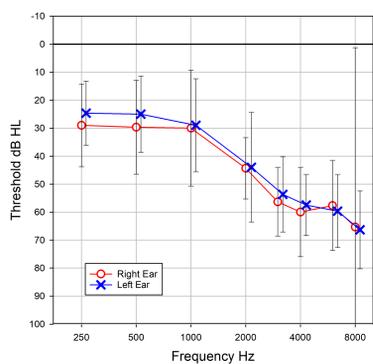


Introduction

- Self-report questionnaires are commonplace in the modern audiology clinic as a part of hearing aid validation- the subjective assessment of patient satisfaction and perceived benefit from the hearing aids.
- These questionnaires are retrospective- requiring patients to reflect on weeks to months of hearing aid use and synthesize this information.
- Retrospective questionnaires may not be reflective of the patient's overall experience with the hearing aids, but instead may be reflective of more recent experiences.
- Over a 12-week hearing aid trial utilizing a smartphone administered, in-the-moment questionnaire (In-situ), we hypothesized that retrospective questionnaires at 12 weeks would correlate with more recent in-situ data, than questionnaires completed earlier in the study.

Methods

- Participants: 14 older adults (avg. age 68) with mild to moderate hearing loss completed the study.
- Part of a larger study. Participants completed 7 lab visits that included:
 - Conventional audiometry
 - Speech in noise testing (unaided & aided)
 - Paper and pencil questionnaires
 - Cognitive and dexterity tasks
 - Hearing aid trial
 - On ear measurements (unaided & aided)



Mean Participant Audiogram

12-week hearing aid trial:

- Bilateral Hearing Aid Fitting
 - Hearing Aids: Entry level Signia Intuis 3 M BTE hearing aids with slim tubes and non-custom dome tips.
 - Fitting: Participants utilized a tablet kiosk to select one of four pre-configured hearing aid fittings (Urbanski et al. 2020).
 - Participants were instructed to wear the hearing aids as much as possible for the duration of the study.

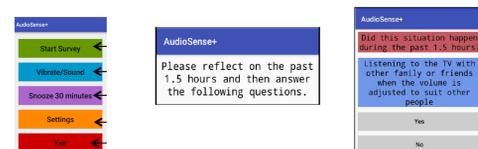
Retrospective Questionnaire

- Completed retrospective Glasgow Hearing Aid Benefit Profile (GHABP) reflecting on and integrating the last 12 weeks with the hearing aids.
- GHABP assesses globally and five domains:
 - Hearing aid use
 - Hearing aid benefit
 - Handicap
 - Residual disability
 - Hearing aid satisfaction
- Situations: listening to TV, one-on-one conversations in quiet, one-on-one conversations in noise, and group conversations.

Did this situation happen in the past few weeks? 0 = No 1 = Yes	LISTENING TO THE TELEVISION WITH OTHER FAMILY OR FRIENDS WHEN THE VOLUME IS ADJUSTED TO SUIT OTHER	Did this situation happen in the past few weeks? 0 = No 1 = Yes	LISTENING TO THE TELEVISION WITH OTHER FAMILY OR FRIENDS WHEN THE VOLUME IS ADJUSTED TO SUIT OTHER	Did this situation happen in the past few weeks? 0 = No 1 = Yes	LISTENING TO THE TELEVISION WITH OTHER FAMILY OR FRIENDS WHEN THE VOLUME IS ADJUSTED TO SUIT OTHER
In this situation, with your hearing aid, how much does any difficulty in this situation worry, annoy or upset you?	In this situation, what proportion of the time do you wear your hearing aid?	In this situation, how much does your hearing aid help you?	In this situation, with your hearing aid, how much difficulty do you now have?	For this situation, how satisfied are you with your hearing aid?	
0 ___ N/A 1 ___ Not at all 2 ___ Only a little 3 ___ A moderate amount 4 ___ Quite a lot 5 ___ Very much indeed	0 ___ N/A 1 ___ Never/Not at all 2 ___ About 1/4 of the time 3 ___ About 1/2 of the time 4 ___ About 3/4 of the time 5 ___ All the time	0 ___ N/A 1 ___ Hearing aid no use at all 2 ___ Hearing aid is some help 3 ___ Hearing aid is quite helpful 4 ___ Hearing aid is a great help 5 ___ Hearing is perfect with aid	0 ___ N/A 1 ___ No difficulty 2 ___ Only slight difficulty 3 ___ Moderate difficulty 4 ___ Great difficulty 5 ___ Cannot manage at all	0 ___ N/A 1 ___ Not satisfied at all 2 ___ A little satisfied 3 ___ Reasonably satisfied 4 ___ Very satisfied 5 ___ Delighted with aid	
	Handicap	Use	Benefit	Disability	Satisfaction

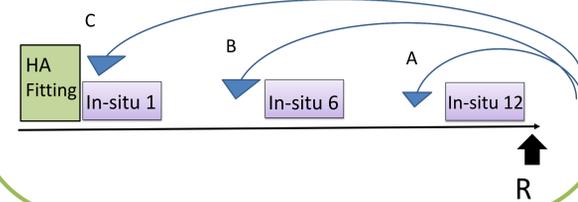
In-situ Questionnaires

- Administered on laboratory Moto G6 Play smartphones using an app.
- Participants were given the smartphone for 1 week prior to visit weeks 1, 6, and 12 post hearing aid fitting.
- In-situ app alerted participants to complete a survey every 90 minutes during a set time window of a least 10 hours. Standard GHABP questions.



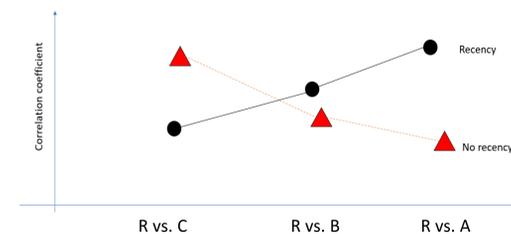
Data Analysis

- Data were analyzed using a Spearman's correlation.
- In-situ GHABP assessments were averaged together into the following categories and compared to the average of the retrospective data (R)
 - A = Week 12 In-situ
 - B = Week 6 & 12 In-situ
 - C = Weeks 1, 6, & 12 In-situ

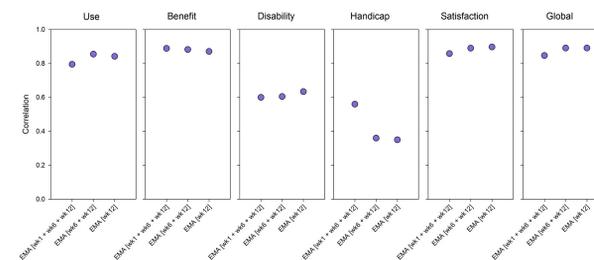


Results

- If a recency effect were affecting data, we would expect to see a higher correlation between retrospective and 12 week in-situ compared to earlier weeks.



- Data does **not** show evidence of a recency effect.



- Only a slight positive correlation for hearing aid use, satisfaction, and the global scores when comparing retrospective data to C and B, however trend plateaus by A.

Results Continued

- High correlation between in-situ weeks
 - A vs C = 0.91, p < 0.01
 - B vs C = 0.91, p < 0.01
 - B vs A = 1.0, p < 0.01

Conclusions

- No data to suggest recency effect.
- May be influenced by small sample size:
 - Fewer subjects due to Covid-19 pandemic.
 - High correlation between different in-situ sessions.
 - Too many times?

Future Directions

- More research needed to determine if a recency effect may influence retrospective questionnaires in the clinic.
- Compared to retrospective questionnaires, in-situ questionnaires have been shown to be more useful in assessing differences in hearing aid benefit regarding different
 - Processing strategies (Humes et al. 2009)
 - Microphone directionality (Humes et al. 2009)
 - Noise reduction algorithms (Bentler et al, 2008)
 - Technology level (Wu, et al, 2019)

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Acknowledgements

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