Measuring hearing aid satisfaction in everyday listening situations: Retrospective and in-situ assessments complement each other

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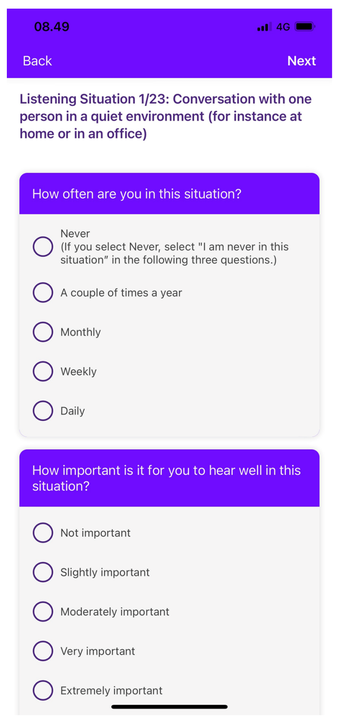
Introduction

- We developed a hearing-related lifestyle questionnaire (HEARLI-Q)[1] which asks respondents to rate their hearing aid (HA) satisfaction in 23 everyday listening situations. The listening situations are based on the Common Sound Scenarios (CoSS) Framework[2].
- It is unknown how HA satisfaction on the retrospective HEARLI-Q scale compares to HA satisfaction measured on the same scale implemented in Ecological Momentary Assessment (EMA).
- The aim of the study presented here was to learn how the two types of assessments can complement each other.

Method

- N = 21 experienced HA users (mean age 66 ± 7 years)
- Mild-to-moderate hearing loss
- Participants wore their own HAs for the duration of the trial
- The trial lasted eight days and participants filled out questionnaires via MyHearingExperience app
  - On day 1: the participants filled out HEARLI-Q
  - On days 2-8: the participants filled out EMA questionnaires approximately every two hours between 9-21
- Participants rated the frequency of occurrence of 23 pre-defined listening situations (HEARLI-Q) and the frequency of occurrence of the current situation (EMA), as well as importance to hear well, difficulty to hear and HA satisfaction in these situations.
- The two questionnaires were compared, and the underlying discrepancies of HA satisfaction ratings were evaluated.



Conclusions

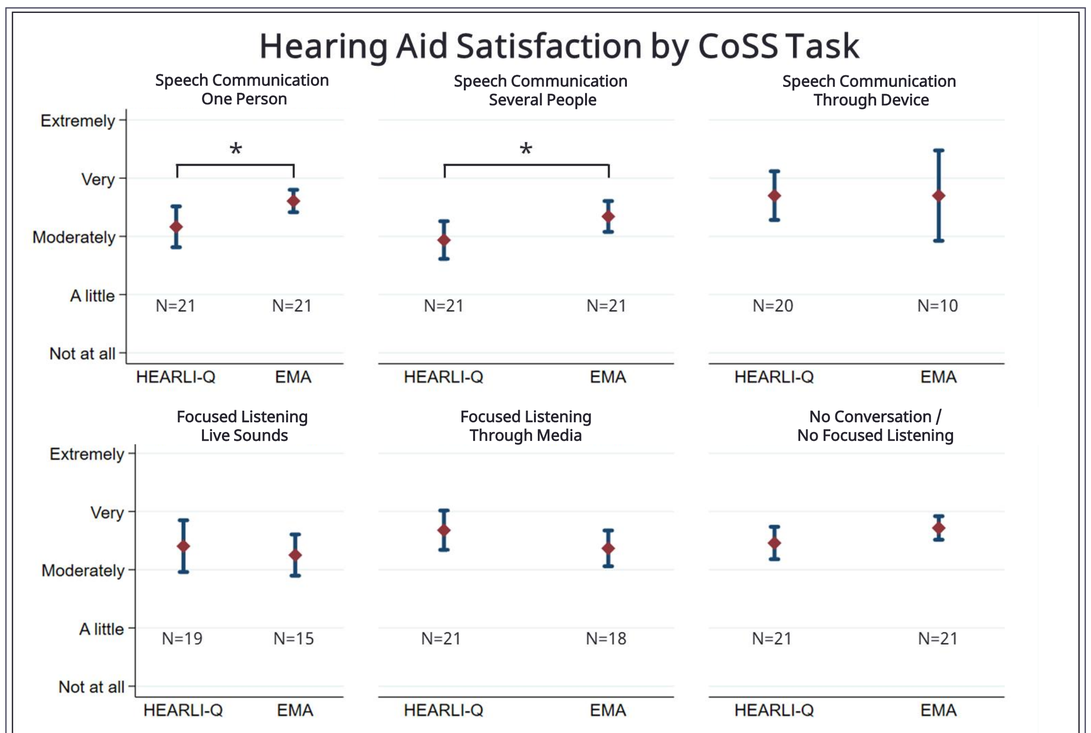
- Differences in the reported hearing difficulty and lower occurrence of difficult listening situations seem to be the key drivers of discrepancies in HA satisfaction ratings between the two questionnaires.
- The advantage of EMA is that it provides insight into an individual's day-to-day life and is less prone to memory bias than HEARLI-Q.
- HEARLI-Q, on the other hand, can capture those difficult situations which occur infrequently or are inconvenient to report in the moment. However, one is likely to think back to situations that stand out (e.g., of greater hearing difficulty).
- Hence, we potentially have a slight overestimation of hearing difficulty in HEARLI-Q and a slight underrepresentation of hearing difficulty in EMA, with the truth lying somewhere in between.
- When possible, administering HEARLI-Q and EMA in combination has the potential to give a complementary and more holistic view of HA satisfaction.

References

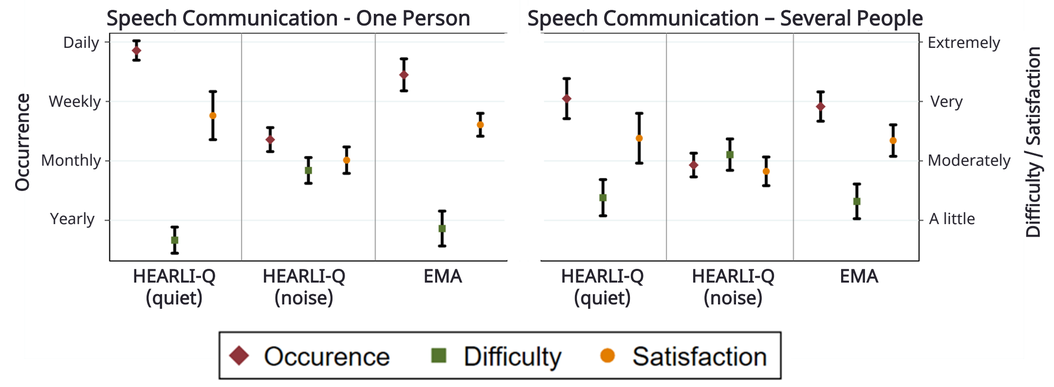
[1]Lelic D., Wolters F., Herrlin P., Smeds K. (2022) *Assessment of Hearing-Related Lifestyle Based on the Common Sound Scenarios Framework*. American Journal of Audiology.

[2]Wolters F., Smeds K., Schmidt E., Christensen E.K., Norup C. (2016) *Common Sound Scenarios: A Context-Driven Categorization of Everyday Sound Environments for Application in Hearing-Device Research*. Journal of the American Academy of Audiology.

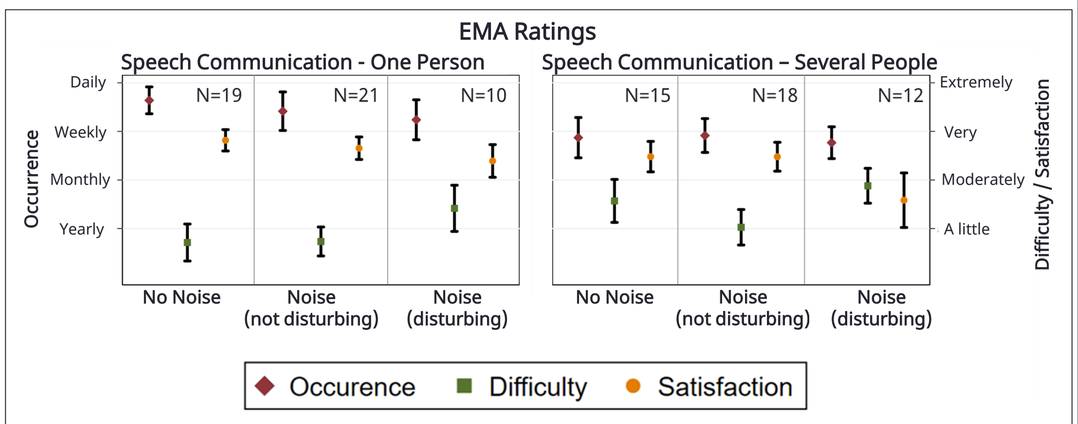
Results



- The overall HA satisfaction was 3.4 ± 0.6 in HEARLI-Q and 3.5 ± 0.4 in EMA ($F_{1,20}$=2.06, p = 0.17).
- The overall HA satisfaction ratings were positively correlated between the two questionnaires (r = 0.58, p < 0.01).
- However, when looking at individual CoSS task categories, HA satisfaction was higher in EMA for "Speech Communication – One Person" ($F_{1,20}$=7.88, p = 0.01) and "Speech Communication – Several People" ($F_{1,20}$=5.38, p = 0.03).



HA satisfaction was rated lower in HEARLI-Q in situations including background noise. This is where hearing difficulty was rated higher, and occurrence of those more difficult listening situations was rated to be lower.



Situations in noisy environments and of greater hearing difficulty were represented in EMA but reported seldomly and by only ~50% of the participants.

- When comparing only the situations that occur on daily or weekly basis, the two questionnaires had similar HA satisfaction ratings (β = -0.06 [95% CI: -0.24, 0.12], p=.53, mixed-effects linear regression).
- HEARLI-Q hearing difficulty ratings for frequent (daily / weekly) situations were lower than HEARLI-Q hearing difficulty ratings when including all the listening situations or when comparing to listening situations that occur infrequently (more seldom than on a weekly basis) - (frequent vs all situations: β = 0.24 [95% CI: 0.06, 0.43], p = .01; frequent vs infrequent situations: β = 0.54 [95% CI: 0.34, 0.74], p = <.001, mixed-effects linear regression).

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