Evidence-Based Strategy to Monitor Aided Hearing performance

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**Background** In addition to the routine audiological follow-ups, children’s hearing status should be closely monitored on a daily basis. However, children who live in the remote areas may have limited access to a professional audiology service, it is particularly important to provide an effective monitoring strategy for family members to maintain a successful audiological management. This study clinically validated the use of Chinese Sound Test – a modified version of Ling’s Six-Sound Test – in home settings, and also established a performance index to describe the relationships between the aided audiometric thresholds and the expected detection distance thresholds.

**Methods** 60 children with bilateral hearing aids were recruited. The aided sound field thresholds at 250, 500, 1000, 2000, 4000, and 6000 Hz were compared with the distance thresholds of six Chinese sounds, /u, a, a, i, tɕʰ, and s/, spanning from low to high frequency across the Chinese speech spectrum.

**Results** Partial correlation and stepwise regression analyses revealed that the Chinese testing sounds are frequency-specific, and the audibility of each sound could be predicted by a specific frequency threshold. The ANOVA results showed significant distance differences in detecting sounds between different aided threshold ranges.

**Conclusions** This study has validated the frequency specificity of a set of sounds across Chinese speech spectrum and confirmed the Chinese Sound Test as an efficient tool to monitor children’s daily hearing status. Finally, the index may function as a performance indicator of the hearing devices for clinicians.