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Perception of Hearing Loss in Orchestral Musicians

Eva Gebel
*University of Nebraska-Lincoln*, eva.gebel@huskers.unl.edu

Sherri M. Jones
*University of Nebraska-Lincoln*, sherri.jones@unl.edu

Julie A. Honaker
*University of Nebraska-Lincoln*, julie.honaker@unl.edu

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Musicians are at risk for hearing loss due to noise exposure and presbycusis (1, 2). Compared to non-musicians with hearing loss, musicians with hearing loss show improvements in speech understanding in a background of noise, but by self-report do not perceive an advantage (3). This project aimed to explore this further by studying six orchestral musicians aged 42-64 with a perceived hearing loss. Scores on a variety of assessments were compared to published normative data and a survey was also completed. No significant differences were found between the musicians and the normative data. Survey responses indicated that overall, the musician participants did not have concerns with hearing themselves play music or with how well they hear music in general. Participants did report concerns with hearing in background noise, room acoustics, following conversation, and noise exposure from music. Participants also noted occasional difficulty in noise, reverberant environments, and when visual cues are lacking. These findings suggest that musicians may have unique concerns related to their hearing, even if their perceived handicap secondary to hearing loss is no larger than would be expected based on their hearing loss alone.

**Introduction:**

- Prevalence of noise-induced hearing loss among musicians is 3.3 to 14 times higher than in the general population (4, 5).
- Upwards of 80% of orchestral musicians report being at risk for noise-induced hearing loss (2).
- 43% of orchestral musicians report having hearing loss (2).
- Orchestral musicians are exposed to sound ranging from 81-90dB(A) for over 20 hours a week: enough noise exposure to contribute to hearing loss over the course of a career (6).
- Speech discrimination degrades with hearing loss and this degradation cannot be corrected (7).
- Musicians with normal hearing demonstrate better auditory perception than non-musicians (8).
- Musicians with hearing loss demonstrate advantages over non-musicians with hearing loss, including better: Understanding of speech in noise Fundamental frequency encoding (3).
- Musician performance in speech-in-noise testing is maintained, even with hearing loss (3).
- When self-rating their performance on speech-in-noise testing, musicians with hearing loss do not perceive an advantage over non-musicians (3).

The purpose of this study was to evaluate musicians’ perception of their hearing loss by collecting data on musicians’ self-assessment of their hearing.

**Procedure:**

- Participants were screened for eligibility:
  - Otoscopic evaluation was performed to check for occluding cerumen.
  - Mini-Mental State examination was used to screen for the cognitive capability to understand the research questions and questionnaires.

All participants met these screening criteria and therefore were eligible to participate in the study.

- Participants were recruited from an adult clinic study and had similar test results.
- Participants were screened for eligibility:
  - You were asked to complete an audiometric test.
  - You were asked if you had any concerns about hearing.

**Results:**

**Musicians’ Likert scale survey responses ranged from 2 (rarely) to 5 (always) and indicate overall:**
- Often hearing music well
- Occasional difficulty when visual cues are lacking
- Occasional difficulty in reverberant environments
- Occasional difficulty in noise
- Occasional difficulty understanding speech over music

**See Figure 3 for individual responses to Likert scale questions.**

**Conclusions:**

- The musicians did not perceive a significantly larger handicap secondary to hearing loss than that suggested by the normative data for people with the same hearing level, as assessed by the HHIA.
- Despite identifying some challenging listening environments, the musicians felt that they hear music as well as they would like.
- Limitations to this study include the small sample size and lack of an age- and hearing-matched control group.
- Overall, the initial research question for this study is still of interest because:
  - The literature suggests perceptual differences between musicians and non-musicians with hearing loss.
  - Musicians rely on their hearing for their livelihood and it is important for clinicians to develop a better understanding of how hearing loss affects musicians.
  - This study bears repeating with a control group and different assessment measures, such as measures to evaluate quality of life.

**References:**


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