Speech Recognition Thresholds in-Quiet and in-Noise and its relationship with Aided Thresholds in Post-lingual Adult Cochlear Implant Users in Malaysia

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INTRODUCTION

- Application of speech tests are crucial in tracking the performance of speech perception in cochlea implant (CI) users.
- This study examines the speech recognition thresholds (SRT) of CI users using one in-quiet speech test: **Bisyllabic Malay Speech Audiometry (BMSA),** and two in-noise speech tests: **Malay Matrix Sentence Test (MMST)** and **Malay Digit Triplet Tests (MDTT)** and examines their relationship with aided thresholds.

CHALLENGES IN TESTING SPEECH PERCEPTION FOR CI USERS IN MALAYSIA

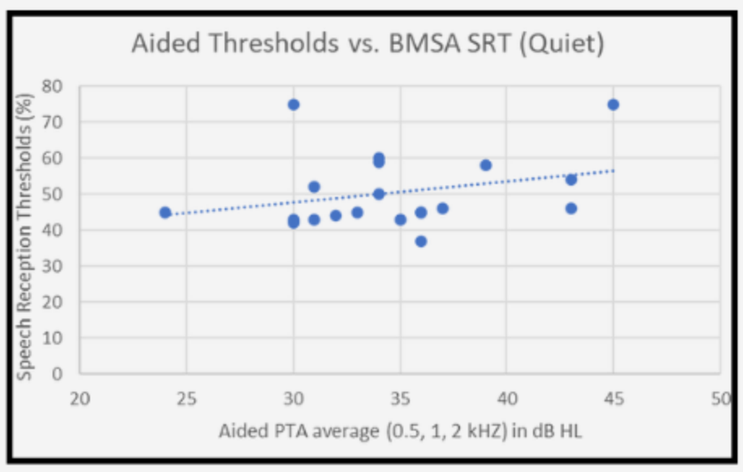
- Lack of test materials and mostly dependent on questionnaires.
- Multicultural society (Native vs. Non-native speakers).
- Learning effects (Procedural vs Repetition).
- Design of protocol to identify performance.

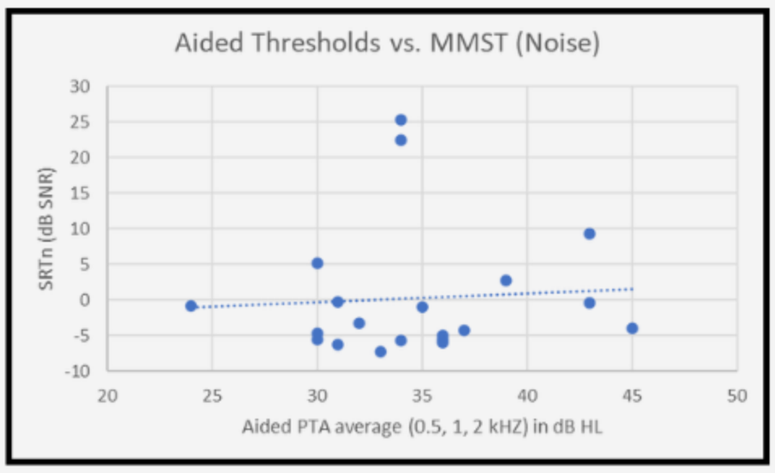
METHOD

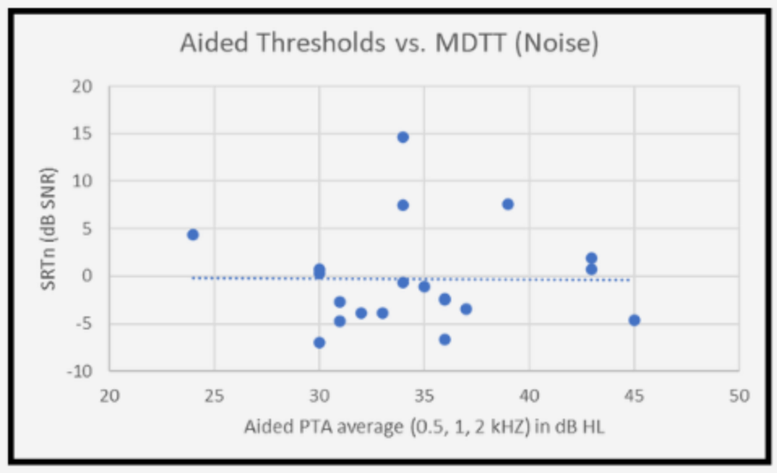
- Cross-sectional study design using convenience sampling.
- Twenty-two experienced CI users (average device age of 4.7 ± 3.7 years).
- Median age of 39 years old (IQR = 33 to 34)
- Aided hearing thresholds (average of 500, 1000 & 2000 Hz), Speech Recognition Thresholds (SRT) using the BMSA, MMST, & MDTT were recorded and analysed. One training list was conducted for every subject for the MMST prior to data collection.

RESULTS

- Median SRT of BMSA, MMST and MDTT were 45 dB SPL (IQR = 43.2 to 53.5), -3.2 dB SNR (IQR = -5.5 to -0.2), and -1.8 dB SNR (IQR = -3.9 to -1.6), respectively.
- Spearmen's rank-order correlation revealed no statistically significant correlations between average PTA AT and the SRT of BMSA (r (22) = .312, p =18), MMST (r (22) = .081, p = .74) and MDTT (r (22) = .125, p = .6).







CONCLUSION

- SRT performance are predictably good in quiet but poor with background noise therefore, clinicians should focus on improving listening in noise for CI users.
- PTA is a poor estimator of speech perception abilities.
- Speech tests should be routinely performed pre- and post- CI use as PTA is not a reliable measure of speech-sounds accessibility.

KEYWORDS: Cochlear Implant (CI), Speech Recognition Threshold (SRT), Bisyllabic Malay Speech Audiometry (BMSA), Malay Matrix Sentence Test (MMST). Malay Digit Triplet Text (MDTT)