EEG-based investigation of the fundamental frequency coding for source segregation in elderly normal-hearing

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3

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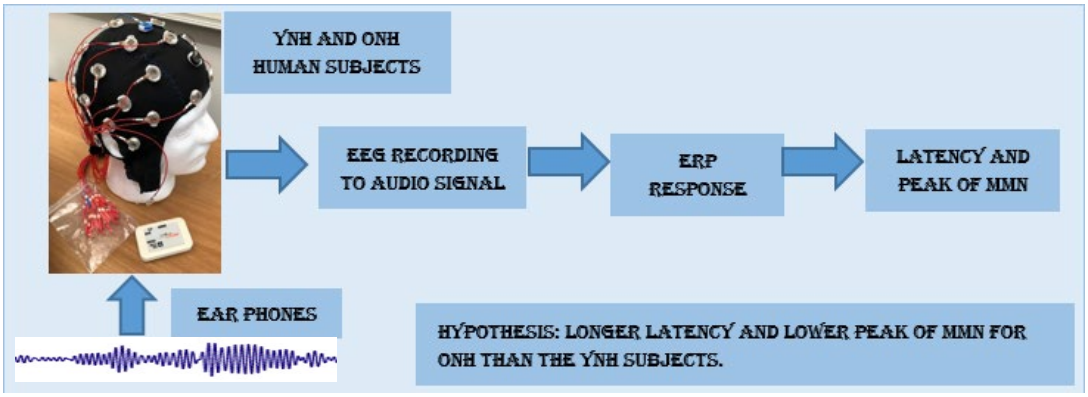
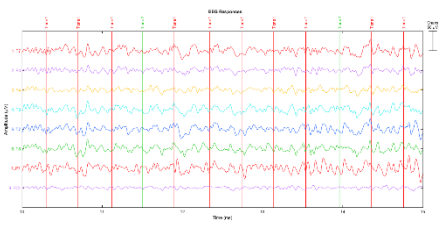
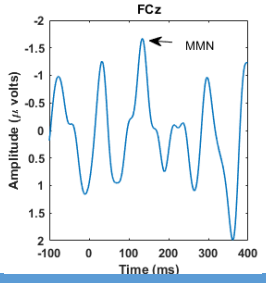
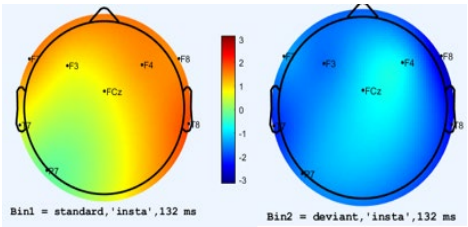
Graphical Abstract/ Lavout



Project Description:

Younger adults with normal hearing (YNH) have a remarkable ability to segregate and understand a target person's speech in the presence of multiple speakers. Whereas older adults with normal hearing (ONH) face a lot of difficulty in segregating and concentrating on a target person's voice. The current study aims to compare the Electroencephalography (EEG)-based representations to concurrent vowels between YNH and ONH subjects to address the reduced identification scores for elderly adults.

Event-related potential (ERP) are obtained by averaging the EEG responses related to a specific auditory stimulus. The mismatch negativity (MMN) component of the ERP is responsible for discriminable changes in the auditory stimulus, prominently located in fronto-central scalp region. The stimulus is presented using the odd-ball paradigm, in which the standard signal (i.e., tone of 126 Hz, with 400-ms duration and 65 dB SPL) is presented frequently while the deviant signal (i.e., tone of 100 Hz with same duration and dBSPL) is presented infrequently to human subjects using the insert ear-phones. The MMN, occurs between 100 - 250 ms after the stimulus onset, is obtained by subtracting the ERP responses of the standard from the deviant. It is hypothesized that ONH subjects will have a longer latency and lower MMN peak than YNH subjects, resulting in poor segregating ability and reduced identification scores. Preliminary results show that the FCz electrode exhibit a strong MMN response around 100-150 ms

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