

The Effect of Demographic Diversity on Auditory Lifestyle

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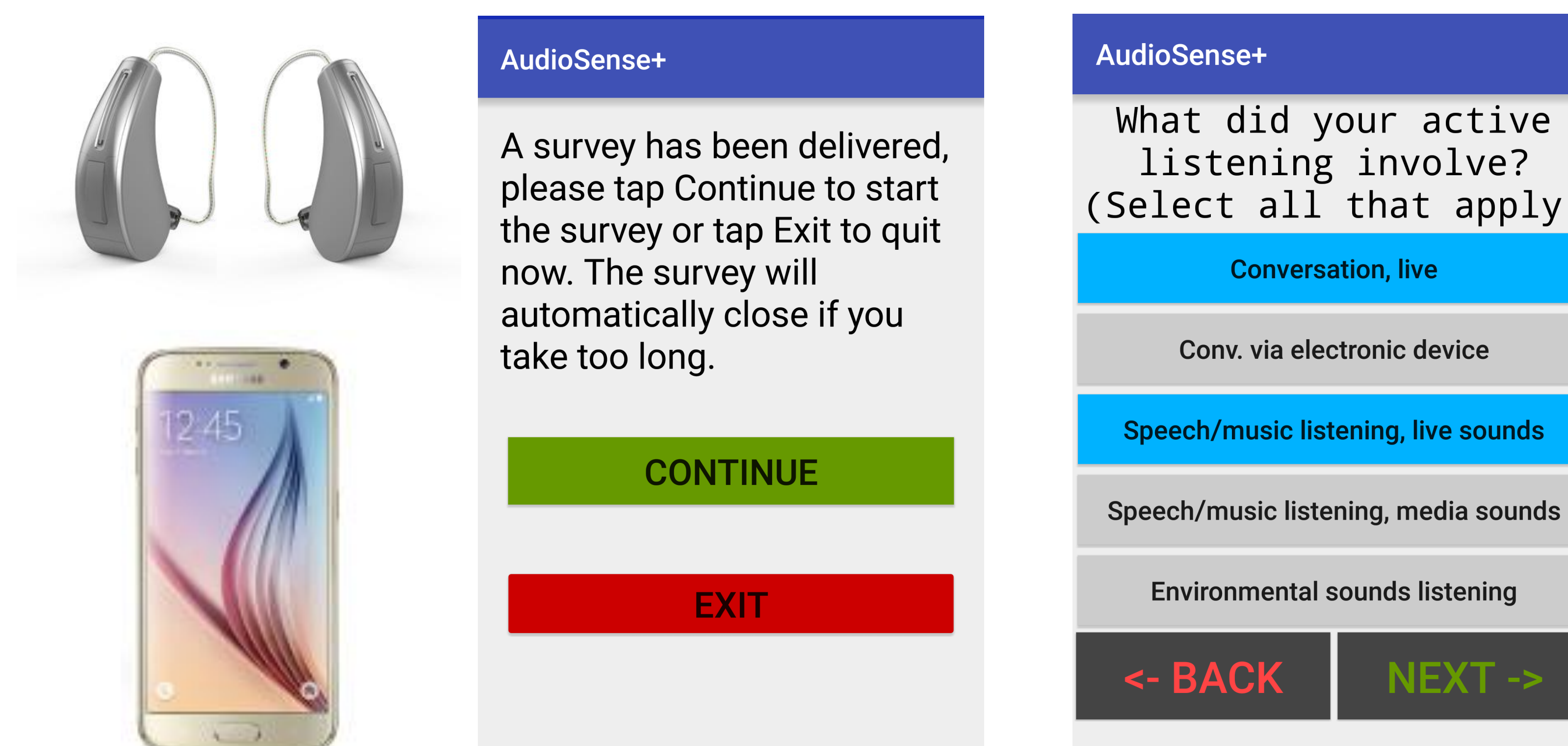
Introduction

- Research in clinical and biomedical science, including audiology research, has not historically included racially or ethnically diverse participants, making the representativeness of much of this research in question (Oh et al., 2015).
- Auditory lifestyle refers to the types of soundscapes listeners encounter. Nearly all research on auditory lifestyle has been conducted on listeners who identify as white.
- Whether demographic factors, including race and ethnicity, affect the soundscapes listeners encounter in daily life is unknown.
- The purpose of this study was to recruit a racially diverse sample to investigate differences in auditory lifestyle between listeners who identify as white and listeners who identify as BIPOC (black, Indigenous, and people of color).
- Results from this study can aid in interpretation of prior work using homogenous samples and guide inclusion for future research on auditory lifestyle.

Methods

- Adults (15-35 years) with normal hearing who identified as white (N=15) or BIPOC (N=18) were recruited.
- Participants wore non-amplifying hearing aids during all waking hours for 7-10 days and completed Ecological Momentary Assessments (EMAs) on a smartphone throughout each day.
- The hearing aids recorded data about the participants' sound pressure levels and other soundscape factors at a rate of 2 samples/second for 1 minute every 10 minutes.
- EMAs were delivered to participants every 40 minutes. Participants reported on their most recent listening activities including the intensity of the background noise.
- Participants completed questionnaires including Cohen's Social Network Index and the Auditory Lifestyle and Demand Questionnaire during lab visits.
- Data were analyzed using either mixed effects regression models (for repeated measures) or ANOVA.

Equipment and EMA Example



Results

- 8,234 data points for sound pressure levels were collected (white=3,145, BIPOC=5,089). 1,168 EMAs were collected (white=486, BIPOC=682).
- Listeners who identified as white experienced, on average, 1.5 dB higher sound levels than listeners who identified as BIPOC, but this difference was not significant ($t(25.846)=-0.831$, $p=0.414$). A violin plot shows the distribution of SPLs between the two groups in **Figure 1**.
- Listeners who identified as white reported significantly larger total social network sizes than listeners who identified as BIPOC ($F(1)=4.482$, $p=0.043$). Boxplots showing the total number of individuals in the social networks of each group in **Figure 2**.
- Based on EMA, groups did not differ on time spent in live conversation, live listening, media listening, or environmental listening, but listeners who identified as BIPOC spent significantly more time in conversation on a device than listeners who identified as white ($z=2.064$, $p=0.039$). The distributions of the proportions each group spent in different listening activities is shown in **Figure 3**.
- Groups did not differ on auditory lifestyle based on the Auditory Lifestyle and Demand Questionnaire.
- Groups did not differ on perceived background noise levels or signal-to-noise ratios reported on the EMAs.

Figure 1

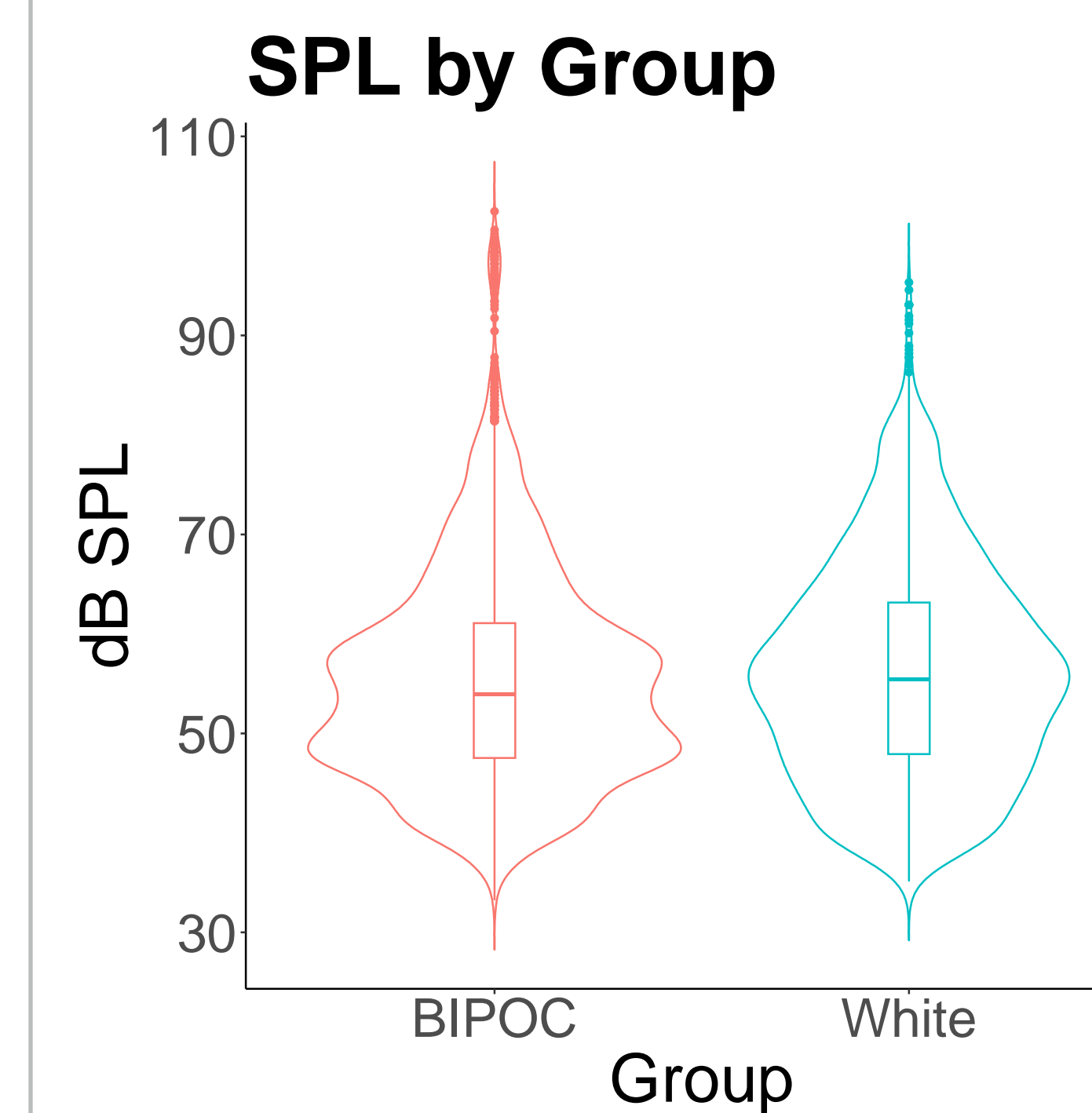


Figure 2

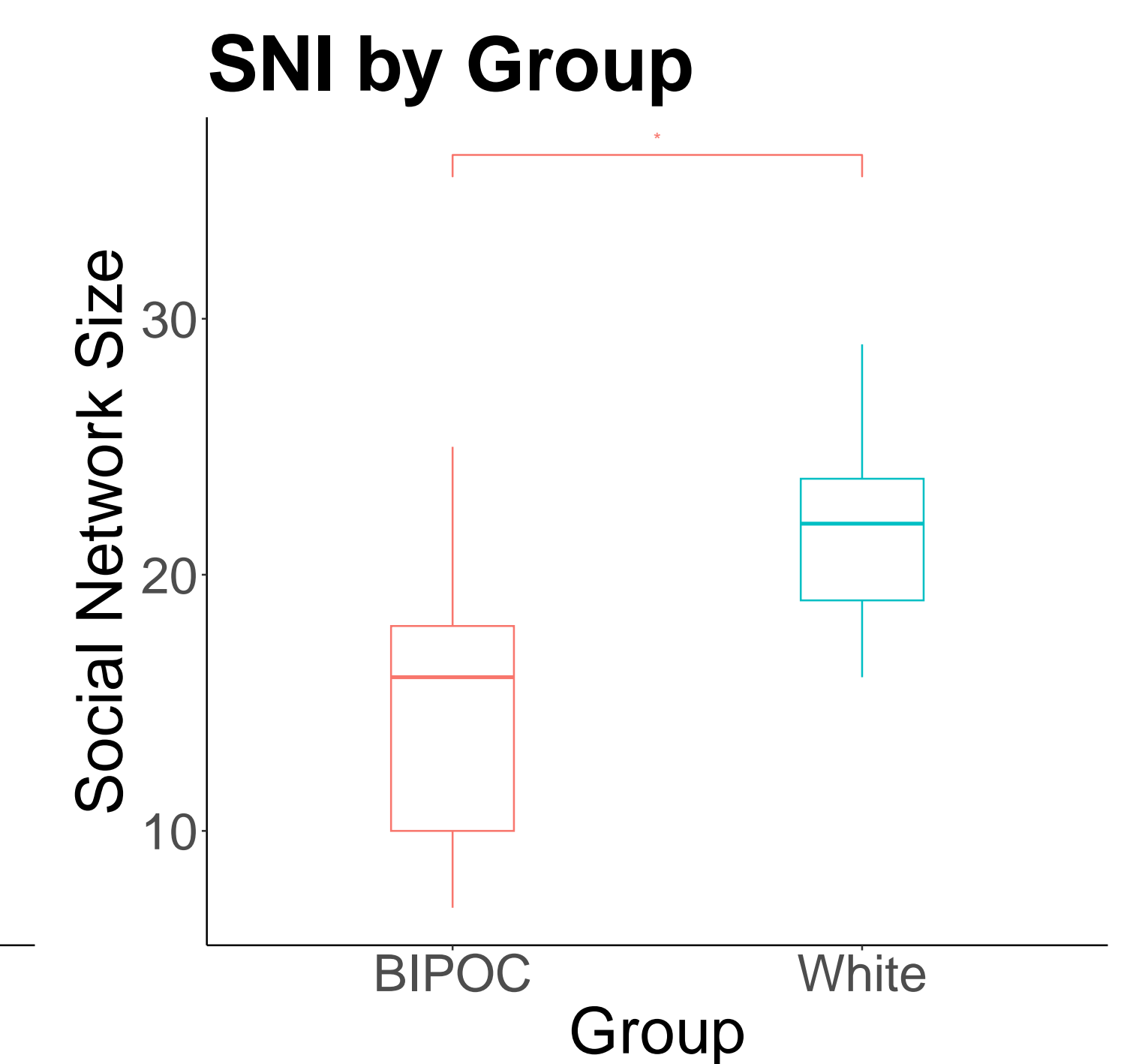
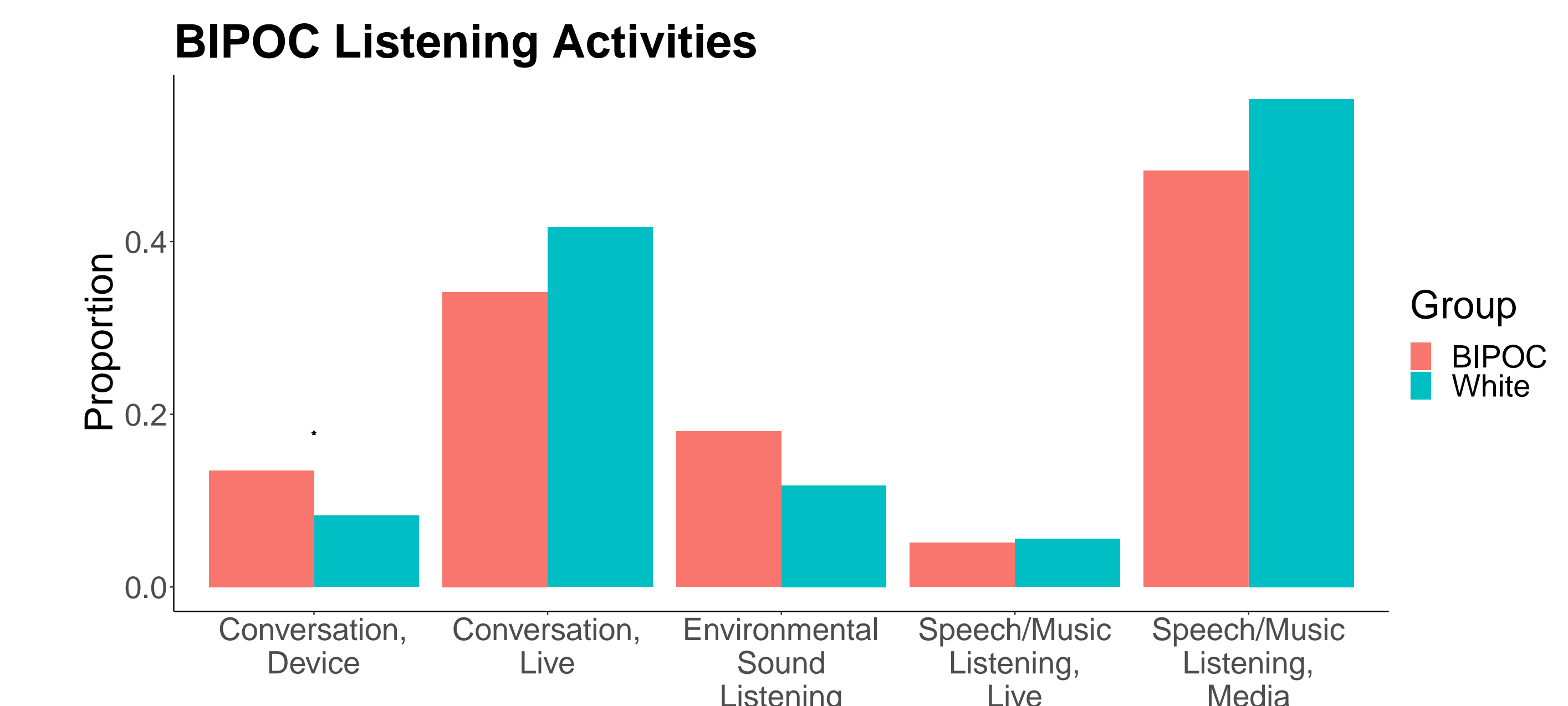


Figure 3



Conclusion

- These early results suggest that racial identity does not generally affect auditory lifestyle.
- Notable exceptions are differences in social network size and conversation on electronic devices.
- More research should be conducted to determine how demographics and recruitment practices might bias research findings on auditory lifestyle.
- Researchers should make every effort to ensure participant diversity in audiology research.