The Aging Musician-Advantage on Listening Effort

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INTRODUCTION

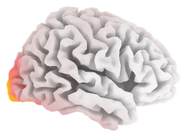
As adults age, **listening** becomes increasingly **challenging**, particularly in environments with **multiple cognitive demands**.

This heightened difficulty, called **listening effort**, can lead to greater fatigue and negatively impact **quality of life**.

Individual factors, such as **lifelong musical practice**, may mitigate listening effort, as musicians demonstrate enhanced central auditory processing, including **superior speech-in-noise comprehension**, compared to non-musicians.

OBJECTIVE

Investigate the impact of **lifelong musical practice** on listening effort for speech in noise in **aging adults.**



HYPOTHESIS

- Musicians will show decreased listening effort when compared to their non-musician counterparts.

METHODOLOGY

PARTICIPANTS

- We will recruit **40 participants** aged **55-75 years.** There will be **two groups:**
  - **Musician group** (*n* = 20) must have 10 years of formal musical training beginning before the age of 10
  - **Non-musician group** (*n* = 20)

METHODS

- Participants will perform **speech-in-noise (SIN) and n-back tasks** separately and in **conjunction.**
- Performance differences on the **n-back**, indicated by **reaction time** and **accuracy**, will reflect effort levels.

STEP 1

Demographic Questionnaire

MoCA

Hearing Threshold Assessment

STEP 2

AzBio SIN Task
SNR: 0dB & –5dB
"Please pass the salt"

2 –Back Letter Task

STEP 3

NASA-TLX
Subjective
Listening effort

ADDITIONAL ASSESSMENTS

- We will conduct a **hearing threshold evaluation** to check for impairments.
- The **Montreal Cognitive Assessment (MoCA)** will be used as a regressor for listening effort.
- The **NASA Task Load Index** will be used to assess **perceived effort** for the dual task.

IMPLICATIONS

- This research could provide evidence for the **protective effects** of musical training against the observed **age-related increase in listening effort.**
- As a result, **auditory training** may be essential to maintaining healthy auditory cognitive function as one ages.