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Category: Oral

Topic: Auditory Steady State Responses

Additional topic: Auditory brainstem responses

Multichannel frequency-domain Hotelling's T^2 test for detection of envelope following responses to natural vowels.

Objectives (250 characters):

A multichannel frequency-domain Hotelling's T^2 (MCHT2) method for envelope following response detection is introduced and its sensitivity compared to a Fourier Analyzer (FA), Magnitude Squared Coherence (MSC), and single-channel Hotelling's T^2 (HT2).

Methods (250 characters):

EEG data were collected from 12 normal hearing adults during auditory stimulation with 4 repeated vowels. Each stimulus was presented 220 times with both polarities. Response detection was compared between algorithms based on detection rate and time.

Results (250 characters):

A five-channel MCHT2 showed a significantly higher detection rate compared to FA (27% increase) and MSC (24%) detection rates. Both HT2 and MCHT2 showed a significant decrease in mean detection time compared to the FA (29% and 39%, respectively).

Conclusion (250 characters):

MCHT2 analysis improves sensitivity in the detection of envelope following responses to natural vowels compared to single-channel methods, without increasing computational complication.

Keywords (maximum 5): Objective response detection, envelope following responses, multichannel analysis