

NEEDS ASSESSMENT OF HEARING ASSISTIVE AND RELATED TECHNOLOGIES

1ST INTERNATIONAL CONFERENCE ON ADULTS WITH
COMPLEX HEARING NEEDS
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THINKING ABOUT NEEDS

- 
- If you have hearing loss, what's your biggest frustration?
 - If you experience hearing loss for the first time, what's your biggest fear?
 - What do we take for granted?
 - It's not just a noisy world
 - Sometimes it's too quiet (bedtime), sometimes things sound "crappy," and sometimes it has nothing to do with sound
 - Great stuff out there, but we've got to think BEYOND hearing aids and implantable devices...

"Walk a mile in my shoes" – Elvis Presley

THINKING ABOUT NEEDS

- *"I think hearing aids are wonderful. I hate to think what my life would be like without them. But sometimes, and in some situations, either you're not wearing them (like when you're in bed, coming out of the shower, etc.) or they need to be supplemented by another type of assistive device. That's where hearing assistance technologies come in. Keep in mind that the devices I'm talking about are not hearing aids and they are not used instead of hearing aids."*

– Mark Ross, Ph.D. (Dr. Ross on Hearing Loss, RERC, n.d.)

MY SOCIAL EXPERIMENT

- Week 1 – No hearing technology whatsoever
- Week 2 – Hearing aids only
- Week 3 – Bimodal
- > Week 4 – Bilateral Cochlear Implants



WHAT PATIENTS TELL OR ASK ME...

- “I’m having trouble finding a cell phone that works for me.”
- “Does my hearing aid have a telecoil?”
- “I can’t use the phone like I used to.”
- “I wait until movies come out on TV or video.”
- “I wish my smartphone could _____.”

WHEN AUDIOLOGISTS CONTACT ME...

- “My patient is not interested in a cochlear implant, yet is struggling more than ever before. Can you help?”
- “Do you know anything about setting up a loop system for living room?”
- “An international student with cochlear ossification needs a variety of technologies for college. What do you recommend?”
- “I want to send someone to you who was just diagnosed with bilateral acoustic tumors.”
- “I have a patient with a RIC and needs to use a stethoscope”

HEARING HEALTH

POORER HEALTH

- Reduced psychosocial functioning leading to:
 - Increased feelings of **isolation, depression, loneliness, fear, frustration,** and **disappointment** (Crandall et al., 1998; Bess et al., 1989)
 - Poorer **physical health** (Lichenstein et al., 1998; Mulrow et al., 1990)
- Hearing loss can be mistaken for dementia, or co-exist

BETTER HEALTH

- Noted improvements seen with hearing aids and cochlear implants on health and well-being (Cohen et al., 2004; Mo et al., 2005; Lin et al., 2012)
- Wearing hearing aids may delay the onset and effects of dementia (Lin et al., 2013)

AGE-RELATED HEARING LOSS

MULTI-FACTORIAL Aging and Speech Understanding Difficulties

Brain Volume
Changes

Lin et al (2014)

Vascular and
Metabolic
Changes

Mills et al (2006)

Neural Changes

Anderer et al (1998); Bellis et al
(2000); Temblay et al (2002,
2003); Atcherson (2009)

Cognitive
Changes

Craik (2007); Schiff et al
(2008); Lin et al (2011;
2012; 2013)

Poorer Temporal
Processing

Lister & Tarver (2004);
Price & Simon (1984);
Strouse et al (1998)

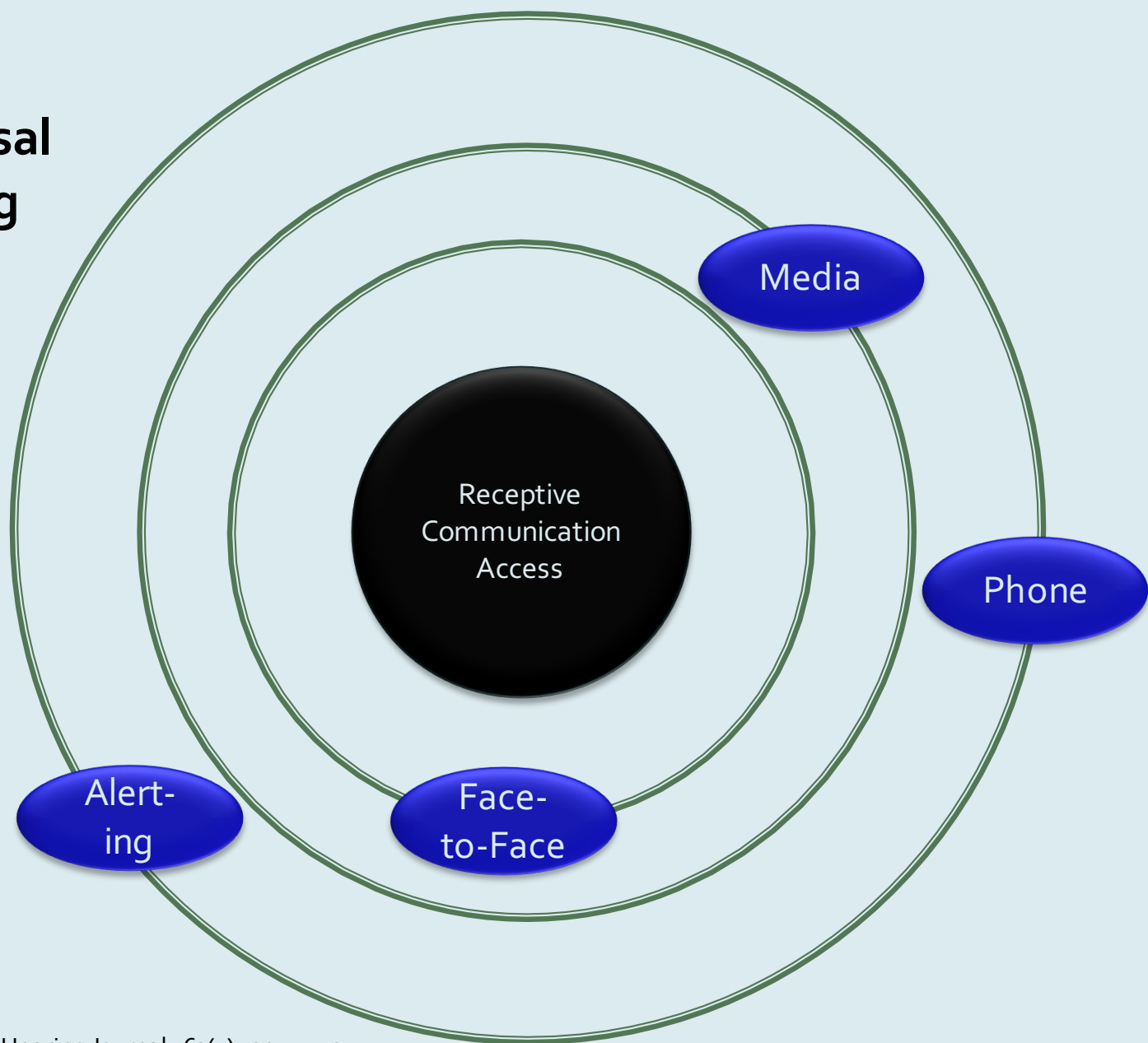
Noise
Interference on
Speech Cues

Rajan & Cainer (2008);
Schneider et al (2007)

ADULTS WITH COMPLEX HEARING NEEDS

- Generally speaking...
 - Faster, noisier, busier, distracted world
 - More ways to connect, for better or for worse
 - Changing and merging technologies

Four Universal Hearing Needs

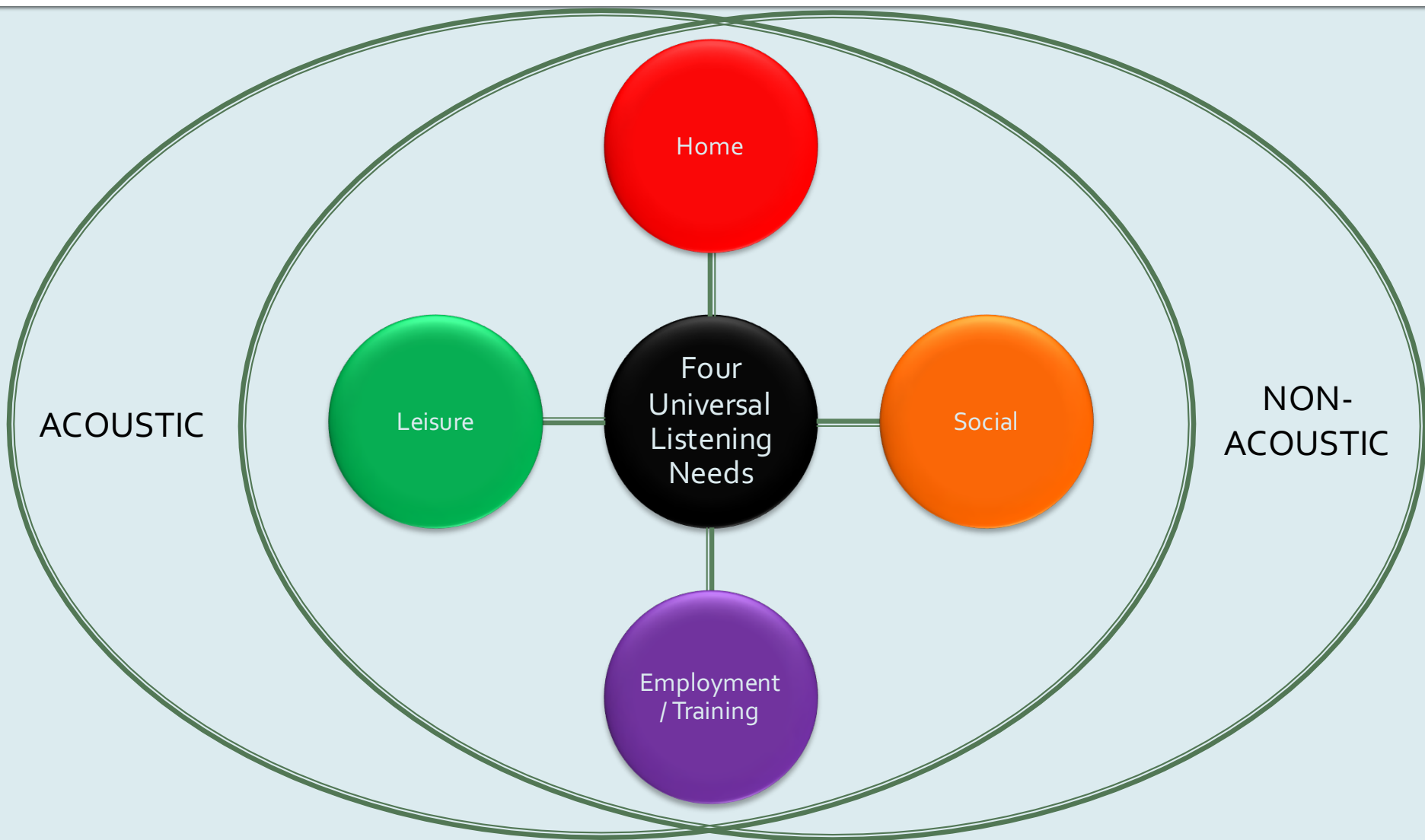


Kochkin, S. (2010). *Hearing Journal*, 63(1), pp. 11-19.

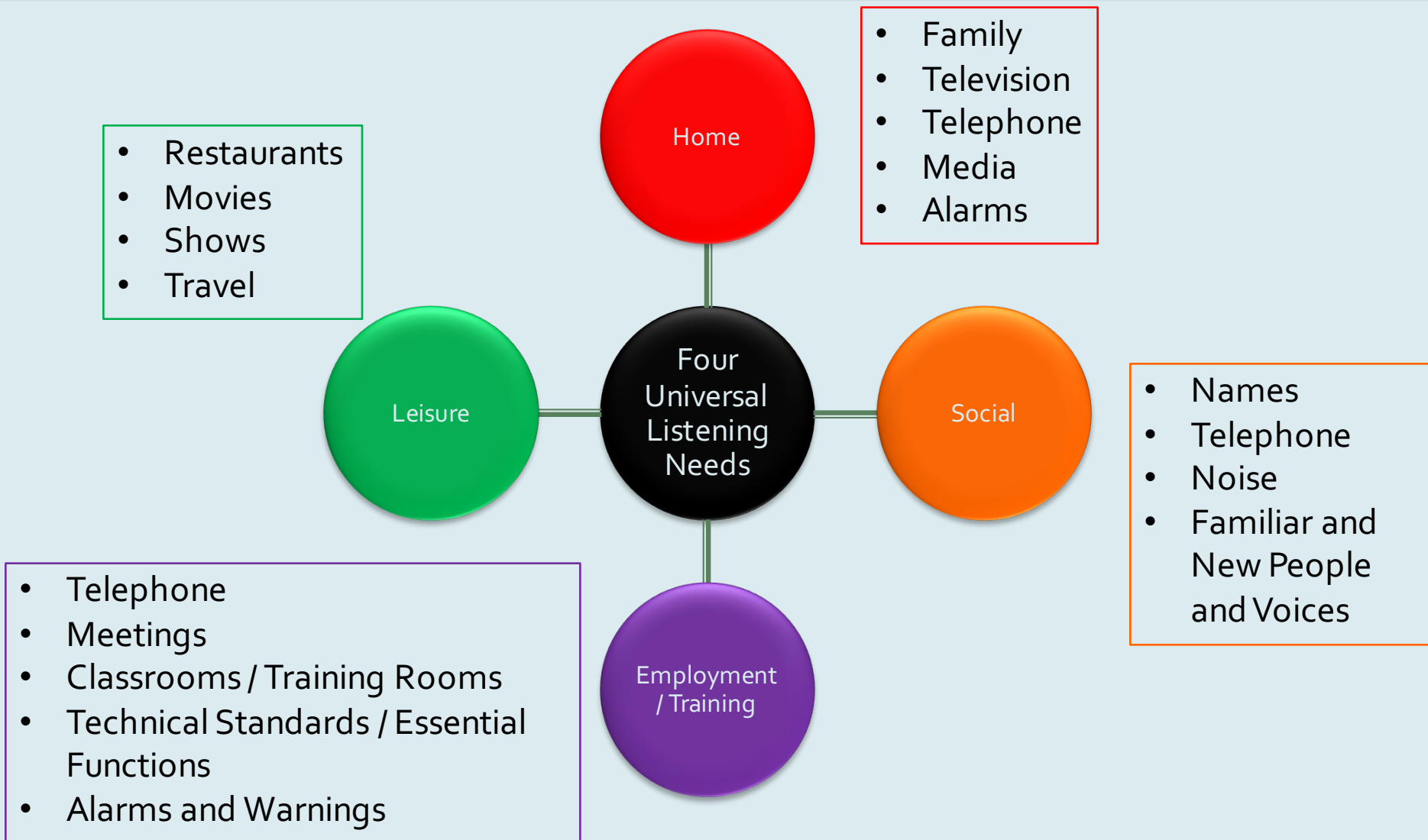
Compton-Conley, C. (2011). Perceived difficulty with face to face communication by adult DMHA users with mild to moderate SNHL. Presentation at the American Auditory Society Convention.

Compton-Conley, C. (2014, Jan). Technology Overview. Presentation at the Institute of Medicine.

ASSESSING NEED

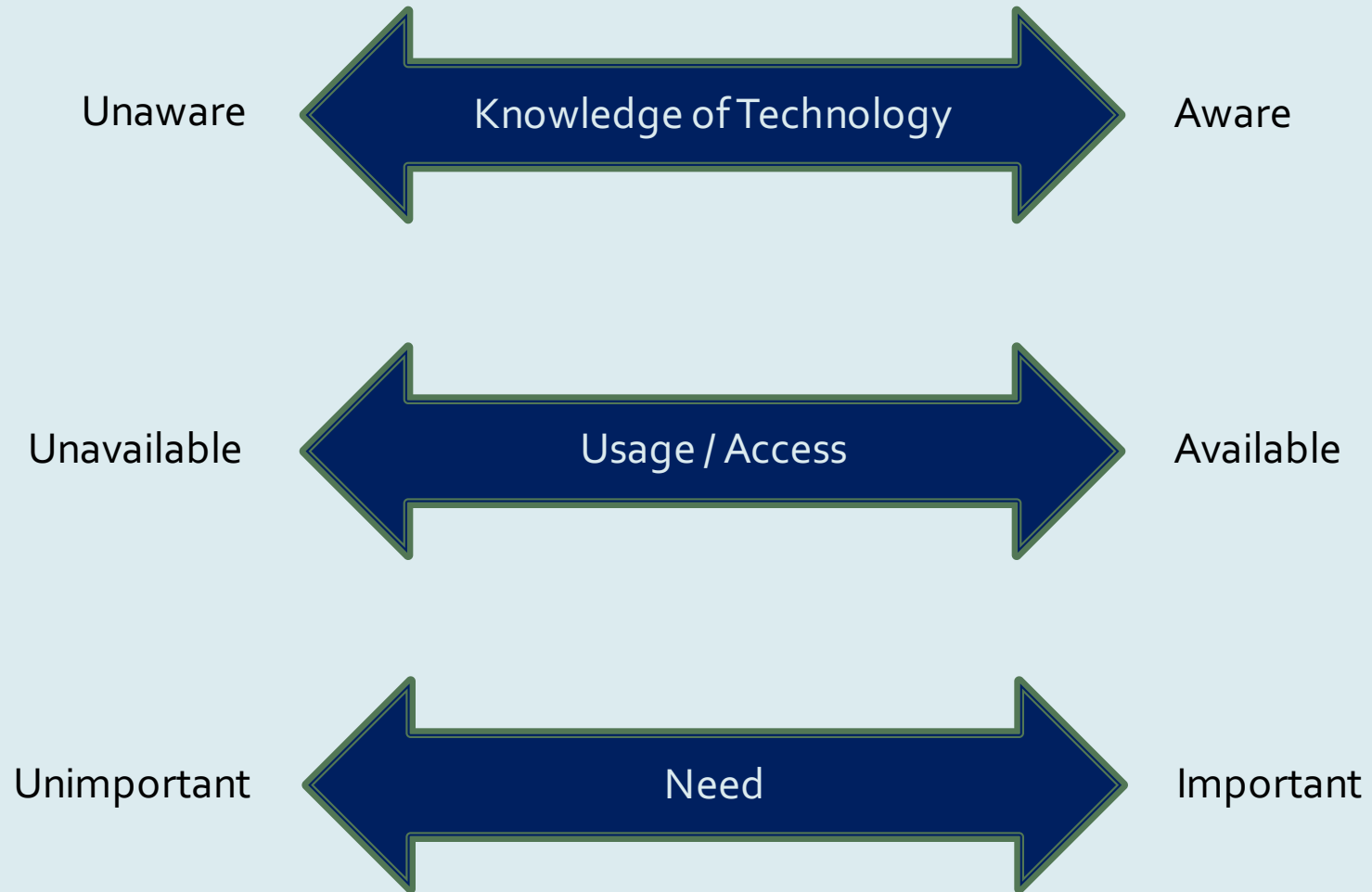


ASSESSING NEED



FOOD FOR THOUGHT

Clinician versus Patient



ASSESSING NEED

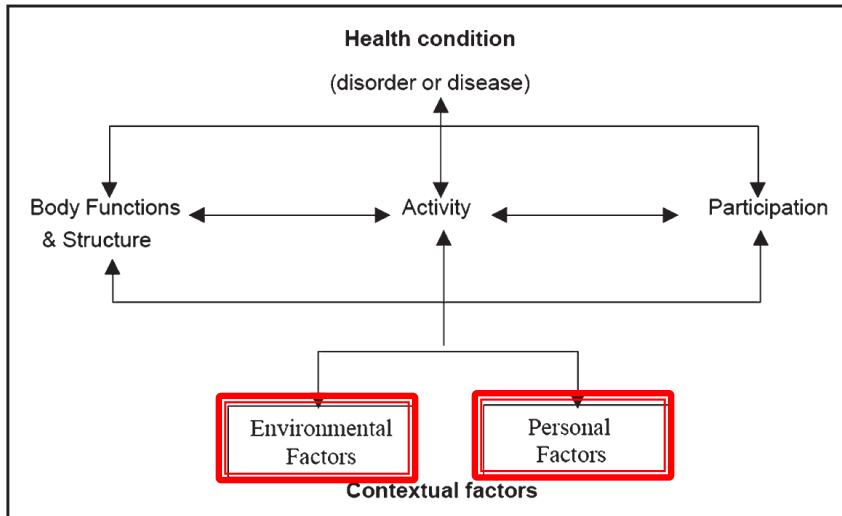
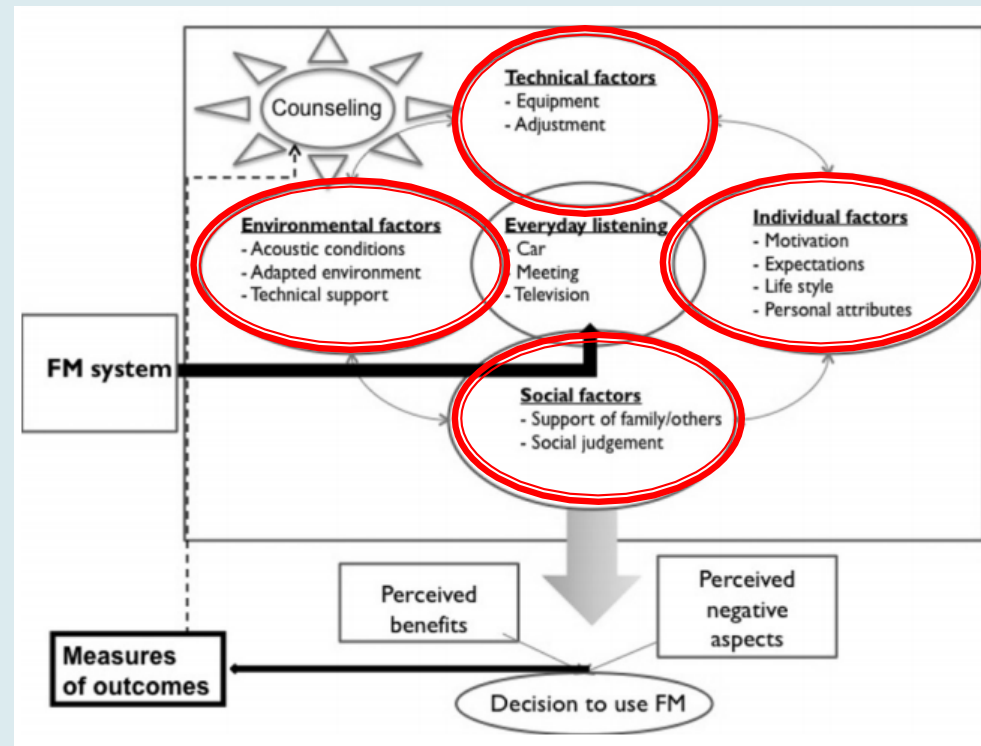


Figure 5-1. ICF model of health and health-related domains. Reproduced, with the permission of the publisher, from *Towards a Common Language for Functioning, Disability and Health: ICF The International Classification of Functioning, Disability and Health*. World Health Organization (2002). Retrieved from <http://www.who.int/about/en/>

WHO (1997)



Fitzpatrick et al. (2010), 49(1),44-53, IJA
 Fournier et al. (2012), 36(2),150-167, CSLPA

TECHNOLOGIES I'VE USED TO DATE

- Hearing aids (analog, digital analog, frequency compression, digital)
- FM system (auditory trainer)
- Cochlear implant (body worn, BTE)
- Telecoils
- Sony Entertainment Access Glasses
- Vibrating alarm clocks
- Timers set to lamp
- TTY (Teletypewriter)
- VCO (Voice Carryover)
- Infrared systems
- Induction loop systems
- Closed caption decoder
- Subtitles/open captions
- Smartphone vibrating and flashing alarms
- Internet
- Soundfield systems
- E-mail
- Messaging
- Texting
- Speech-to-text translation
- Videoconferencing
- CART/TypeWell/C-Print

How to Do a Needs Assessment

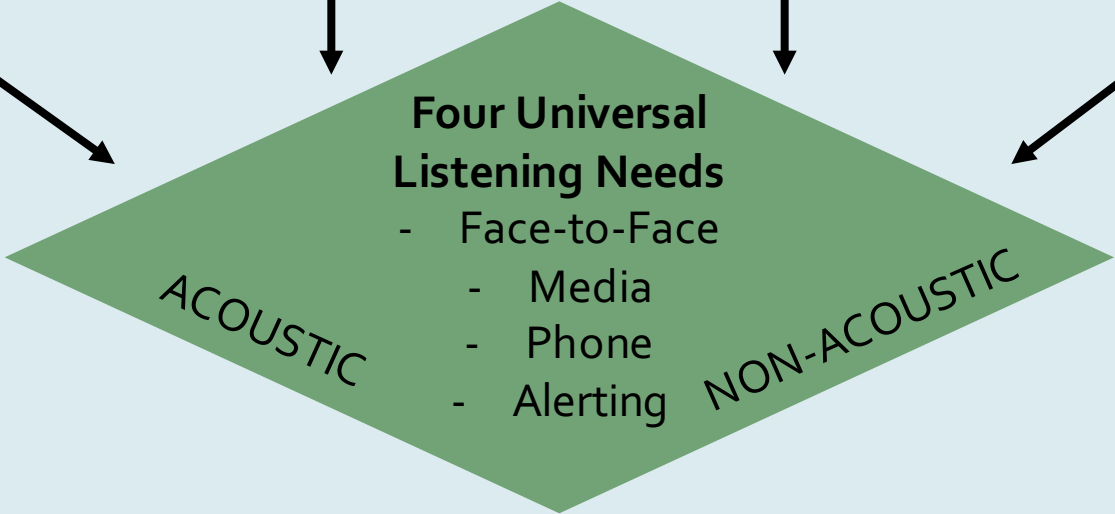
Select a Tool and/or Approach that Fits your Style, Resources, and Constraints

Home

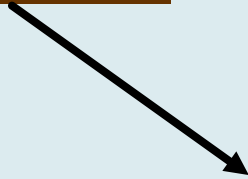
Social

Employment / Training

Leisure



Home



Four Universal Listening Needs

- Face-to-Face
- Media
- Phone
- Alerting

ACOUSTIC

NON-ACOUSTIC

- Streamer to Television
- Amplified Phone w/
Tone Controls
- Emergency Alert
Systems

- Vibrating Alarm Clock
 - Flashing Alerts
- Closed Captions/Subtitles
 - Captioned Phone
- Emergency Alert Systems

Social



**Four Universal
Listening Needs**

- Face-to-Face
- Media
- Phone
- Alerting

ACOUSTIC

NON-ACOUSTIC

- Assistive Listening Devices / Remote Microphone Technology
- Video Communication
- Smartphone M₄/T₄
- Audible Notification

- Text Messaging
 - E-mail
- Vibrating Notification

Employment /
Training



**Four Universal
Listening Needs**

- Face-to-Face
- Media
- Phone
- Alerting

ACOUSTIC

NON-ACOUSTIC

- Assistive Listening Device / Remote Microphone Technology
- Amplified Stethoscope

- Text Messaging
- Chat Messaging
- Speech-to-Text Systems
- Captioning Systems
 - Videophones
- Emergency Alert Systems

Leisure

**Four Universal
Listening Needs**

- Face-to-Face
- Media
- Phone
- Alerting

ACOUSTIC

NON-ACOUSTIC

- Assistive Listening Device / Remote Microphone Technology

- Messaging and E-mail Notifications
- Captioning Systems
- DURATEQ System
- Alerting Systems

MOTIVATION AND SUPPORT

- Patients will have to be motivated to use the technology; counsel if necessary
- Patients may require/desire support of their family members, friends, and/or coworkers to use the technology
- Clinicians can motivate by showing their support and helping to locate resources

CHALLENGE

- Assuming you have the knowledge, why do a needs assessment for hearing assistive and related technology if you don't know what's available?

Your Task(s):

- Expand your current needs assessment strategies to go beyond hearing aids and implantable devices
- Get familiar with assistive technology companies and their products
- What technologies and resources are already in your area?
- What's government supported vs. what's out of pocket vs. what's free?
- Partner with, or form, advocacy or support groups / organizations
- Build up the hearing assistive and related technology side of your practice up (showcase and demonstrate products; consider simulations)

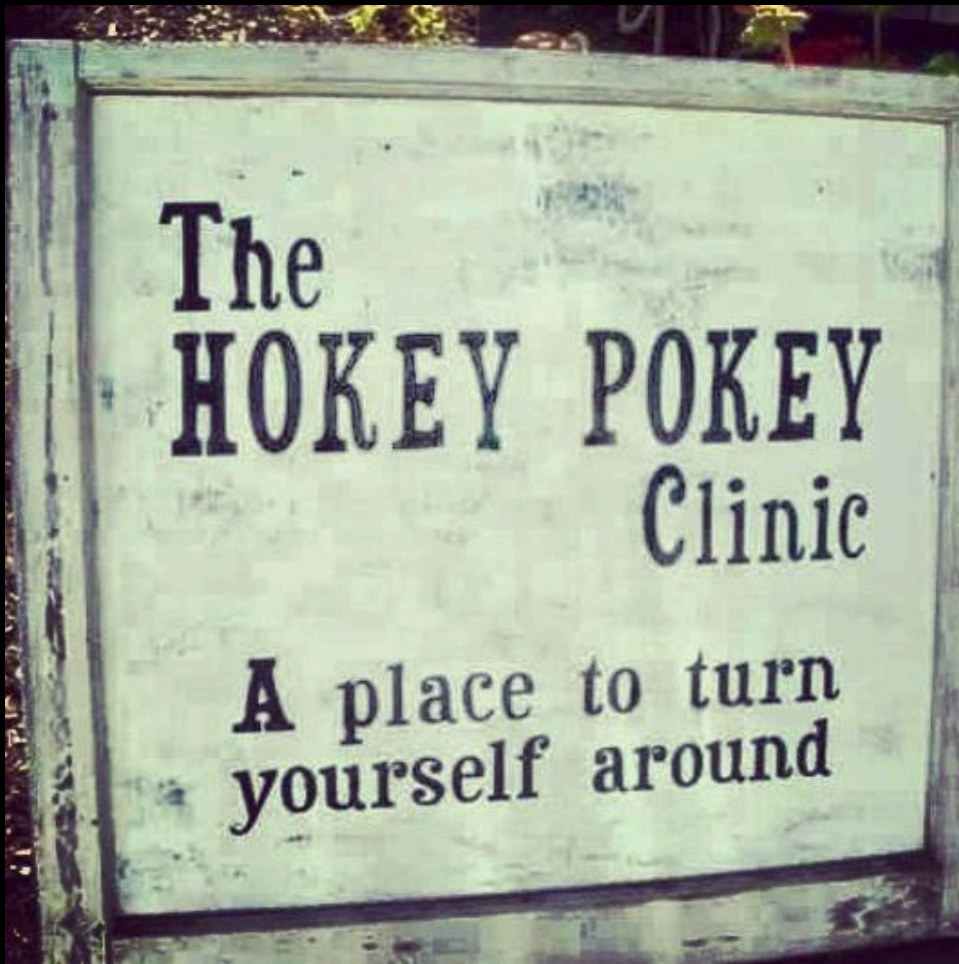
RESOURCES FOR YOU

- Morris, R. (2007). *On the Job with Hearing Loss. Hidden Challenges. Successful Solutions.* Morgan James Publishers. (nice “Communication Questionnaire” is included)
- Ida Institute Toolbox
(<http://idainstitute.com/toolbox/>)
- Professional and Consumer Courses
(<http://www.hearingloss.org/content/course-offerings>)
- Atcherson, S.R., Franklin, C.A., Smith-Olinde, L. (2015). *Hearing Assistive and Access Technology.* Plural Publishing.

*"Knowing is not enough;
we must apply.*

*Willing is not enough;
we must do."*

(Johann Wolfgang van Goethe)



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