

COMPARISON OF SPEECH INTELLIGIBILITY BY EAS, BIMODAL, UNI- AND BILATERAL COCHLEAR IMPLANT PATIENTS IN A 'MULTI-SOURCE NOISE FIELD' (MSNF)

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Speech perception in noise is one of the most difficult tasks for people suffering from hearing impairment. The Oldenburg Sentence Test (OLSA) is a useful tool to investigate speech intelligibility threshold in noise. In the present study, a multi-source noise field consisting of a four loudspeaker array with independent noise sources was combined with the OLSA. The MSNF allows presenting a more realistic noise environment and shows a higher effect of binaural interaction regarding the separation of signal and noise from different sources.

Three different noise characteristics were applied in two conditions (S0N0: Signal and noise from the front; MSNF) to investigate the speech reception threshold: OLnoise (generated by superposed sentences of OLSA), CCITT-noise according to ITU-T Rec. G.227, and speech simulating noise according to Fastl.

Four different groups of cochlear implant patients separated into listening conditions unilateral, bimodal, bilateral and EAS (electric-acoustic stimulation) and 22 normal hearing served as subjects in the present study.

Results showed a clear discrepancy between the examined patient groups unilateral and EAS for Fastl-noise in MSNF-condition (Δ SNR=7.9 dB). For OLnoise in S0N0-condition, the results differ less (Δ SNR=3.4 dB). The MSNF with Fastl-noise is particularly suitable to measure the performance of various aided CI-patients in realistic sound environments.

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