Poster 00517

SCREENING AND DIAGNOSTIC

Remote Speech Audiometry: A Comparative Study with Conventional Methods

Chen Yuan, David

The Education University of Hong Kong

Introduction

1. Tele-audiology has gained prominence, with recognition rising from 44.3% to 87.1% (Eikelboom et al., 2021) .
2. Tele-speech-audiometry, which is an important component of tele-audiology, remains underutilized.
3. Barriers to tele-audiology include clinical equipment compatibility and research on service validity needed (Eikelboom et al., 2021; Hughes et al., 2012).

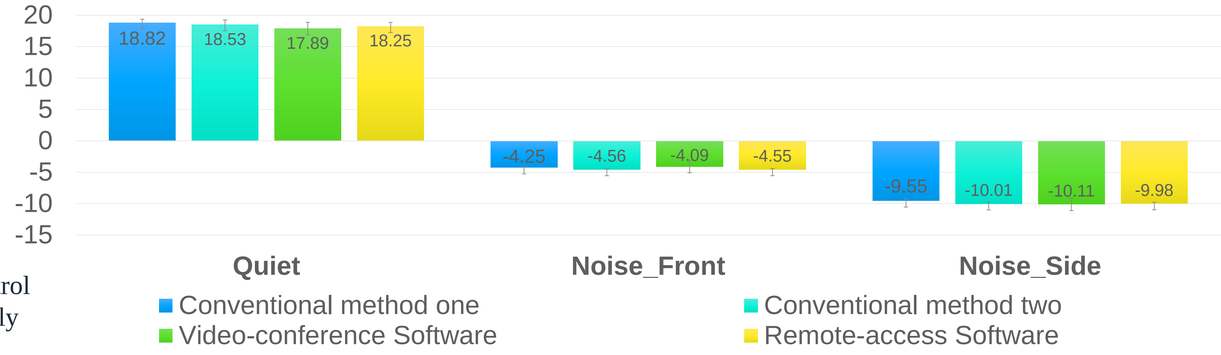
This study examines the feasibility of remote speech perception tests using video-conferencing (i.e., Zoom) and remote-control (i.e., TeamViewer) software, hypothesizing no significant outcome differences from in-person tests.

In-person Conventional Method: participant (female) and audiologist (male) in the same room

Remote speech audiometry using video-conferencing and remote-control software: participant and audiologist in different rooms. They can only see and talk to each other using RC or VC.

Results

- Repeated ANOVA showed that there was **NO** significant effect of the administration methods, F (2, 110) = 3.09, $p > 0.05$, $\eta_p^2 = 0.05$.
- Speech reception threshold (SRT) differences across administration methods were within **±1dB**, **within the test-retest variations** using different lists of the CHINT, F (2, 66) = 0.07, $p > 0.05$, $\eta_p^2 = 0.00$.



Methods

Conventional method (CM): Administered Cantonese in Noise Test (CHINT) **face-to-face**.

Remote-control method Using TeamViewer (RC): Experimenter **remotely** controlled **participant**'s computer, ensuring direct, uncompressed audio delivery for the CHINT.

Video-conferencing method Using Zoom (VC): CHINT sentences and noise generated on **experimenter**'s computer, transmitted to participants **remotely**.

Conclusion

	Remote Control (RC)	Video Conferencing (VC)
Advantages	Same audio quality as the CM	Easy to use
Shortcomings	Privacy concerns due to remote computer control	Audio quality suffers from signal compression and transmission

The results suggest that **remote speech audiometry (RC and VC)** is a **viable alternative** to in-person conventional methods, capable of yielding reliable outcomes

Procedures

Participants: Fifty-six Cantonese-speaking participants, mostly with normal hearing (54 out of 56).

Scenarios: 12 combinations of 3 listening settings (Quiet, Noise from the Front, Noise from the Side) × 4 methods (CM1, CM2, RC, VC). CM tested twice for examination of test-retest variation (i.e., CM1 and CM2).

Selection: Randomized lists and scenarios, Latin Square design, tested in a sound booth

References

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WCA World Congress of Audiology
19›22 September 2024
Paris, France
CNIT Paris La Défense