



Canadian Academy of Audiology
Académie Canadienne d'audiologie

Auditory Wellness: What is it, why is it important, and how can it be self-managed?

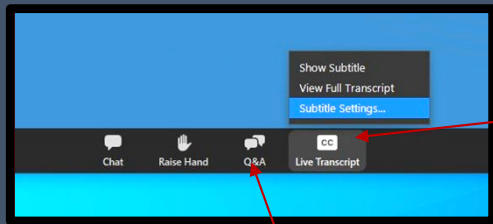
Speaker: Larry E. Humes, Ph.D.

Distinguished Professor Emeritus, Department of Speech, Language, and
Hearing Sciences, Indiana University

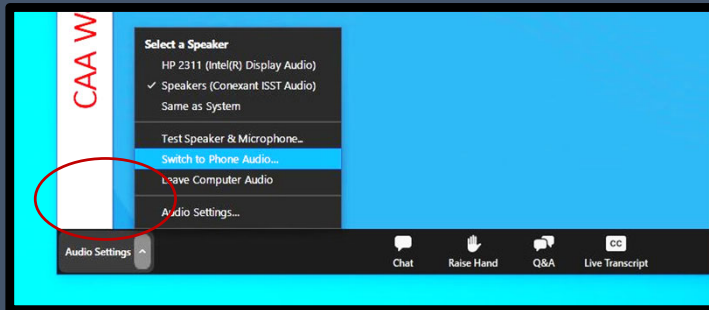
Moderator: Dave Gordey, Ph.D., Director of Pediatric Audiology and
Research, Oticon Global headquarters, Adjunct professor, Western
University and Salus University

May 15, 2024

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Moderator: Dave Gordey, Ph.D., Director of Pediatric Audiology and Research, Oticon Global headquarters, Adjunct professor, Western University and Salus University

Dave Gordey, Ph.D., has been a pediatric audiologist for over twenty-five years. Dave is the director of pediatric audiology and research at Oticon Global headquarters in Denmark. Dave is an adjunct professor at Western University and Salus University.

Dave's current research projects include pediatric hearing aids, counseling, functional communication deficits in children with normal peripheral hearing, and the social and emotional development of children with hearing loss.



Speaker: Larry E. Humes, Ph.D.
Distinguished Professor Emeritus, Department of Speech,
Language, and Hearing Sciences, Indiana University

Larry E. Humes earned his master's degree from Central Michigan University, before completing his Ph.D. at Northwestern University. He has been working for faculty at Indiana University, where he remains today as Distinguished Professor Emeritus. He has published over 175 articles in peer-reviewed and has presented or co-presented on over 380 presentations throughout the world.



Professor Humes has received the Honors of the Association and the Kawana Award for Lifetime Achievement in Publications from the American Speech-Language-Hearing Association, the Jerger Career Award for Research in Audiology from the American Academy of Audiology. He is a Fellow of the Acoustical Society of America and the International Collegium of Rehabilitative Audiology (ICRA).

Auditory Wellness:

What is it, why is it important, and how can it be self-managed?

Larry E. Humes

Distinguished Professor Emeritus

Department of Speech & Hearing Sciences



INDIANA UNIVERSITY
BLOOMINGTON



Northwestern
University

Outline of Today's Talk

- Well-being, wellness, and “auditory wellness” defined
- The NEED for a new Hearing Healthcare (HHC) model
 - % of those with unmet HHC needs
 - Current barriers to meeting those needs
- A new approach based on self-reported auditory wellness
 - Evidence that self-reported hearing trouble is superior to pure-tone audiometry
 - Use of the HHI and HHI-S in a self-driven model of auditory wellness from identification of need through the measurement of outcomes

Broad Context: Well-being and Wellness

- **Well-being** is synonymous with happiness, good quality of life, and a thriving life.
- Typically, **well-being** is measured via self-report and includes *positive/negative affect as well as overall satisfaction with life.*



- **Wellness** is a product of a healthy lifestyle that enables people to do what they want to do.
- **Wellness is more than the absence of illness!**
- A person caring for others can achieve a thriving well-being.
- MANY wellness models and domains exist, but the six most common **wellness** domains are shown here.

What is “auditory wellness”?

- The effective processing of sound that enables the individual to participate in a wide range of desired daily listening activities without limitations or restrictions.
- The specific listening and communication activities that are desirable and deemed important are determined by the individual and often include:
 - communication with others;
 - listening to music; and
 - an appreciation of the sounds of nature.
- It is NOT the absence of hearing loss nor is it “hearing wellness”
 - “hearing wellness” corresponds to PTA4 < 20 dB HL per ANSI/CTSA standard 2018 (2023)

Auditory Wellness



- More than the detection of simple pure tones (“hearing wellness”)
- Includes the perception of complex sounds
- Involves multiple levels of the listening hierarchy:
 - Detection;
 - Discrimination;
 - Identification/Recognition; and
 - Comprehension. (Erber, 1982)

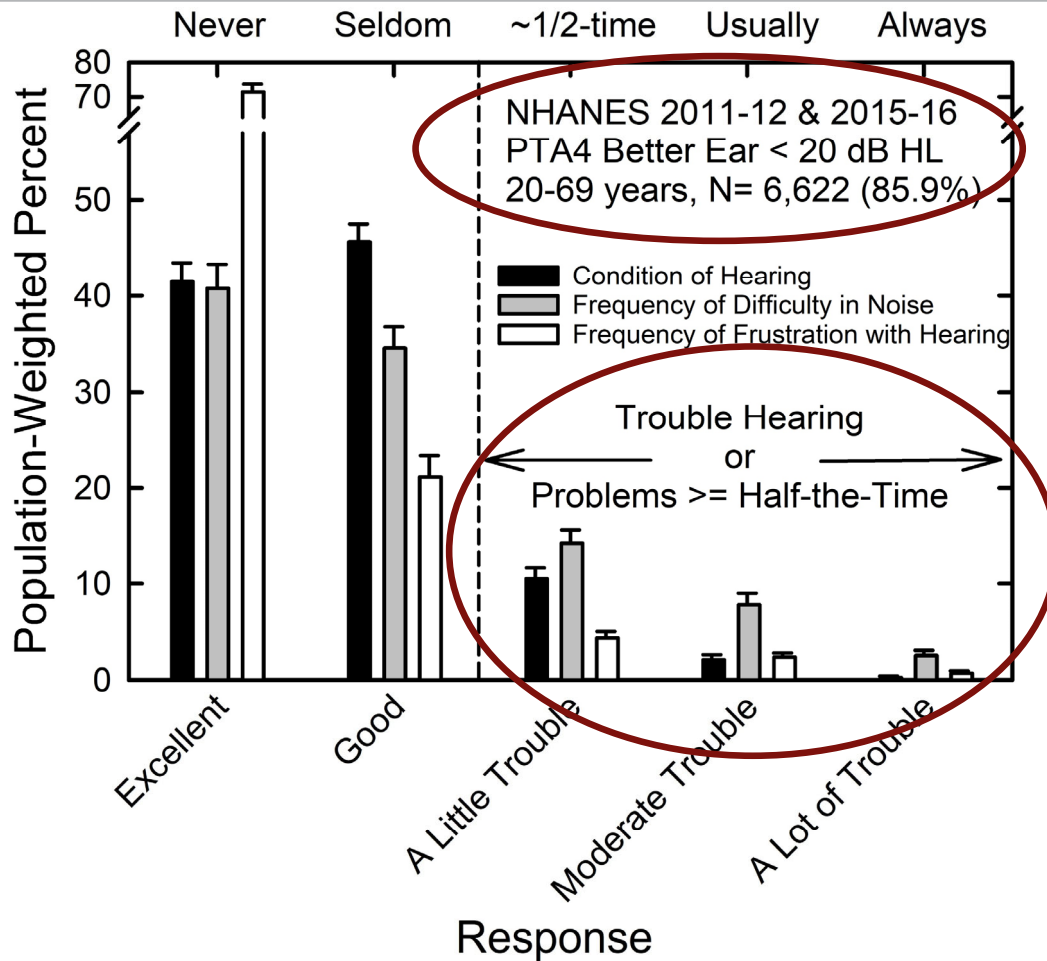
Links of Auditory Wellness to Other Wellness Domains



- Evidence exists for links between the simplest form of auditory wellness, hearing wellness (PTA4), and:
 - physical wellness (including falls);
 - psychological wellness, especially anxiety, depression, and fatigue;
 - social wellness; and
 - cognitive wellness.

**Good “Hearing
Wellness” is not
Good “Auditory
Wellness”**

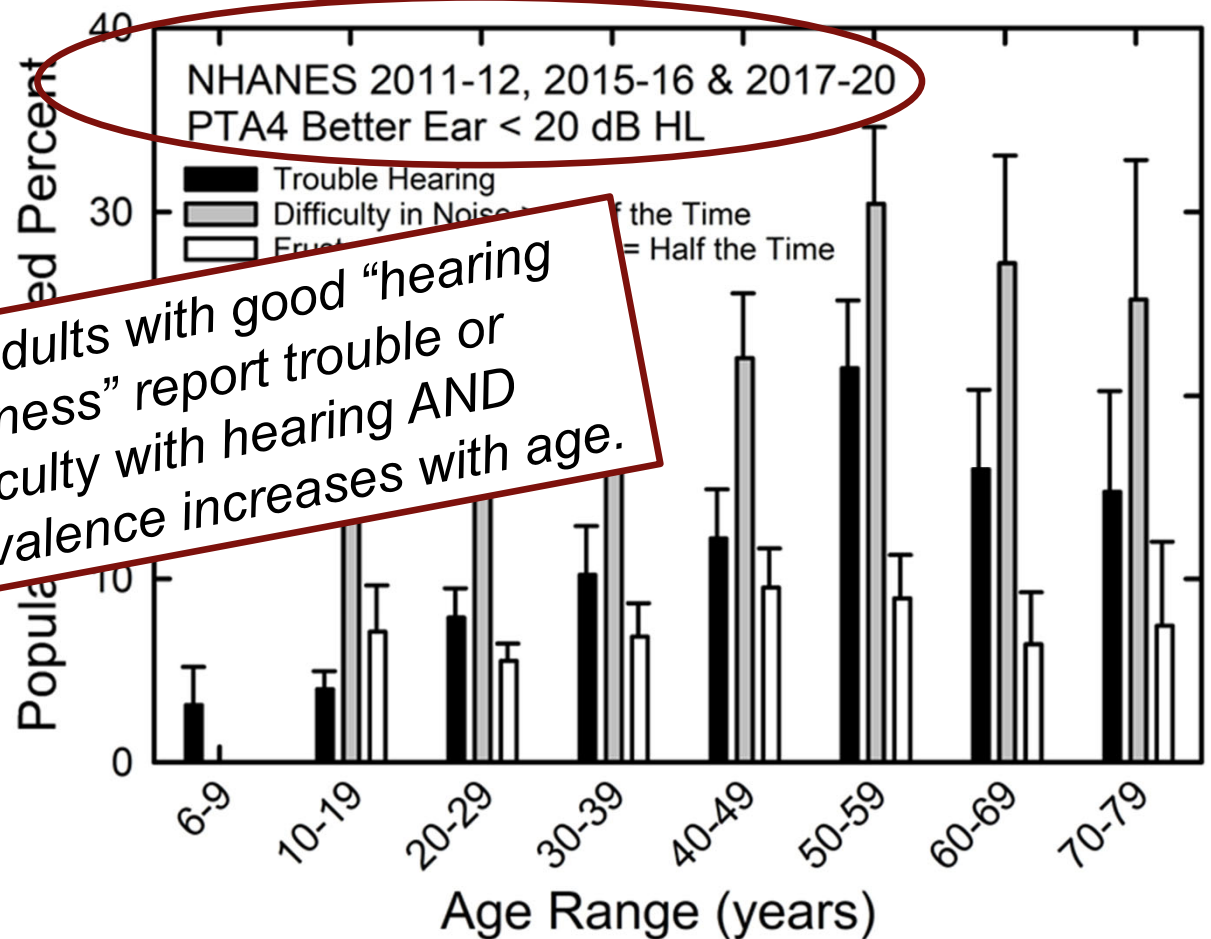
**An Example
from NHANES**



Good “Hearing Wellness” is not Good “Auditory Wellness”

Example from NHANES (cont.)

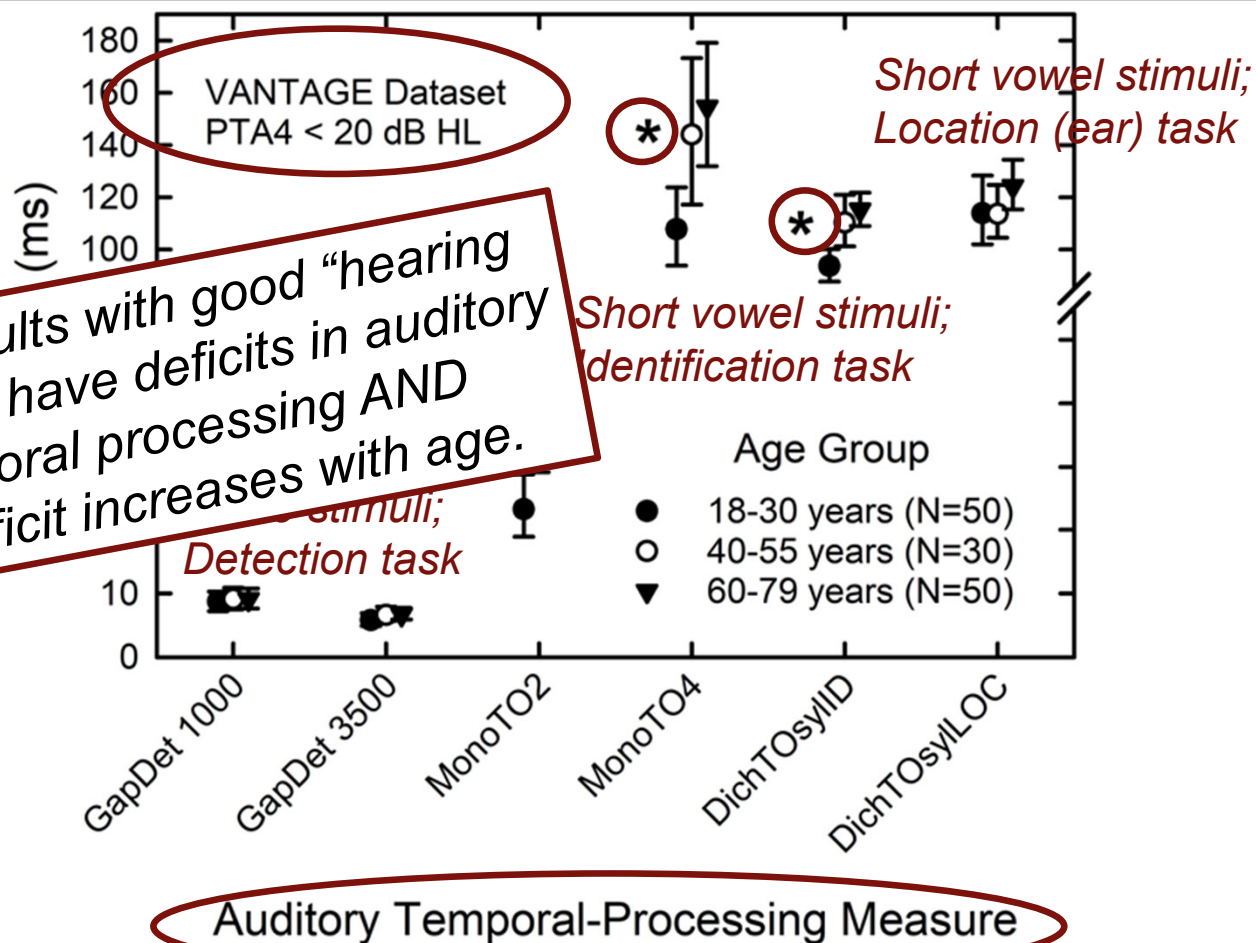
Many adults with good “hearing wellness” report trouble or difficulty with hearing AND the prevalence increases with age.



Good “Hearing
Wellness” is not
Good “Auditory
Wellness”

Another Example

Many adults with good “hearing
wellness” have deficits in auditory
temporal processing AND
the deficit increases with age.



Recap:
**Many adults with good “hearing wellness”
based on pure-tone audiometry do not have
good “auditory wellness”**

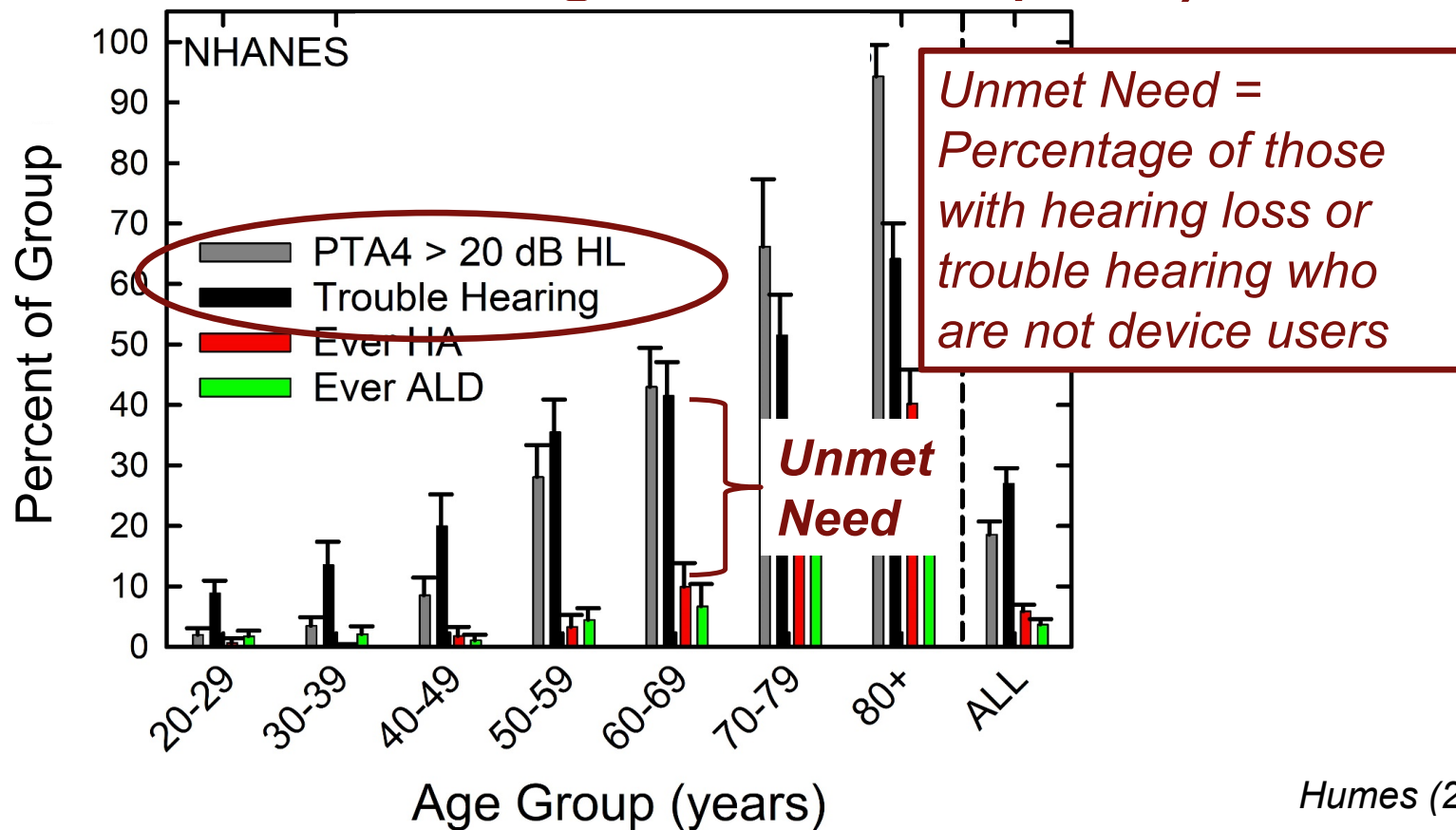
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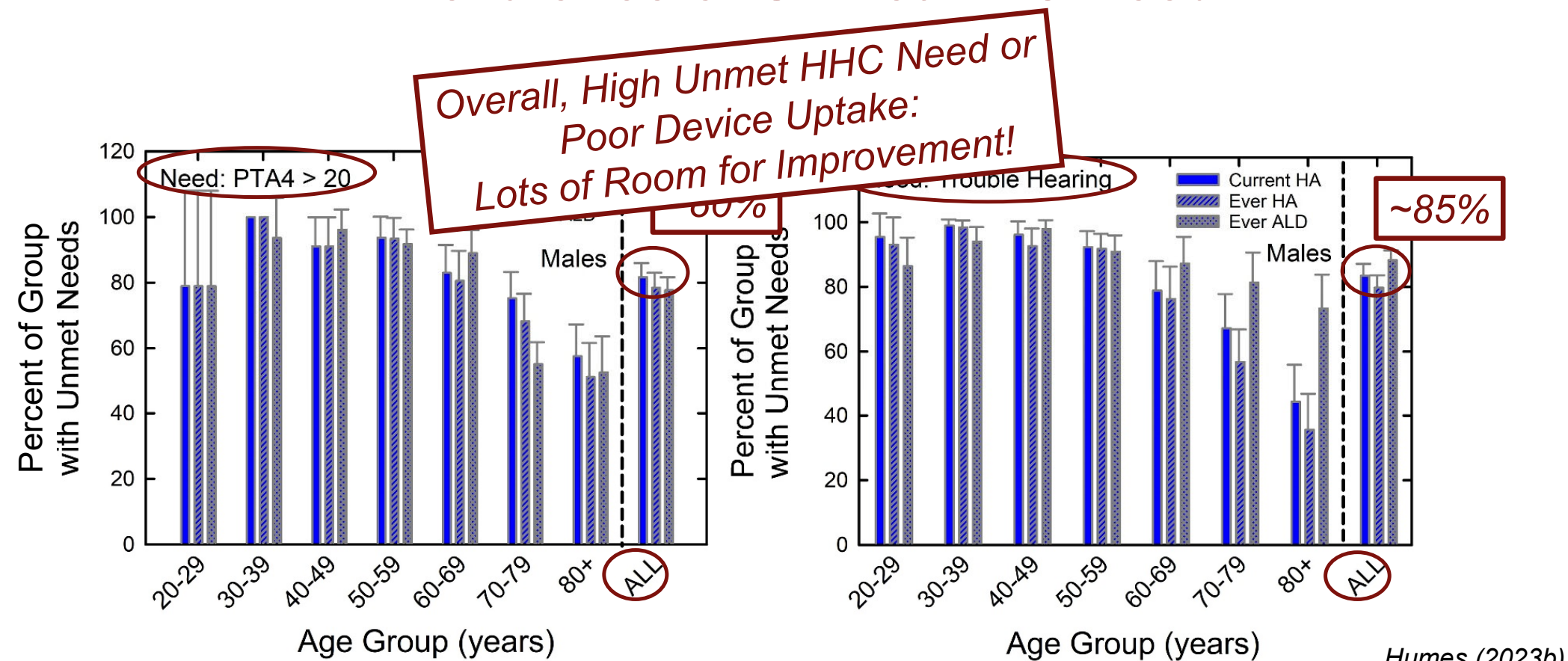
The Need for a New Approach Based on Auditory Wellness

- Adults should be empowered to measure and maintain their own auditory wellness
- Why is a new approach needed?
 - The prevailing professional-driven HHC model, based on treating hearing loss, has been “broken” for a long time

Evidence of Failure: Unmet Need for Hearing Healthcare (HHC)-NHANES



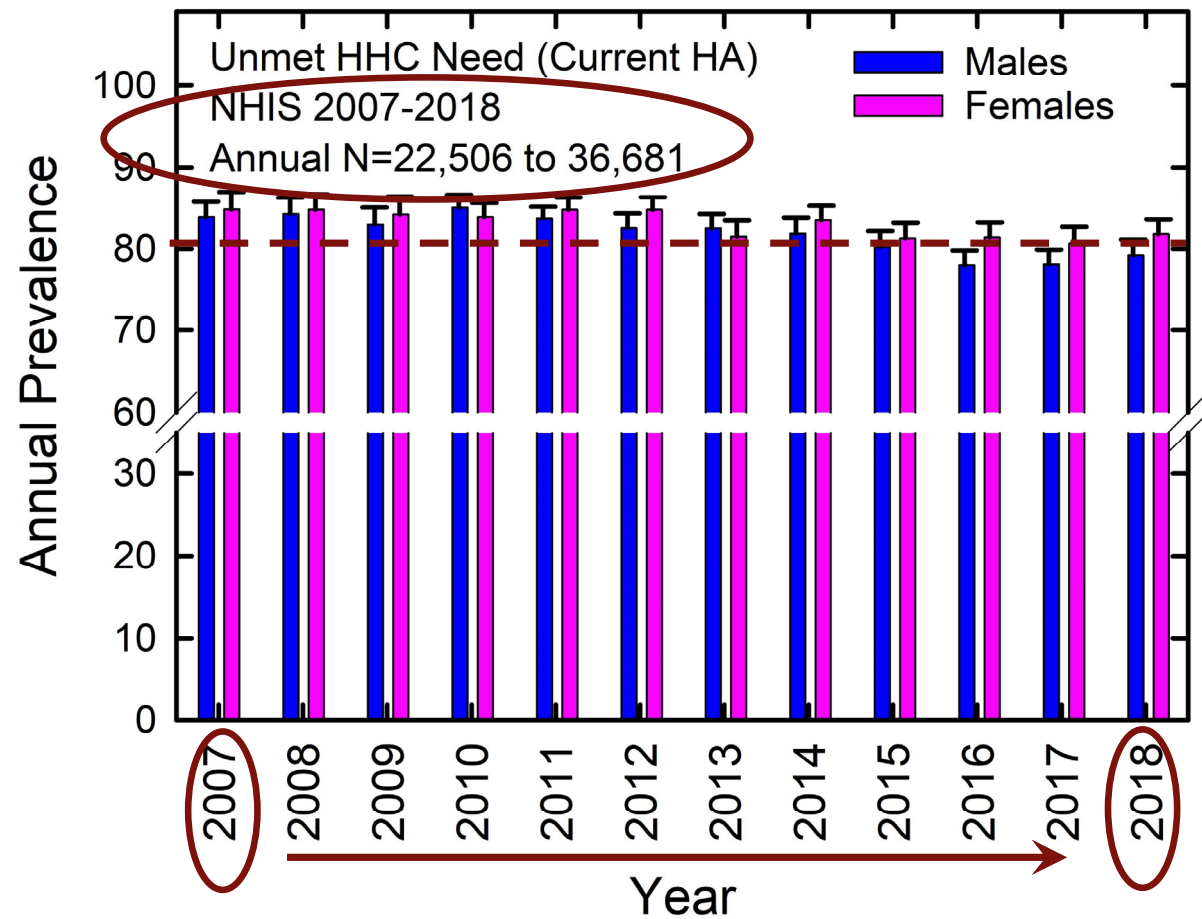
Prevalence of Unmet HHC Need



Humes (2023b)

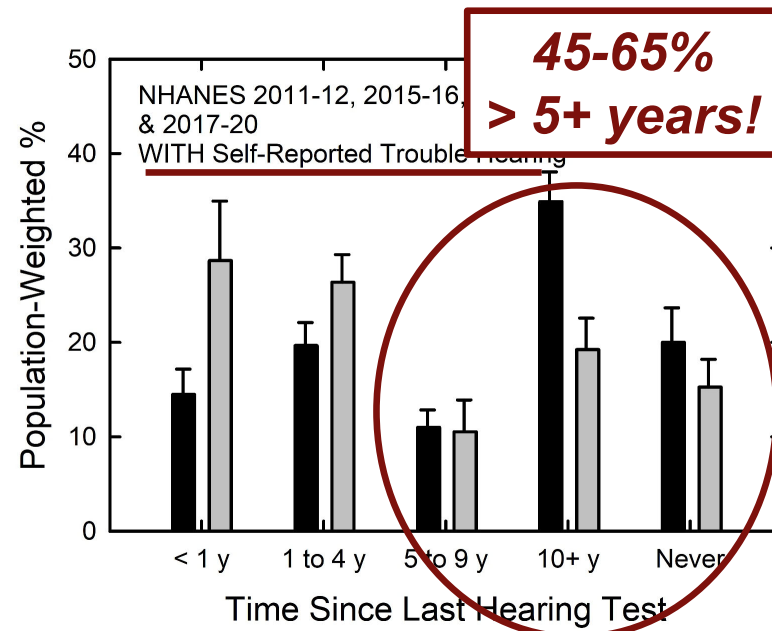
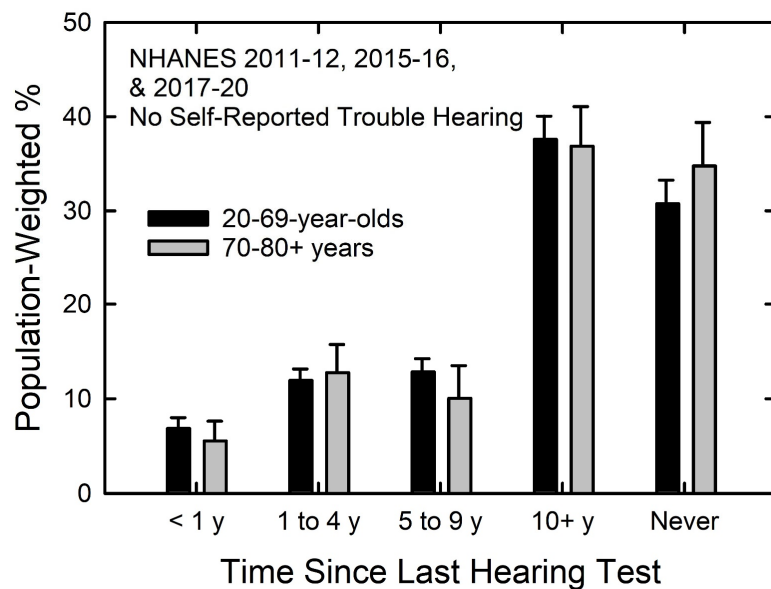
**AND it has been
this way for a
LONG time!**

Humes (2023a)



Barriers in Prevailing HHC System: One barrier is need for a hearing test: Last Time Hearing Tested by HHC Professional?

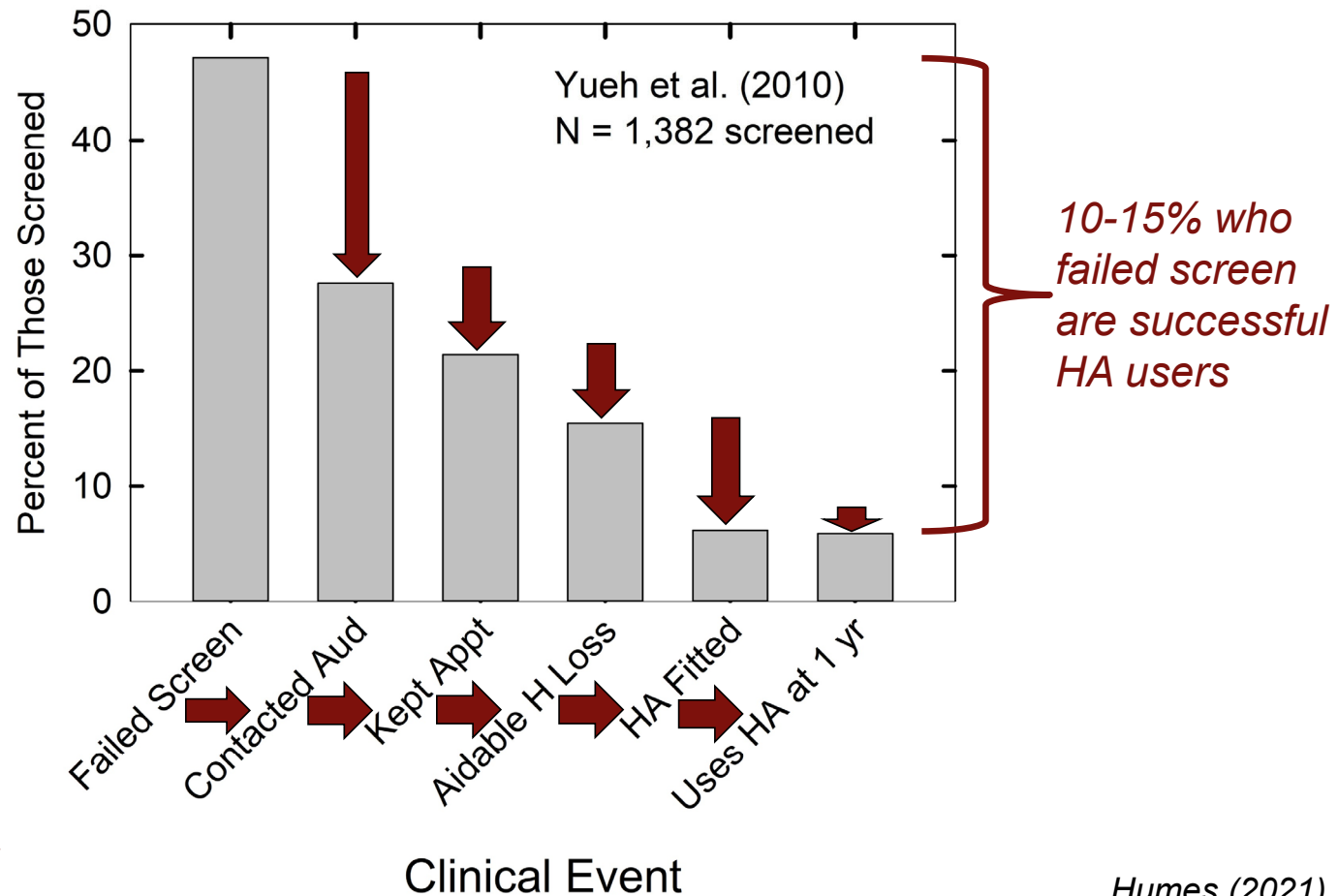
“Hearing test by a specialist is one that is done in a sound-proof booth or room, or with headphones. Hearing specialists include audiologists, ear nose and throat doctors, and trained technicians or occupational nurses.”



Another Barrier:

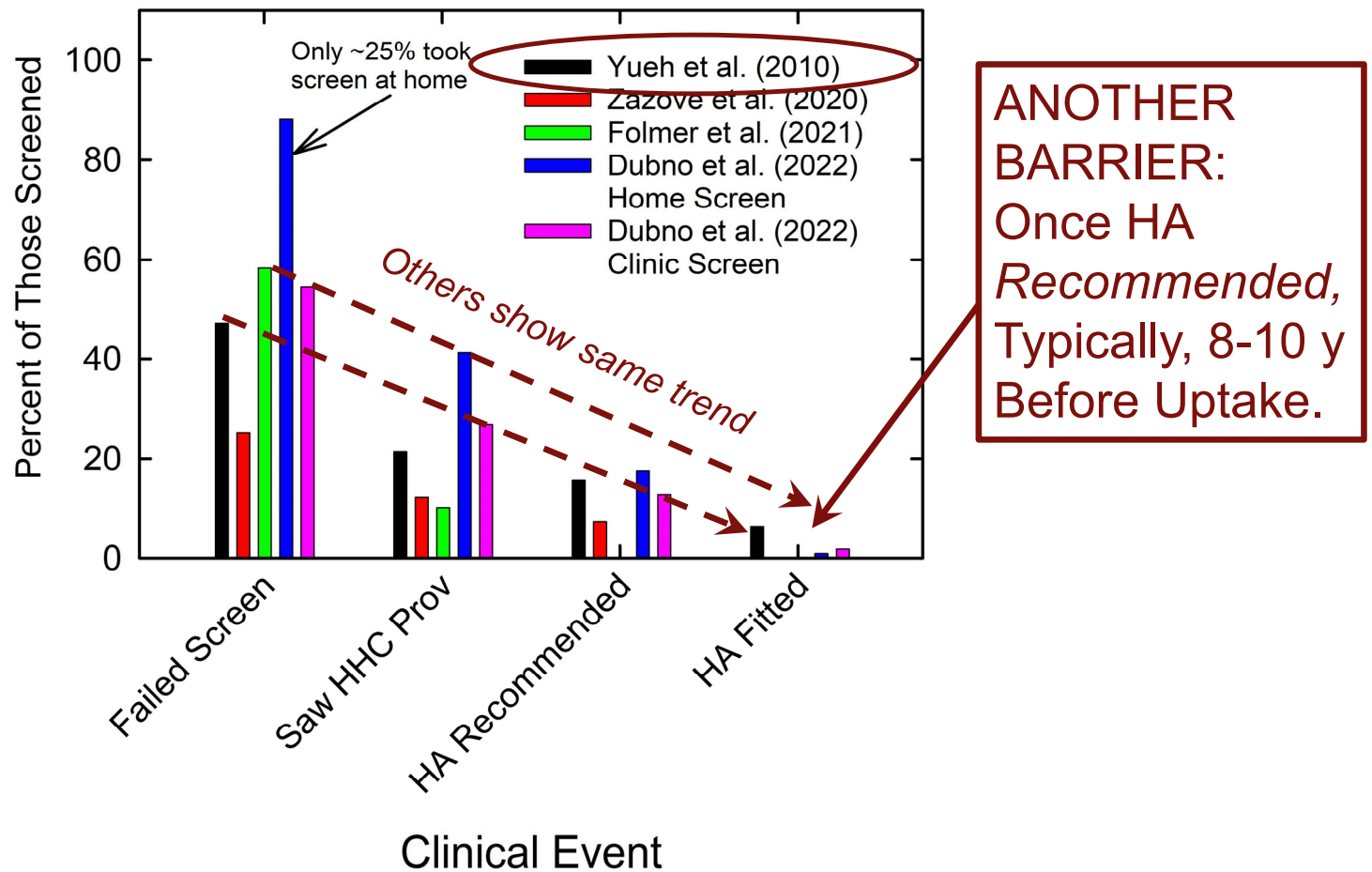
Overview of Disease-Based Model of ARHL:

the pathway to
successful
treatment—*poor
accessibility to HA*



Humes (2021)

More Recent Studies of Hearing Screening and Follow-Up Stages



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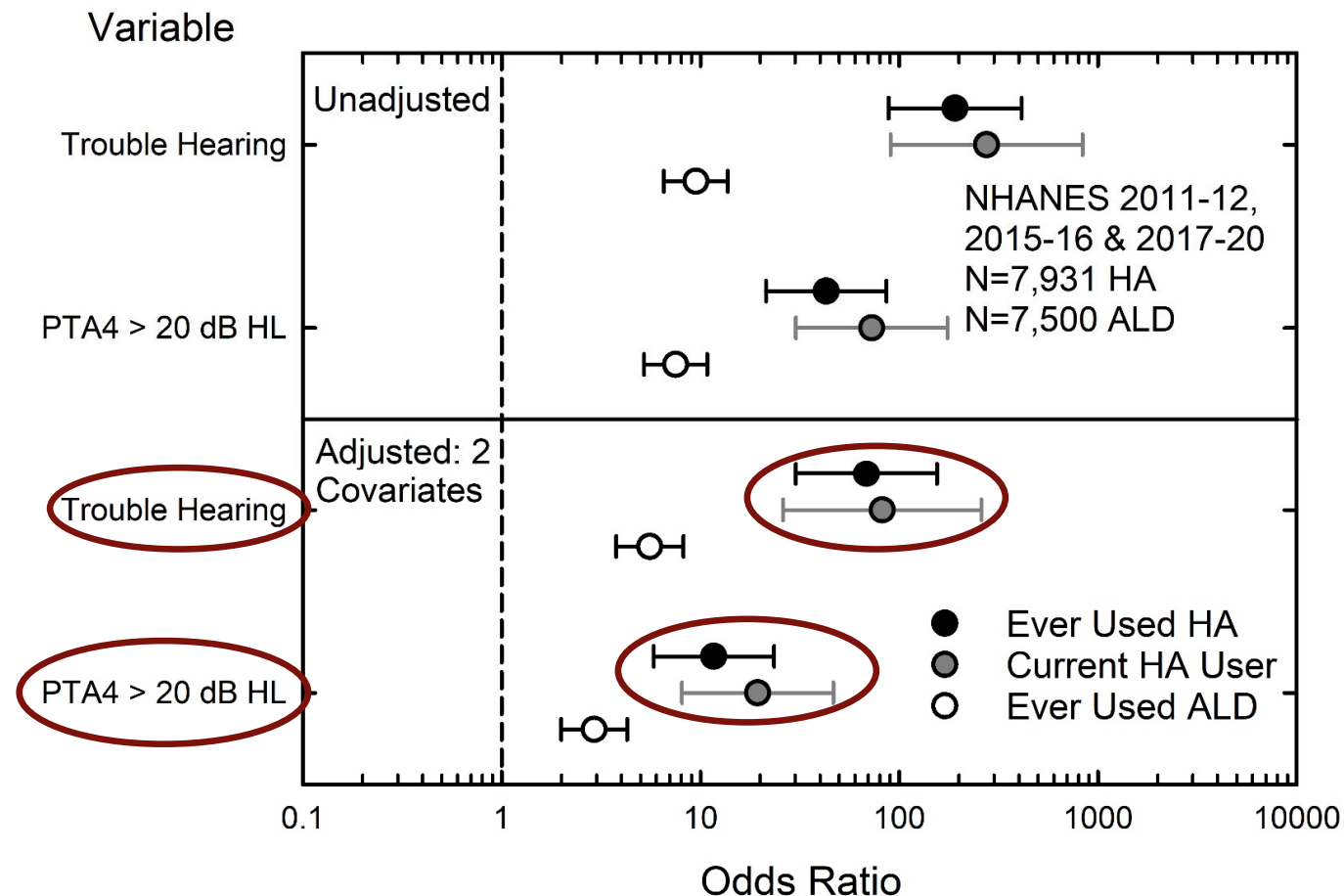
Need to Empower the Adult with Functional Hearing Difficulty to Manage Her/His Own Auditory Wellness

- The older adult should be empowered to:
 - Self-identify poor auditory wellness
 - Select and try device-based intervention, including OTC HA, to improve auditory wellness
 - OTC HA should be just one of several choices available including other devices, ALDs, hearables, as well as no devices but education about listening strategies (ACE, etc.) and various combinations of intervention
 - Self-evaluate the success of the intervention objectively

Evidence that Self-Reported Hearing Difficulty is the Key to Identifying Functional Hearing Difficulties

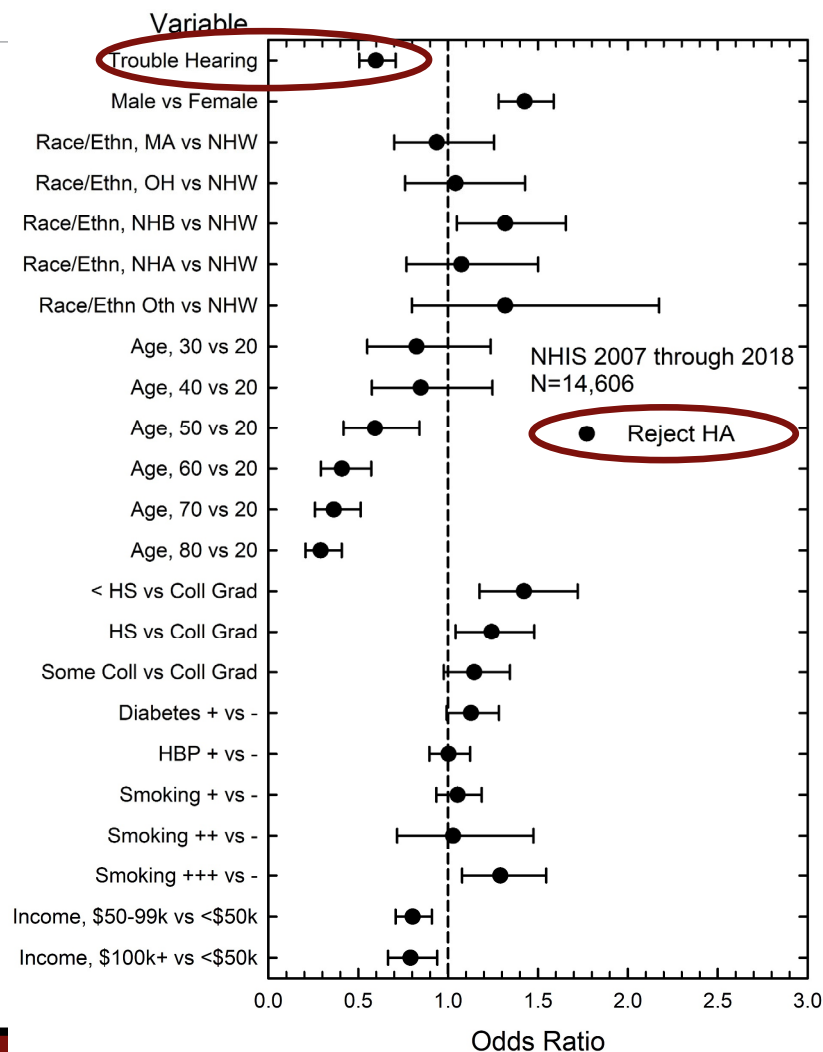
Evidence from NHANES:

Odds of ever using HA or ALD and odds of current HA use (“device uptake”)



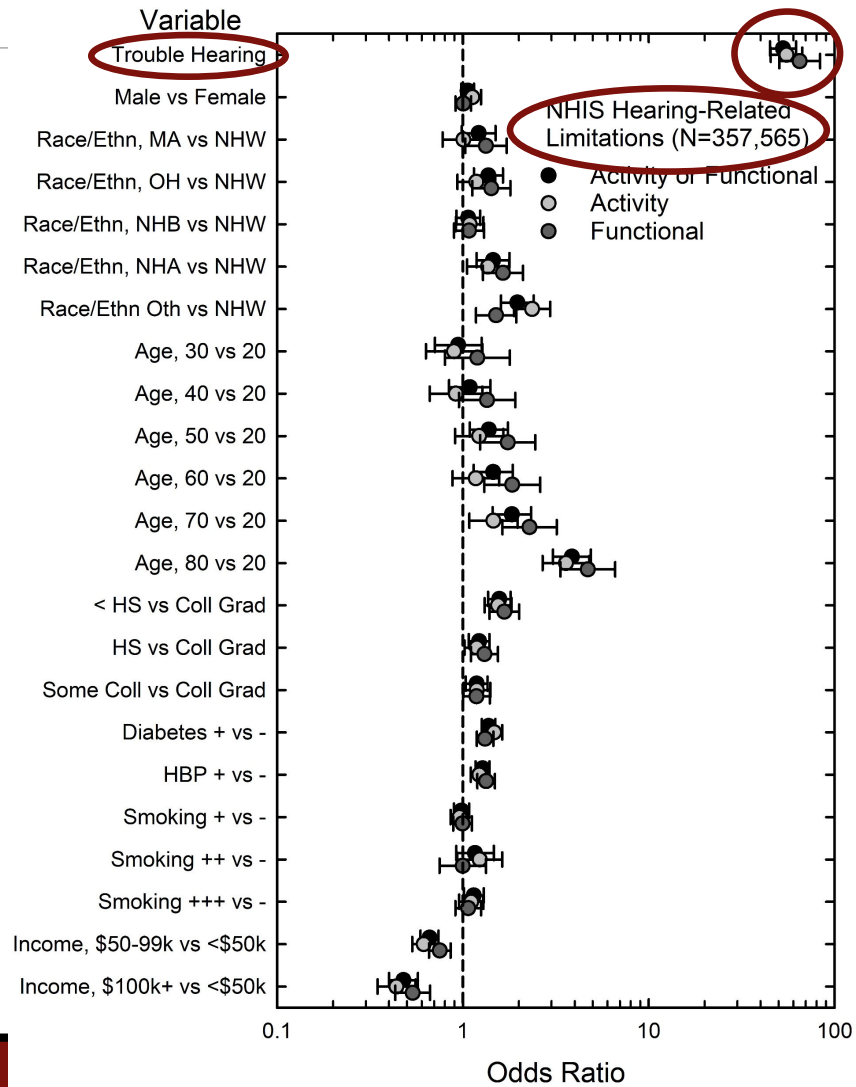
More Evidence on Value of Self-Report Measures:

NHIS data on HA rejection

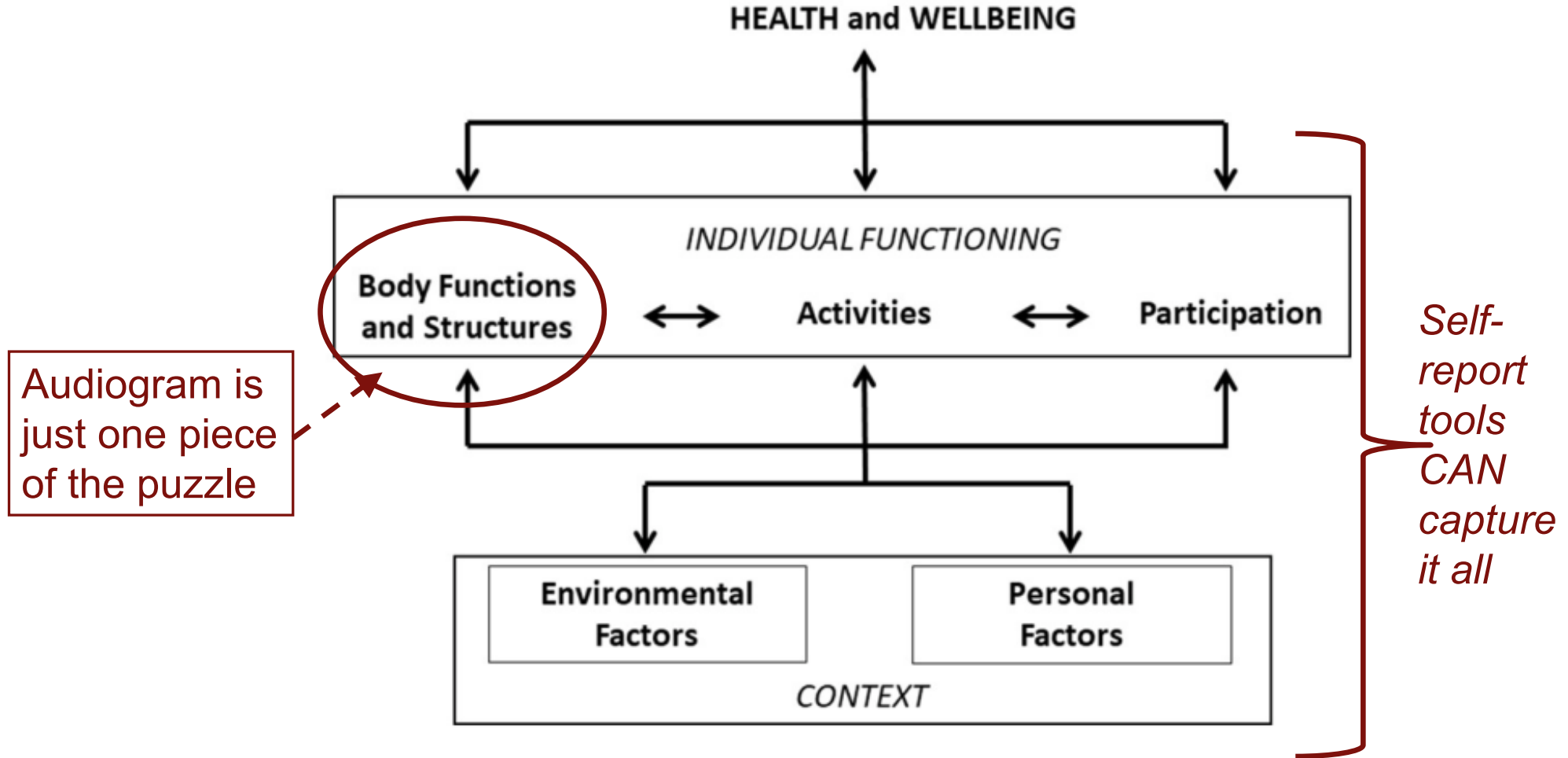


More Evidence in Favor of Self-Report Measures

NHIS data: Odds of having hearing-related activity or functional limitations



Self-Report also superior to PTA from a conceptual standpoint



A practical reason to use self-report measures for candidacy: Over The Counter Hearing Aid Act—August 18, 2018 (and FDA)

(A) IN GENERAL.—In this subsection, the term “*device*” means a device that—

“(i) uses the same fundamental technology as a hearing aid defined in section 874.3300 of title 21, (part of the Federal Food, Drug, and Cosmetic Act, or regulation) or wireless air conduction hearing aid (as defined in the Code of Federal Regulations) (or any successor regulation);

*“... is intended to be used ... to compensate for **perceived** mild to moderate hearing impairment...”*

“(ii) is intended to be used by adults age 18 and older **to compensate for **perceived** mild to moderate hearing impairment;**

“(iii) through tools, tests, or software, allows the user to control the over-the-counter hearing aid and customize it to the user’s hearing needs;

“(iv) **may—** “(I) use wireless technology; or “(II) **include tests for self-assessment of hearing loss;** and

“(v) is available over-the-counter without the direct involvement, or intervention of a licensed hearing professional, by mail, or online.

“... may— ..include tests for self-assessment of hearing loss;”

What self-report measure to use?

Self-report Alternatives to Pure-Tone Audiometry for Defining Auditory Wellness in Older Adults

- Long history of recognizing the importance of self-report to go beyond the pure-tone audiogram in older adults
- Hearing Health Inventory (HHIE) scores are the most common self-report scores reported in large-scale studies of older adults
 - Elderly, HHIE (Ventry, 1983; Weinstein & Ventry, 1983) thoroughly studied
 - Full 25-item HHIE with Social and Emotional Subscales—**HHIE Total**
 - Brief 10-item screener, **HHIE-S**

HHIE Examples

- *Does a hearing problem cause you difficulty when attending a party?*
- *Does a hearing problem cause you to feel embarrassed when meeting new people?*
- *Does a hearing problem cause you to visit friends, relatives, or neighbors less often than you would like?*

YES (4) SOMETIMES (2) NO (0)

Moving Away from the Pure-tone Audiogram for Candidacy for Assistance

Grade and corresponding audiometric ISO 4fPTA (btr ear)

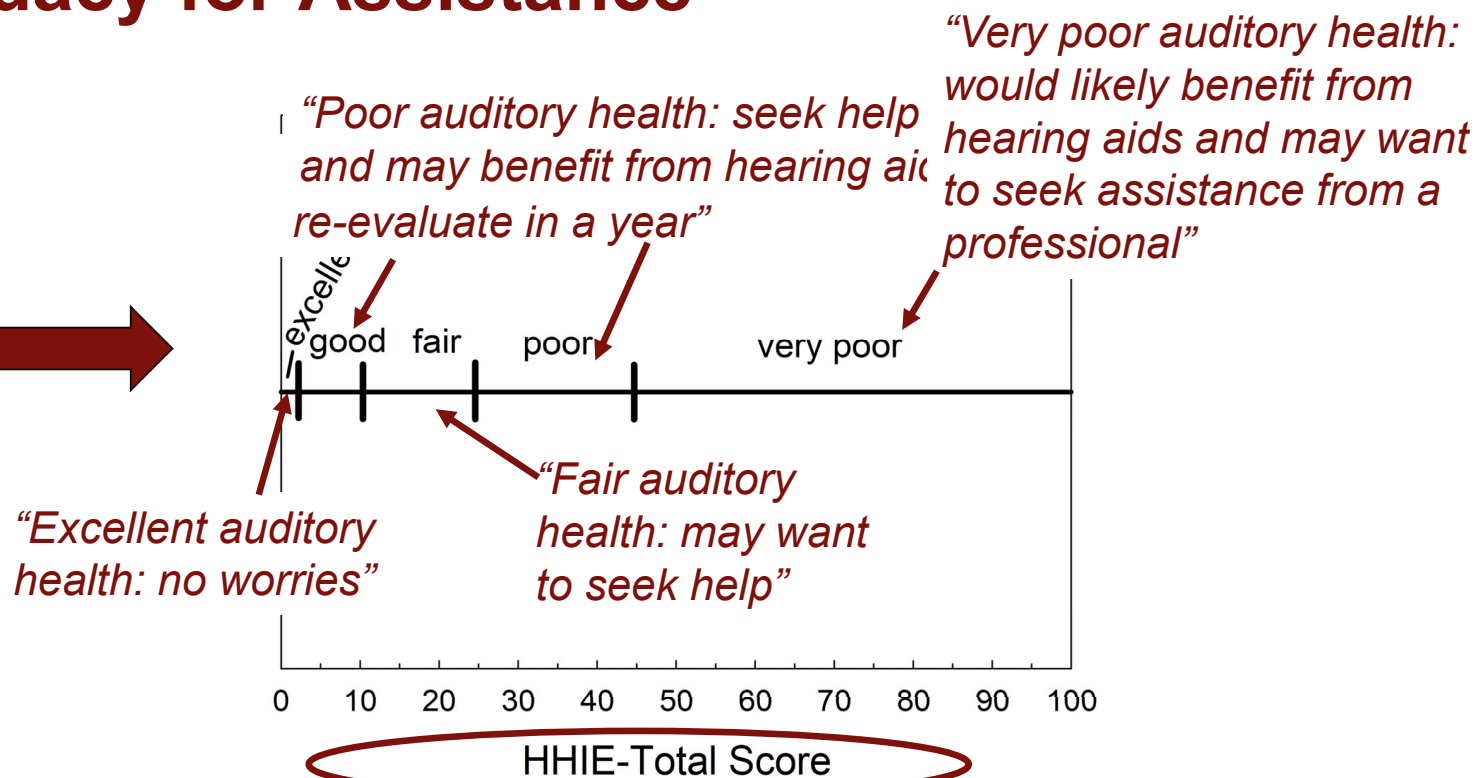
0 - No impairment, 25 dB or better

1 - Slight impairment, 26-40 dB

2 - Moderate impairment, 41-60 dB

3 - Severe impairment, 61-80 dB

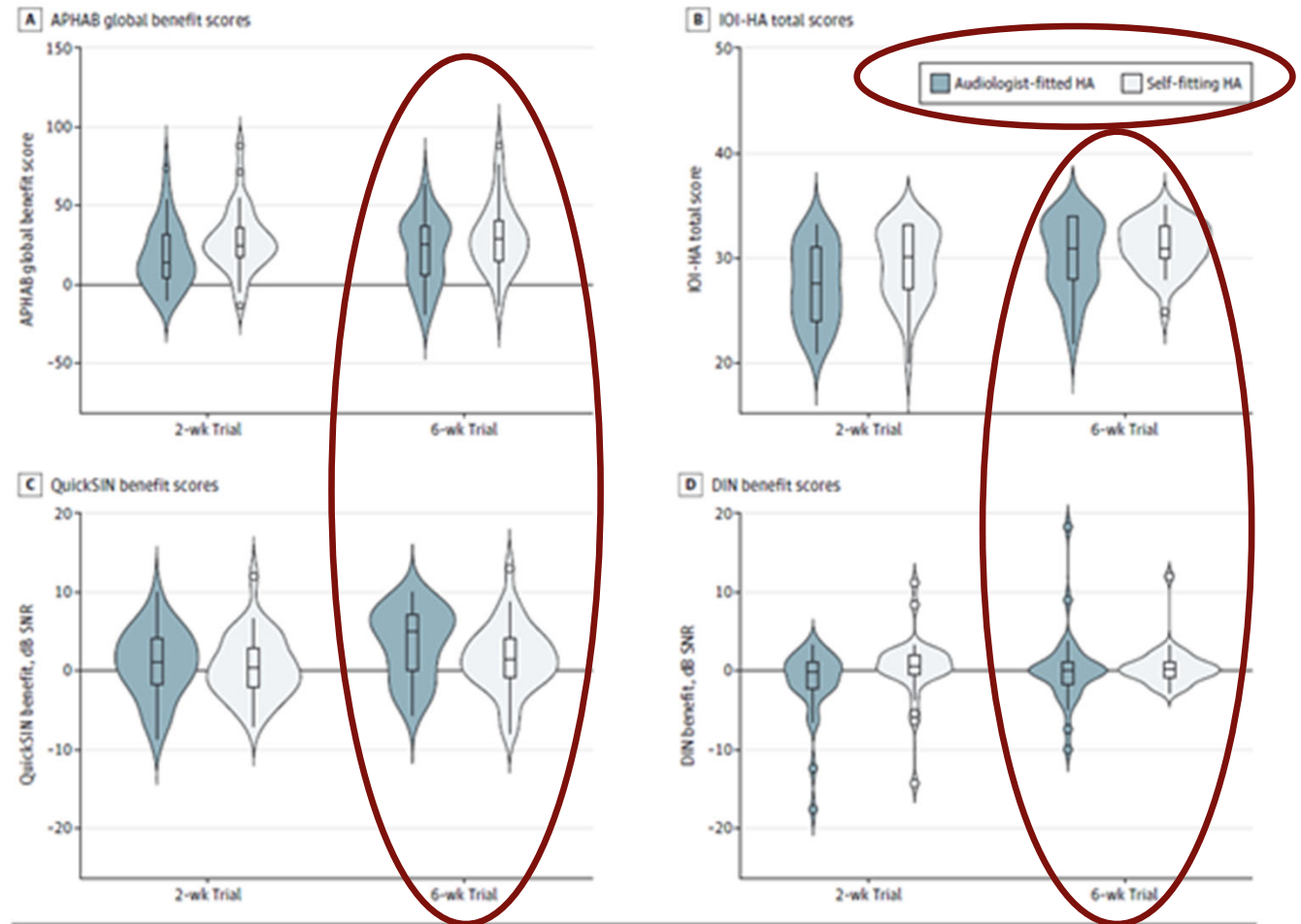
4 - Profound impairment, 81 dB or greater



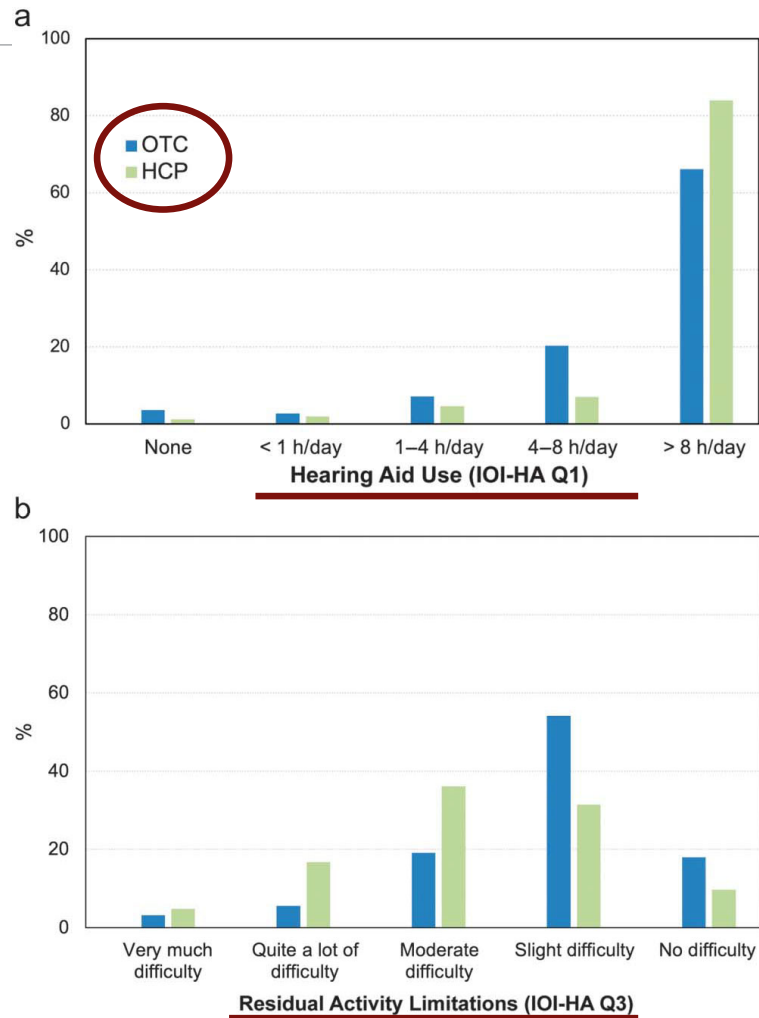
***Can* Adults with Trouble Hearing Select and Fit their Own Hearing Aids Successfully?**

- YES!!!!
- “Consumer Decides (CD)” or “Explore and Select” method
 - Humes et al. (2017), “CD1 RCT” *Amer J Audiol*
 - Humes et al. (2018), “CD2 RCT” *Amer J Audiol*
 - Humes et al. (2021), *Amer J Audiol*
- Other Self-Fit Methods (“Explore and Select”)
 - Nelson et al. (2018) and RCT by Sabin et al. (2020), both in *Trends in Hearing*
 - “Goldilocks” method, Mackersie, Boothroyd, et al. (2019-2022), in *Ear & Hearing, Trends in Hearing*

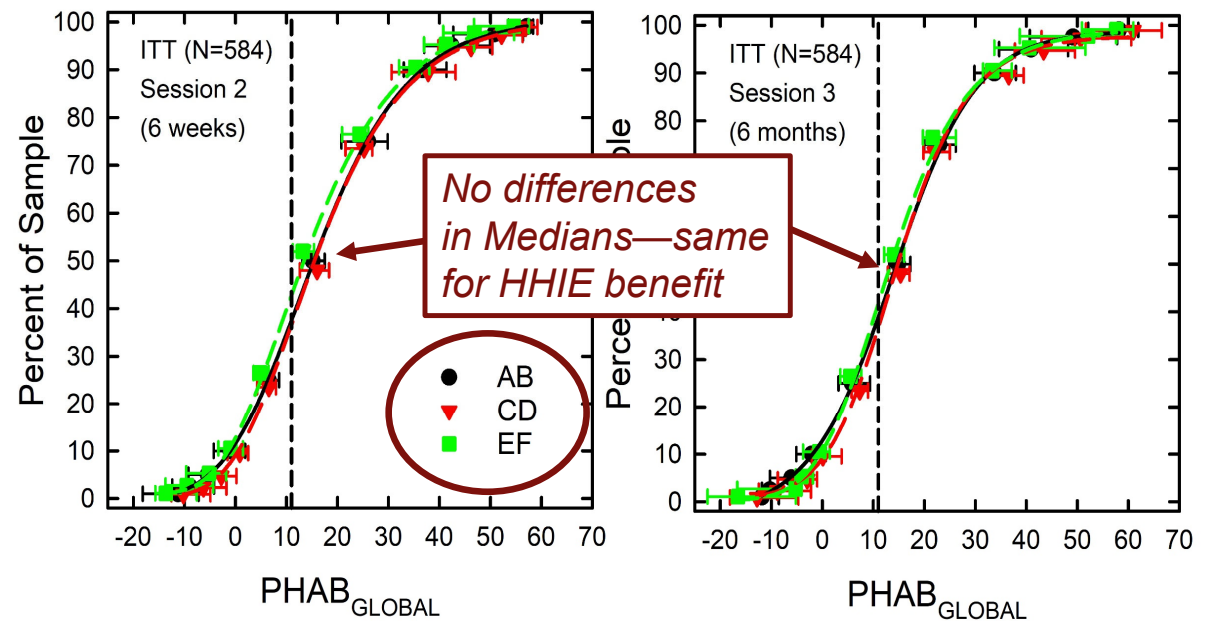
Recent RCT comparing audiologist-fit (N=33) and self- fit (N=35) on 4 different HA outcomes (DeSousa et al., 2023)



**Recent study of 656
older adults, 250 fit
with OTC model
and 406 with HCP
(Hearing Care
Professional) model**
Swanepoel et al. (2023)

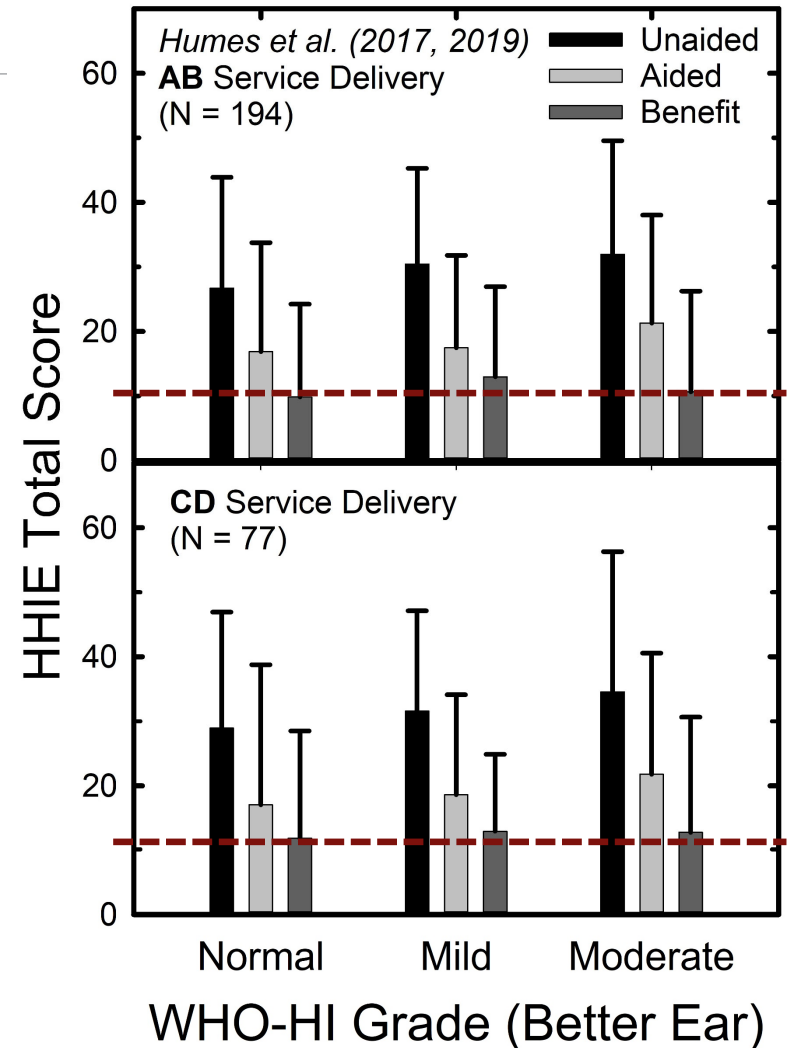


Our recent RCT of 584 older adults, comparing best practices (AB) to two self-fit methods (CD, EF) with outcomes at 6-weeks & 6-months post-fit.



Little difference in benefit for WHO-HI grades of “normal”, “mild” or “moderate” and ALL show significant benefit whether HA fit by audiologist (AB) or self-fit (CD)

(NOTE: HHIE as a self-administered HA outcome measure)



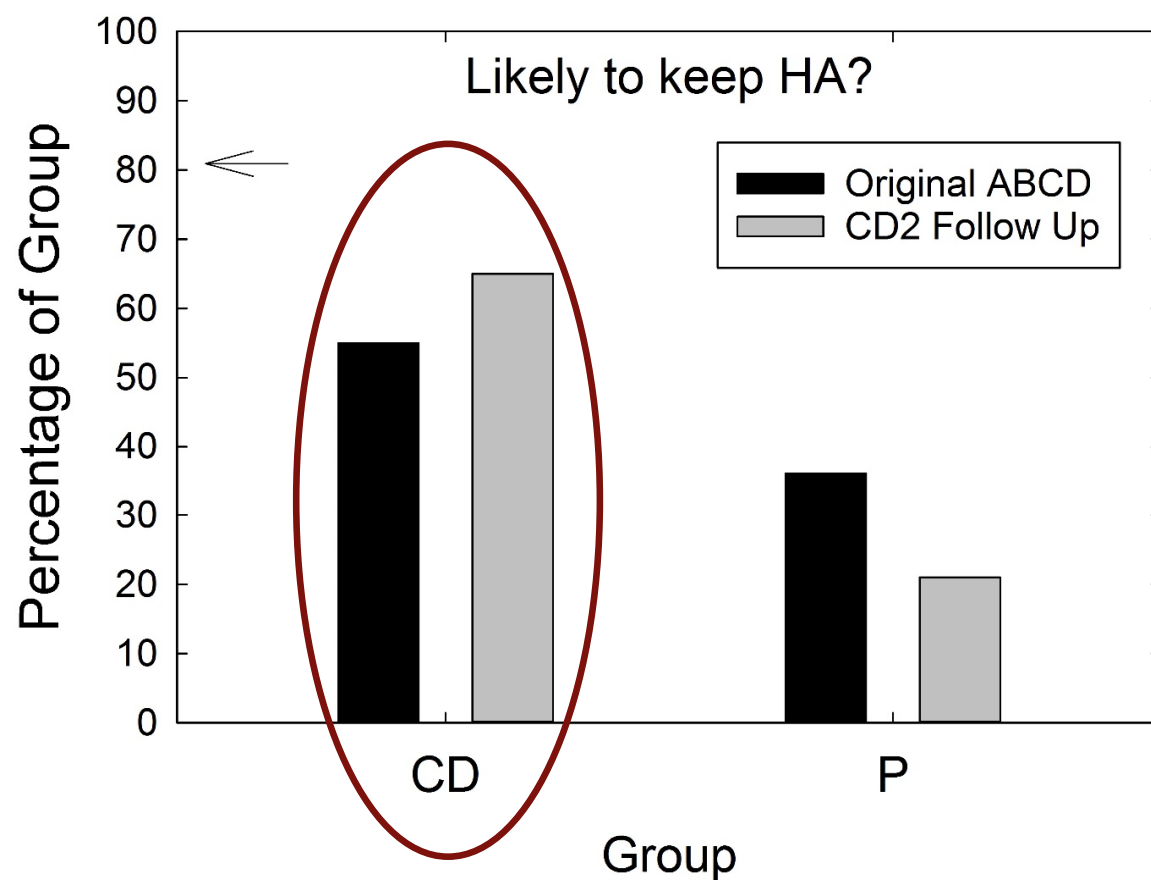
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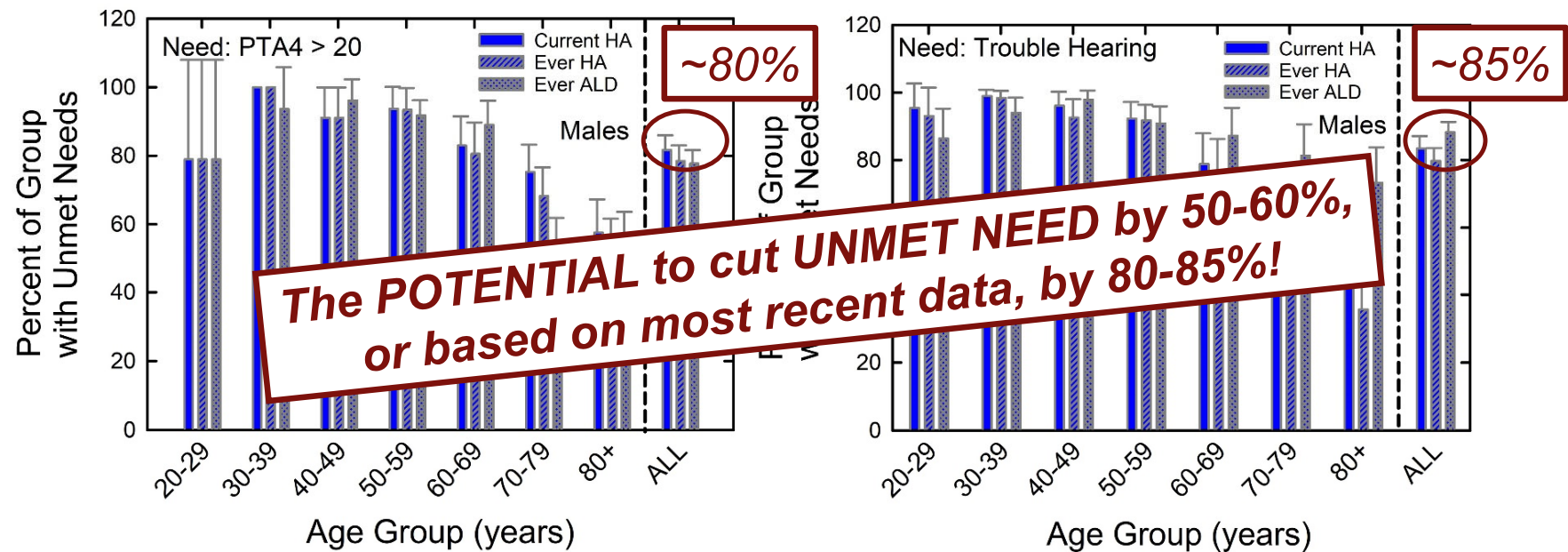
Potential Benefit of Self-Driven Auditory-Wellness Model

*At end of 6-week trial, 55-65% of Self-Fit (CD) participants indicated that they were **LIKELY** to keep their HA*

In most recent RCT, this is ~80-85%, but still lower than AB (93%)

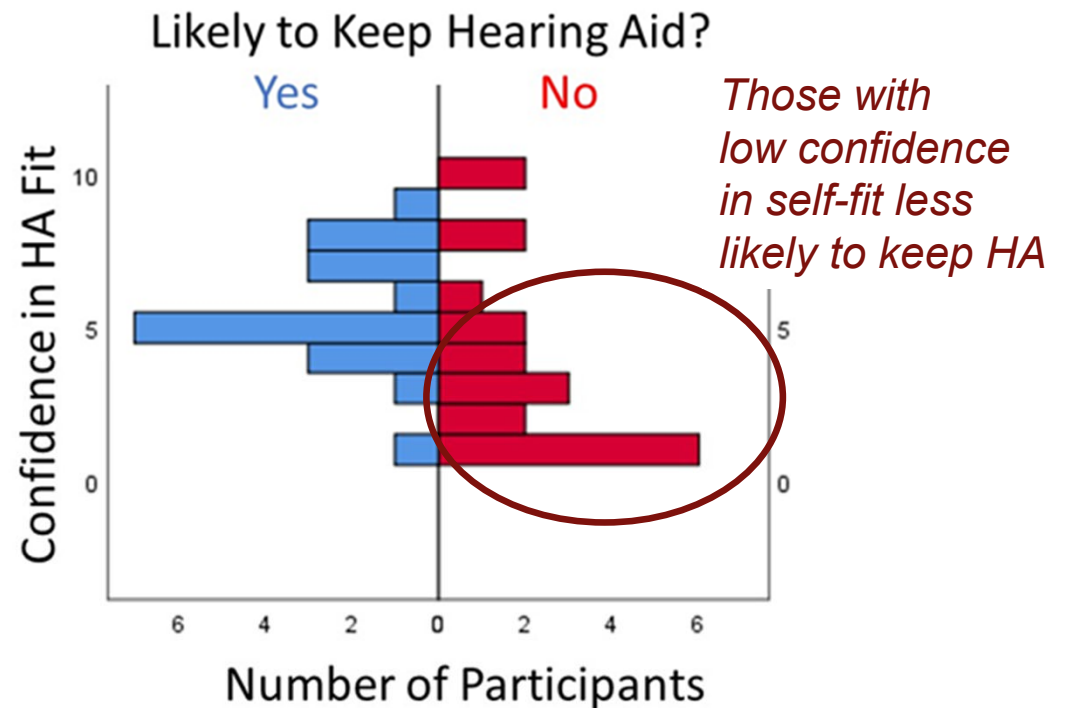


Prevalence of Unmet HHC Need



After the fitting: Hearing-Aid Fitting Self-Efficacy is Critical

The confidence in their hearing aid fit expressed by 40 consumer-decides self-fit participants grouped according to whether they were likely to keep their hearing aids ("Yes"; N=20; blue bars) or were not likely to keep them (N=18) or were undecided (N=2). The latter two groups were combined into the "No" group (red bars).



Conclusion

- It is time to move to an “auditory wellness” approach to maintain good auditory function across the adult lifespan
- Older adults with perceived auditory difficulties should be empowered to pursue solutions to their problems without the involvement of other professionals
- When doing so, positive outcomes are likely with a wide array of affordable tools available

Questions?

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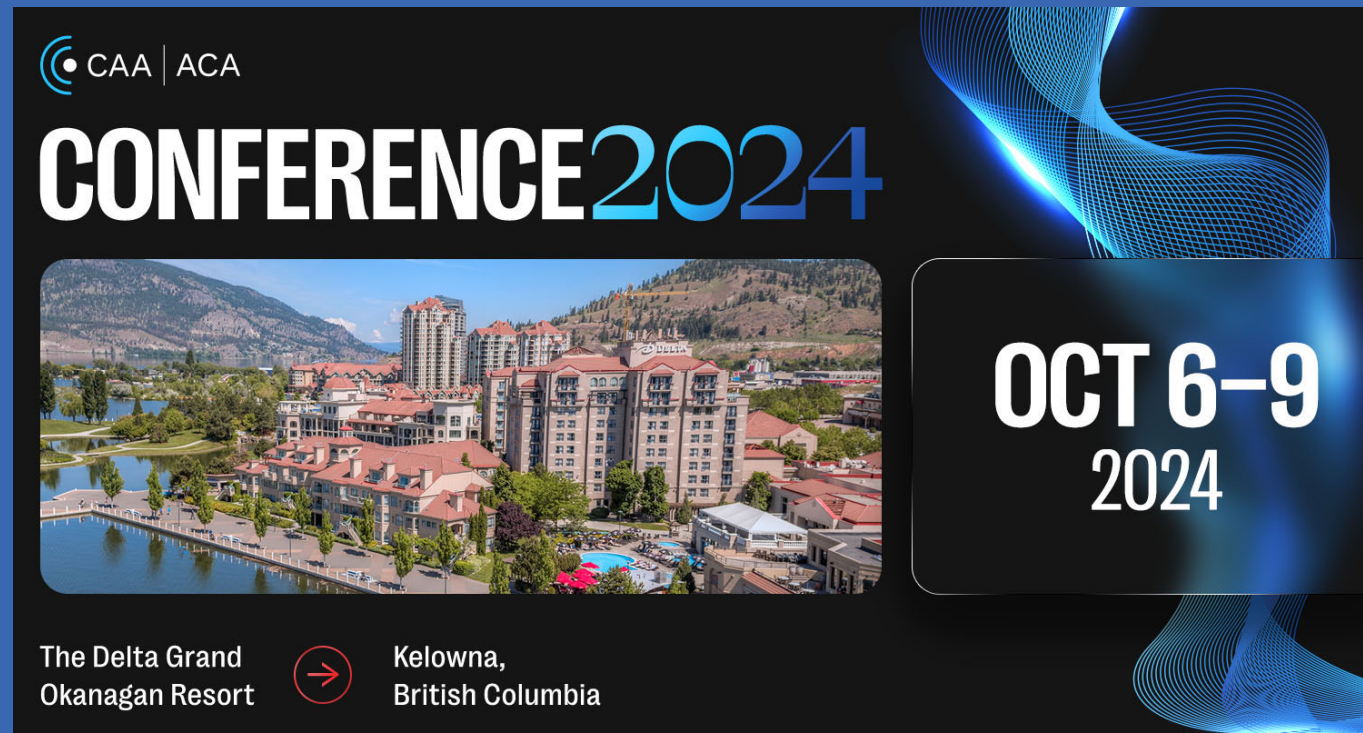
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UPCOMING WEBINAR: MUSIC AND HEARING AIDS WITH MARSHALL CHASIN – APRIL 17, 2024 AT 1PM ET +


UPCOMING WEBINAR: AUDITORY WELLNESS: WHAT IS IT? WHY IS IT IMPORTANT? HOW CAN IT BE SELF-MANAGED? WHAT IS THE ROLE OF AUDIOLOGISTS WITH LARRY E. HUMES – MAY 15, 2024 AT 1PM ET +

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Thank You

