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Abstract book

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Towards a combined behavioural and physiological measure of listening effort

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Motivation: Understanding speech in adverse listening conditions typically requires increased mental exertion (known as listening effort) and can lead to negative psychosocial outcomes. This research aims to evaluate the efficacy of a methodology that objectively indexes listening effort.

Methodology: Listening effort is evaluated using dual task and electroencephalography (EEG) measures. In the dual task, the primary and secondary tasks consist of digits-in-noise at different signal-to-noise ratios (SNRs) and a cued attention-switching task respectively. Behavioural performance is evaluated in terms of accuracy and reaction time. EEG measures include brain oscillations associated with the decision-taking process.

Results: Preliminary results of 3 participants show that obtaining behavioural and physiological measures of listening effort simultaneously is technologically viable. It is anticipated that dual-task performance will be positively associated with the auditory stimulus SNR, and that it will negatively correlate with alpha power.

Significance: The potential use of the proposed methodology includes (1) characterization of individuals' hearing in noise difficulty, and (2) evaluation of the efficiency of technologies like hearing aids or cochlear implants in reducing listening effort.