

## N400 RESPONSES IN INDIVIDUALS WITH NORMAL HEARING WITH AND WITHOUT LISTENING CONCERNS

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Speech understanding in noise is a complex task that involves a wide range of factors, like the correct neural encoding of sounds in the periphery of the auditory system and cognitive factors like attention, working memory, and language. Current methods of evaluating listening-in-noise problems are based on subjective questionnaires/tests, which can be affected by individual bias and recall errors. The aim of this study was to evaluate the efficiency of the N400 ERP as a potential objective indicator of speech understanding-in-noise problems. The N400 is shown as a negative deflection that can be elicited by words incongruent with their context, thus indicating semantic understanding. Participants consisted of twenty individuals with normal hearing (18 - 50 years, 6 males) and twenty with normal hearing and listening concerns (18 - 70 years, 7 males) according to an online survey developed by the research group. Sixty-four channel EEG was carried out on all the participants using semantically congruent and incongruent sentences. N400 magnitude was estimated as the area under the curve between the ERPs elicited by incongruent and congruent sentences in the time frame [0.4 - 0.8] seconds following the onset of the critical word. Preliminary analysis of results showed that despite a visual difference in the grand-average ERPs in frontal EEG channels, group analysis showed no statistically significant difference. Further analyses including clusters (groups of EEG channels) may clarify the potential of the N400 as an objective measure of speech understanding. This study was conducted with ethics approval from the Macquarie University Human Research Ethics Committee.