

Adjustment of the interaural stimulation timing leads to improved sound localization in bimodal listeners

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Abstract

In bimodal cochlear implant (CI) / hearing aid (HA) users a constant interaural time delay in the order of several milliseconds occurs due to differences in signal processing of the devices. For MED-EL CI systems in combination with different HA types, we have quantified the respective device delay mismatch [1].

In the current study, we investigate the effect of the device delay mismatch in actual bimodal listeners on sound localization accuracy. To deal with the device delay mismatch we delayed the CI stimulation according to the measured HA processing delay and two other values. To determine potential effects of procedural learning, we applied an A-B-B-A testing paradigm.

With all delay values highly significant improvements of the rms error were observed compared to the test without the delay (14.7° improvement in average). Also the signed bias of sound localization improved significantly from 25.2° to 10.5° averaged across listeners [2].

The results reveal that bimodal listeners benefit from a reduction of the device delay mismatch between CI and HA. With this form of temporal adjustment of modalities, spatial re-centering seems possible [3].

Literatur

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