

Lexical tone identification and consonant recognition in acoustic simulations of cochlear implants.

林永松

Lin YS;Lu HP;Hung SC;Chang CP

摘要

Abstract

Conclusion: Cochlear implant (CI) recipients' performance of lexical tone identification and consonant recognition can be enhanced by providing greater spectral details. Objective: To evaluate the effects of increasing the number of total spectral channels on the lexical tone identification and consonant recognition by normally hearing listeners who are native speakers of Mandarin Chinese. Subjects and methods: Lexical tone identification and consonant recognition were measured in 15 Mandarin-speaking, normal-hearing (NH) listeners with varied numbers of total spectral channels (i.e. 4, 6, 8, 10, 12, 16, 20, and 24), using acoustic simulations of CIs. Results: The group of NH listeners' performance of lexical tone identification ranged from 44.53% to 66.60% with 4-24 spectral channels. The performance of tone identification between channels 4 and 16 remained similar; between channels 16 and 20 performance improved significantly. As regards consonant recognition, the NH listeners' overall accuracy ranged from 73.17% to 95.33% with 4-24 channels. Steady improvement in consonant recognition accuracy was observed as a function of increasing the spectral channels. With about 12-16 spectral channels, the NH listeners' overall accuracy in consonant recognition began to be comparable to their accuracy with the unprocessed stimuli.