60% of respondents reported difficulty in understanding from behind plexiglass barriers

Communicating in the Pandemic Era

- Face Masks
  - Reduce the level of sound by as much as 12 dB (greatest with medical grade masks)
  - Affects high frequencies most which are important for speech clarity
Communicating in the Pandemic Era

• Loss of visual cues with face masks prevents lipreading

• 25-30% of speech sounds are visible.

• Clear face masks are an option for people who are struggling to hear
Communicating in the Pandemic Era

• Phone/Zoom Technology

  • Communicating over phone or Zoom has inherent limitations related to poor sound quality

  • A degraded signal requires you to “fill in” the missing pieces (auditory closure”)

  • Phone calls have additional challenges related to speech-reading and turn taking
Communication in the Pandemic Era

• Captioning technology

• Google Hang Out, Zoom

• Free Apps (Ava, Otter, Live Caption, Live Transcribe)

• Phonak Call-to-Text – Free with Phonak devices; $5.99 - $29.99 per month

Ava turns your smartphone's microphone into a captioning service that captures speech and turns it into a text conversation displayed on your screen.
Communicating in the Pandemic Era

- Impact of Stress on Listening
  - Listening itself can be stressful
  - Worry and concerns about COVID-19 triggers the body’s stress response,
  - The “fight of flight” response is designed to prepare us for action and limits our ability to process incoming information.
Communicating in the Pandemic Era

• Relaxation strategies / Deep breathing

• Take a break from listening

• Use of tools and strategies to reduce the “load of listening”

• When hearing difficulty becomes a hearing problem, it may be time to seek help.
When is hearing difficulty a hearing problem?
Hearing Loss

• Not all hearing loss is the same
  • Type
  • Severity
  • Configuration
  • Symmetry

• No amount of hearing loss is “normal” for a person’s age (presbycusis)

• Not all hearing loss is aidable (too mild or too severe)

• Effects of hearing loss may be situational

• People have different tolerance for hearing loss

Impact on Communication
Risk Factors for Hearing Loss

- Diabetes
- Heart Disease
- Kidney Disease
- Genetics
- Noise Exposure (short- or long-term)
- COVID-19*

*Trafton (October 2021). Study finds the SARS-CoV-2 virus can infect the inner ear. MIT News.
Other Causes of Hearing Loss

**Outer Ear**
- Otitis externa
- Ear wax
- Eardrum perforations
- Collapsing Canals

**Middle Ear**
- Otitis media
- Cholesteatoma
- Otosclerosis
- Ossicular disarticulation

**Inner Ear**
- Otitis interna
- Meniere’s disease
- Intracochlear tumor
- Semicircular Canal Dehiscence (SCD)

**Auditory Nerve and Central Nervous System**
- Acoustic Neuroma
- Multiple Sclerosis
- Concussion
Audibility vs. Understanding

- Hearing loss configuration
  - Flat vs. High-Frequency
- Hearing loss type
  - Conductive – Outer/Middle Ear
  - Sensorineural – Inner Ear
Audibility vs. Understanding

• Hearing with your brain - “Use it or lose it”?

  • 2020 study* found mild untreated loss was associated with “cross-modal re-organization” (auditory cortex was repurposed)

  • Resulted in poorer speech perception in noise and worse cognitive performance

  • Reversed with appropriately fitted amplification

I can hear you now!

Options for Improving Communication
Communication Strategies

• Strategic Seating (Environment)
• Clear Speech (Talker)
• Speech Reading (Message)
• Active Listening (Listener)
Strategic Seating

• Choose a booth instead of a table when possible
• Move away from the bar, kitchen, live music, etc.
• Avoid sitting in the middle of the room
• Try to sit with your back to the room
• Avoid dimly lit areas and backlighting
“Clear Speech”

To improve communication, the Speaker should:

- Slow down a bit,
- Speak a tiny bit louder,
- Say things as clearly as possible without exaggerating mouth movements,
- Pause at meaningful places so the listener’s ears can catch up with your mouth.

http://www.betterhearing.org/hearingpedia/counseling-articles-tips/clear-speech
Speechreading

• Visibility of a message communicates two-thirds of its meaning

• Focus on the movement of the lips, teeth, and tongue
  • Sounds that are harder to hear are easier to see
  • Sounds that are easier to hear are harder to see

• Also, use facial expressions and other nonverbal cues to supplement residual hearing.
Speechreading

• Practice speechreading skills:  https://www.lipreading.org/ - $20 per month or $100 for 6 months
Active Listening

• Prepare for listening situation (Topics? Vocabulary?)

• Conversational “Rules” – One person speaks at a time

• Move closer to the talker

• Look at the person speaking

• Be assertive and ask for what you need
Repair Strategies

- Nonspecific
  - “Huh?” “What?” “Say that again!”
  - Indicative of miscommunication only
  - Frustrating to conversational partners

- Specific
  - Be as specific as you can about what you missed.
  - Ask for a specific word, topic, or clarification.
Technology Approaches

• Approximately 15% of American adults (37.5 million) ages 18+ report difficulty hearing.

• An estimated 1/3 of people over the age of 65 have hearing loss

• 1/5 of people who could benefit from hearing technology do so.

• Barriers to Adoption: Stigma, Access, Cost!!
What’s the Difference?

Hearing Aids

- Medical devices programmed by audiologists to your hearing prescription
- Diagnostic hearing evaluation required to determine type of hearing loss**
- For all types of hearing loss and all listening environments
- Audiologists provide device fitting, verification, and maintenance, as well as support and education

Hearables

- Wearable electronics for situational use including Personal Sound Amplifying Products (PSAPs) and specialized headphones or earbuds
- Not intended to compensate for hearing loss**
- Audiologists can assist with maintenance and verification of devices to ensure they are safe and effective

Over-the-Counter Devices (OTC)

- Intended for a mild to moderate hearing loss and occasional use
- Under FDA evaluation (some OTC devices available online)
- Self-administered hearing screening used for programming**
- Audiologists can assist with verification and maintenance of devices to ensure they are safe and effective

Assistive Listening Devices (ALDs)

- Can be used with or without a hearing aid
- Assists with improved speech in noise performance and hearing from a distance
- Wide range of options including TV and phone accessories, remote microphones, and hearing aid t-coil
- Audiologists can help with selection of an ALD and device training

**If you are noticing hearing difficulty, it is recommended that you have a diagnostic hearing evaluation to determine the best approach for you and whether medical intervention may be necessary.
• Medical devices programmed by audiologists to your hearing prescription

• Diagnostic hearing evaluation required to determine type & severity of hearing loss**

• For all types of hearing loss and all listening environments

• Audiologists provide fitting, verification, maintenance, & education
Hearing Aids

• Devices that provide audibility (awareness of sound)

• Objective is to restore normal loudness perception

  • Soft sounds = “Soft”

  • Average sounds = “Comfortable”

  • Loud sounds = “Loud, but tolerable”
Hearing Aids Styles

Custom Styles (IIC, CIC, ITE)

miniRIC / RITE

Non-custom ITE products

BTE
Hearing Aid Technology Levels

- **Entry**: Entry level aid with a few additional features.
- **Basic**: Excellent mid-level technology for listening in a variety of situations.
- **Advanced**: Improved audibility in quiet.
- **Best**: Best performance in noise, automatic and adaptable.
- **Economy**: Ideal for quiet situations with extra programs for challenging listening environments.
Hearing Aids

• Only available from a licensed provider:

  • **Hearing Instrument Specialist (HIS)** – licensed by NC Hearing Aid Dealers and Fitters Board

  • **Audiologists** – most with doctoral degree (AuD) and licensed by NC Board of Examiners for Audiologists and Speech-language Pathologists; many also are national certified by the American Speech-Language Hearing Association (CCC-A) or the American Academy of Audiology (FAAAA)
Hearing Aid Verification

• Probe tube microphone measures or “Real Ear” (aka “Carrot Test”)

• Objective way of measuring output of hearing device while taking into account acoustics of a person’s ear

• Check for audibility, match to fitting prescription (“targets”), and safe listening levels
Cost of Hearing Aids

- Technology level (Hearing loss & Listening Needs)
- Insurance Benefit / Managed Care Plans
- Bundled vs. Unbundled Service Models
  - Device Warranty
  - Office Services
  - Accessories
  - Battery Plan

Bundled vs. Unbundled Service Models

Pay Upfront vs. Fee for Service
• Low-end hearing aids available **direct to consumer**
• Intended for a **mild to moderate hearing loss** and occasional use
• Self-administered **hearing screening** used for programming
• Audiologists can assist with verification and maintenance of devices to ensure they are safe and effective
Over the Counter (OTC) Devices

• Over-the-Counter Hearing Aid Act (2017)

• FDA Proposed OTC Hearing Aid Rule (October 2021)

• 75 day comment period ends January 18, 2022

• "The OTC category, when finalized, would apply to certain air-conduction hearing aids intended for adults age 18 and older who have perceived mild to moderate hearing loss. Hearing aids for severe hearing loss or for users younger than age 18 would be prescription devices.”
Examples of OTC Devices

- ReSound Jabra ($999 pair)
- Otofonix ($790 - $1090 pair)
- MDHearingAid® ($999 pair)
- EarGo Hearing Aids ($1500 - $2500 pair)
- Bose Sound Control Hearing Aids ($849 pair)
Self-Administered Hearing Screening

• **Advantages:** Convenient and Free

• **Limitations:**
  - Screening exams are not comprehensive (most do not include functional tests such as word recognition)
  - Screening exams do not identify auditory pathology that may need medical management
  - Screening exams are not conducted in a sound controlled environment and may OVERestimate hearing loss
Hearing Screening Results

- Nano Four-Frequency Test: “At Risk”
- Eargo Four-Frequency Test: “Your hearing could be better”
- Bose Numbers in Noise Test: “Mild hearing difficulty”
- Lively Hearing Test: “No significant problem”
- MDHearing Test: “Normal range of hearing”
MDHearing Follow-up Email

• “It appears your are within the normal range of hearing for adults. Congratulations!”

• “However, this result does not mean you are out of the woods.”

• “If you feel your hearing needs a boost, there is no negative to trying hearing aids to see if they provide you with the hearing you’ve imagined you should have.”

• “Start a completely risk-free trial now!”
OTC Devices

• Goal is to address 2 of the 3 barriers to adoption:
  • **Access** – Direct to consumer
  • **Cost** – $500 - $1000+

• OTC devices are similar to “entry level” hearing aids

• Verification by an audiologist still is beneficial to ensure devices are safe and effective
• Wearable electronics for situational use including **Personal Sound Amplifying Products (PSAPs)** and specialized headphones or earbuds

• Not intended to compensate for hearing loss**

• Audiologists can assist with maintenance and verification of devices to ensure they are safe and effective
Examples of Hearables / PSAPs

Apple AirPod Pro
($249)
“Live Listen” Mode—uses the microphone of the iPhone to stream sound to the earbuds

The “BEAN” PSAP
($299.95)*

Audien PSAP
($89-$249 pair)*
*Volume adjusted with screwdriver

Two Modes:
• Normal: 15dB amplification
• High: 23dB amplification

*Two Modes:
• Normal: 15dB amplification
• High: 23dB amplification

The BEAN PSAP
($299.95)*

Audien PSAP
($89-$249 pair)*
*Volume adjusted with screwdriver

MD Air PSAP
($399 BOGO)

Nano PSAP
($397 BOGO)*
*4 preset programs
“If it looks like a duck....?”

PSAP

OTC

PSAP

HA

PSAP

HA

HA

HA
Differences in Hearing Technology

Analog Technology

PSAPs

Makes everything louder
Not Programmable
Useful in specific situations

Digital Technology

Hearing Aids

OTC

Makes targeted sounds louder
(Self) Programmable
Useful in some situations
Useful in nearly all situations
Other Hearing Aid Features

- Directional Technology
- Feedback Control
- Advanced Noise Management
- Binaural Processing
- Telecoil
- Rechargeability

- Bluetooth Streaming
- CROS Technology
- Custom options
- Tinnitus features
- Telecare
A Comparison Study*

• High-End Hearing Aids, Low-End Hearing Aids (OTC), High- and Low-End PSAPs

  • Study found that High-End hearing aids met a higher percentage of verification “targets” for 10 different hearing configurations.

  • Most High-End PSAPs and OTCs capable of fitting mild losses.

  • Only High-End Hearing Aids capable of fitting moderately-severe losses.

*Smith, Wilber, and Cavitt (2016), A study of 11 low-end and high-end hearing aids and PSAPs, Hearing Review.
A Comparison Study

• The poorest performers had **high levels of low frequency gain** and **little high frequency gain**.
  
  • **Not helpful** for high frequency hearing losses
  
  • Could be **harmful** for people with normal low frequency hearing
  
  • Amplifies low frequency background noise, which **masks speech**
  
• All devices OTCs and PSAPs had too much internal noise.
- Can be used with or without a hearing aid
- Assists with improved speech in noise performance and hearing from a distance
- Wide range of options including TV and phone accessories, remote microphones, and hearing aid t-coil
- Audiologists can help with selection of an ALD and device training
Examples of ALDs
Telecoil and Induction Loop Systems

• An induction loop system provides a magnetic wireless signal that is connected to a microphone or other audio source

• The magnetic signal is picked up by activating the telecoil (a small coil of wire) inside the hearing aid

• A headset also may be used in place of a hearing aid.
Induction Loops

• Where can you find loops?
  • Airports / Subways / Taxis
  • Houses of Worship
  • Theaters (e.g. Tanger Center)
  • Assisted Living Facilities
  • Government Buildings

The Tanger Center is T-Coil compliant. If your hearing aids or cochlear implants have a built-in telecoil, you will be able to link up to our loop sound system without the use of an additional device.
Aural (Re)habilitation

- LACE (www.neurotone.com) - Up to 40% improvement in difficult listening environments
  - Speech in Noise
  - Competing Speaker
  - Auditory Memory
  - Rapid Speech
- Computer, Tablet, or Smartphone - $119 (unlimited access) “SAVE10” for $10 off
Aural (Re)habilitation

• Amptify (https://www.amptify.com/)
  • Hearing Health Coach to monitor progress
  • 12-16 Week Curriculum
  • Auditory Training “Games”
  • Peer Support Community
• $49.95 per month after 14 day trial
Still Confused?

• You are not alone!

• Final FDA decision re: OTCs should prohibit labeling of PSAPs as HAs, which will help combat deceptive marketing practices

• “Build Back Better” bill also currently includes some coverage for hearing aids…stay tuned.

Audiologists are here to help!
“I trust UNC Greensboro with my hearing.”

UNC Greensboro audiologists and speech-language pathologists are committed to providing high quality services, offering innovative solutions, and educating the next generation of clinicians. At the Speech and Hearing Center, we are driven by a shared intention to impact the human experience by improving your communication.

Call (336) 334-5939 to make an appointment today or visit http://csd.uncg.edu/shc
300 Ferguson Building, 524 Highland Ave, Greensboro, NC 27402
Open to the public - Free convenient parking

http://csd.uncg.edu/shc • www.facebook.com/uncgaudiology
HEARING SERVICES: AUDIOLOGISTS

Dr. Lisa Fox-Thomas,
Ph.D., CCC-A
AP Professor
Assistant Director, Coordinator of Audiology Services
lfoxthomas@csdshc.uncg.edu
Tinnitus, sound sensitivity, and auditory processing disorders

Dr. Amy Myers,
Au.D., CCC-A
AP Assistant Professor
amymyers@csdshc.uncg.edu
Hearing loss, amplification, and adult cochlear implant rehabilitation

Dr. Jennifer Burkey,
Au.D., CCC-A
AP Assistant Professor
jburkey@csdshc.uncg.edu
Hearing loss, amplification and assistive listening devices
Questions?