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Paper Title: The effect of selective attention to segregated streams on event-related potentials

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Abstract

Auditory stream segregation is a phenomenon in which alternately presented sounds with different frequencies are perceived as multiple sound streams. BCI (brain-computer interface) using auditory stream segregation has been proposed. In this study, tendency of perceiving auditory stream segregation was investigated by psychophysical experiments by using two different types of sounds. In addition, we aimed to improve the performance of the auditory BCI based on auditory stream segregation by evaluating the relationship between the magnitude of event-related potentials, and the level of segregation, i.e., how significant the sequence is perceived as segregated streams. The results showed that 8 out of 8 subjects were more likely to perceive stream segregation when the sound was more complex. It was also shown that 5 out of 8 subjects showed that the amplitude of event-related potential (ERP) responses was larger when the level of segregation was higher. These results show the correlation between brain activity and the level of segregation from the perspective of neural correlates of auditory illusions.