

Auditory Ecology and Preference for Unilateral or Bilateral Hearing Aids

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INTRODUCTION

Rationale

Auditory ecology is the term used to describe how a person interacts with his/her auditory environment. In 1999, Gatehouse et. al. hypothesized that a person's auditory ecology might contribute to his/her selection of a particular hearing aid processing strategy. Gatehouse et al found that individuals with more diverse auditory lifestyles had a stronger preference for non-linear processing strategies than for linear processing strategies.

Auditory ecology might also contribute to a person's selection of one or two hearing aids. Conventional wisdom suggests that people who function in more challenging auditory environments would be more likely to choose two hearing aids. The purpose of our study was to explore the auditory ecology of users of unilateral and bilateral hearing aids through two approaches: questionnaires and an electro-acoustic environmental logging device.

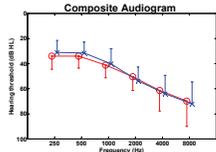
Research Questions

1. Are there overall differences in auditory ecology between people who chose one hearing aid and people who chose two hearing aids?
2. Do subjective and objective auditory ecology measurements yield similar conclusions?

METHODS

Subjects

- 34 subjects with symmetric hearing loss
- Mean age: 70 yrs
- Range: 57 – 81yrs
- 3 months experience with hearing aids
- Expressed preference for 1 or 2 hearing aids
- 20 Subjects chose 1 HA
- 14 Subjects chose 2 HAs



Questionnaires

Auditory Lifestyle and Demand Questionnaire (ALDQ)
Language Activities Survey
Daily Listening Situations Checklist

Recording Device

- Commercially available body-worn envirometer
- Oticon Sound Activity Meter (SAM)

PROCEDURE

- ALDQ and Communication Activities Checklists were administered prior to hearing aid fitting
- Subjects were fit with digital BTE hearing aids which were worn for three months
- For one week, subjects wore the personal envirometer during all waking hours
- After removing the envirometer each day, subjects would complete the daily listening situations checklist

RESULTS

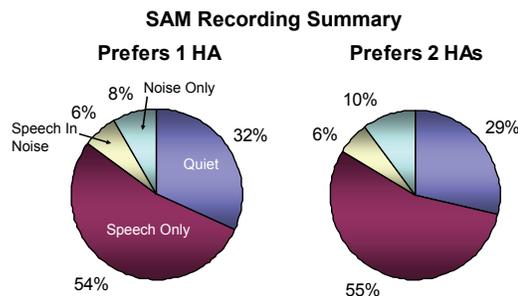
How does a SAM work?

A SAM records the auditory environment as a percentage of time in quiet, speech only, speech plus noise, or noise only, for several levels

Prior to collecting data, the accuracy of the SAM was checked:

- A SNR of +15, yielded mostly "speech only"
- A SNR of +5, yielded mostly "noise only"
- In a SNR of +10, "speech only", "speech in noise", and "noise only" were all represented

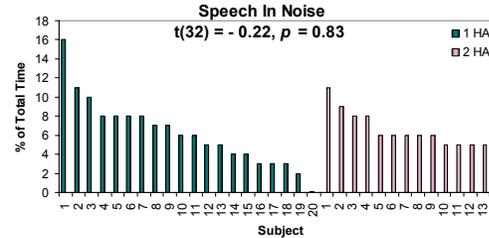
1. Do objective measures of Auditory Ecology distinguish between people who choose 1 HA and people who choose 2 HAs? **NO**



Objective SAM measures revealed similar auditory environments for both groups.

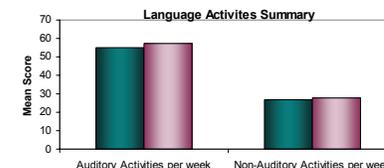
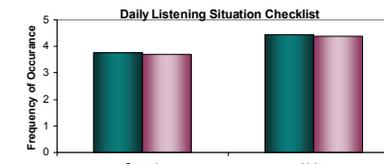
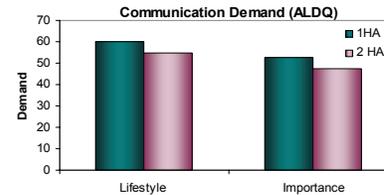
RESULTS

2. Do people who choose 2 HAs experience more speech in noise than people who choose 1 HA? **NO**



There is no significant difference in the amount of time spent in "speech in noise" environments between people who choose 1 HA and people who choose 2 HAs.

3. Do subjective questionnaires distinguish between people who choose 1HA and people who choose 2 HAs? **NO**



Both groups report similar auditory environments

DISCUSSION

- (1) The auditory environment of people who chose one HA was similar to the auditory environment of people who chose two HAs.
 - Other recent research (Boymans et al, 2009) also found no significant differences in social activities or background noise exposure between users of unilateral and bilateral hearing aids.
- (2) Both groups spent the majority of their time in quiet or speech-only environments.
 - This finding is consistent with results from Schum (2006).
- (3) The typical sound level encountered by users of both bilateral and unilateral hearing aids ranged from 50-70 dB SPL.
 - This is also consistent with findings from Schum (2006).
- (4) Subjective and objective auditory ecology testing methods do yield similar conclusions.

CONCLUSIONS

Based on the methods used in this study, there is no evidence that differences in a person's auditory ecology contribute to the selection of one or two hearing aids.

REFERENCES

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PDF-versions of this poster can be obtained at <http://www.ausp.memphis.edu/harl/>

