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INNOVATIVE TECHNOLOGIES AND TRANSLATIONAL THERAPIES
Clinical Trials in Audiology and Otoneurology

Speech Perception in Noise: A Clinical Trial on Digital Microphone Systems and Hearing Accessibility App

Perception de la parole dans le bruit : Un essai clinique Essai clinique sur les systèmes de microphones numériques et l'application d'accessibilité auditive

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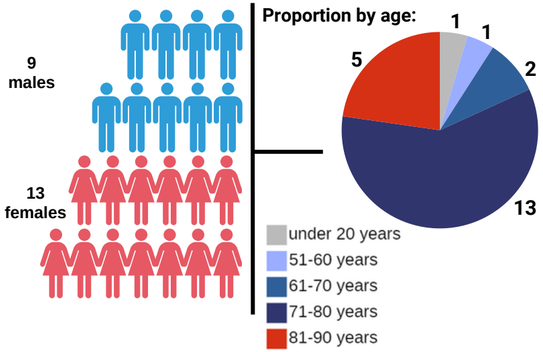
Aims

The study aims to evaluate the effectiveness of a Digital Microphone System (DMS) and Hearing Accessibility App in speech perception in noise for individuals with sensorineural hearing loss.

Population

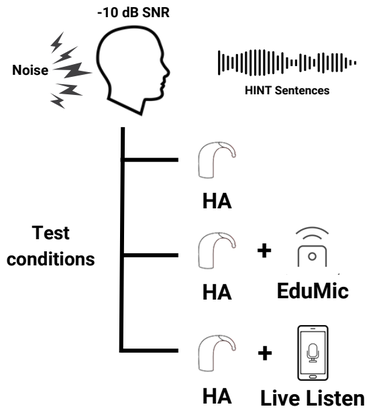
- **22 individuals with sensorineural hearing loss, hearing aid users**

HA model: Siya 1 BTE PP 13; Siya 2 BTE 13 and Siya 2 BTE 12 PP
Participants' average age: 72.23 years



Study Design

This randomized, double-masked clinical study **(RBR-2rh5djy)** evaluated participants in three conditions with their HA (digital remote microphone - EduMic, Oticon - activated, deactivated, and app - Live Listen - activated in an Live Listen iPhone 15 ProMax) using the HINT Brasil test with a signal-to-noise ratio of -10 dBSNR.



Instruments

Oticon EduMic

Oticon Hearing Aids

Iphone 15 ProMax Apple

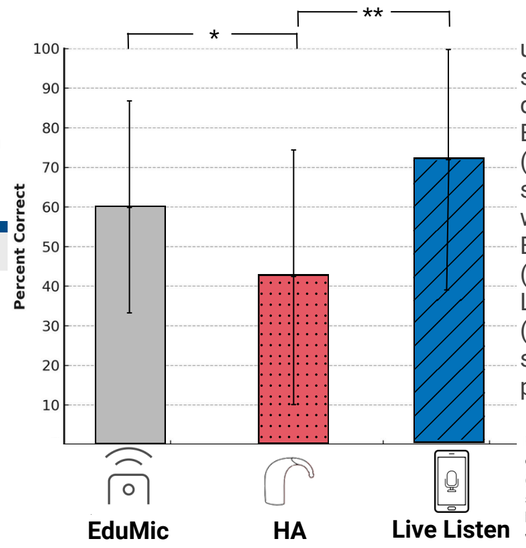
Affinity Compact Interacoustics

Desktop

Results

Test Condition	Mean Percentage of correct responses (%)	Standard Deviation (SD)	Shapiro-Wilk Normality test (p-value)	Post-hoc Wilcoxon comparisons (p-value)
EduMic	60.0	26.7	0.536	EduMic vs. Live Listen: 0.0094
Live Listen	70.9	31.8	0.001	EduMic vs. HA: 0.0025*
Hearing Aids (HA)	40.9	33.5	0.036	Live Listen vs. HA: 0,007**

The Shapiro-Wilk test indicated that only EduMic condition followed a normal distribution (p = 0.536), while Live Listen (p = 0.001) and HA (p = 0.036) did not. Due to the lack of normality in some conditions, the non-parametric Friedman test was used, revealing a significant difference between the three conditions (p = 0.016).



Post-hoc comparisons using the Wilcoxon test showed no significant difference between EduMic and Live Listen (p = 0.094). However, significant differences were observed between EduMic and HA (p=0.025*) and between Live Listen and HA (p = 0.007**), with both showing superior performance to the HA.

Figure 1 illustrates the mean percentage of correct responses for each condition (Edumic, Live Listen, AASI), along with the standard deviations. Live Listen had the highest accuracy, followed by Edumic, with HA showing the lowest performance.

Conclusion

The results show that both the DMS (EduMic) and the Hearing Accessibility App (Liven Listen) improve speech perception in noisy environments for individuals with sensorineural hearing loss, outperforming conventional hearing aids (HAs). The two technologies were equally effective, making both viable solutions.

However, it is important to note that this study was conducted in a controlled laboratory setting, which may not fully represent real-world listening environments.

The controlled nature of the evaluation limits the generalizability of the findings to everyday scenarios, where factors such as varied acoustic conditions, user mobility, and different types of background noise may affect device performance.

Future studies should aim to expand the scope of research to include assessments in real-life situations to better understand the effectiveness and practical applications of these technologies in daily life.

References

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