Department of Psychology
The University of Hong Kong
香港大學心理學系

Departmental Seminar (Via Zoom)

Modulation of Cognitive Control by Transcranial Electrical Stimulation

1:00 p.m. – 2:00 p.m. | July 18, 2022 (Monday) | HK Time

Mr. Ahsan Khan
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Abstract

Cognitive control mechanisms are at the core of human cognition and are essential for goal-directed behavior in various cognitive domains. Studies on humans and non-human primates have repeatedly demonstrated that different areas of the prefrontal cortex, notably the Anterior Cingulate Cortex and Dorsolateral Prefrontal cortex, play a key role in implementing cognitive control in the brain. The literature on cognitive control is dominated by correlational studies, which do not provide information about the causal association of specific brain regions with behavior. Transcranial Electrical Stimulation offers a unique methodology to study the causal functions of these brain regions by externally stimulating them with an electrical current and studying associated behaviors. It further provides an avenue for the possibility of enhancing cognitive functions. In this talk, Ahsan will discuss how cognitive control processes in attention and memory can be modulated by stimulating critical brain regions involved in the detection and implementation of control.

About the Speaker

Ahsan is a final year doctoral student in the Biomedical Engineering Department at the Chinese University of Hong Kong. His thesis investigated if stimulation of critical cognitive processing regions in the prefrontal cortex can modulate the activity of the stimulated region and if it can influence cognitive control mechanisms in the attention and memory domain. To investigate the topic, he utilized state-of-the-art methods, including transcranial electrical stimulation, electroencephalography, and Magnetic Resonance Imaging. During his time as a graduate student., he collaborated and worked in different labs in Hong Kong, China, Austria, and United Kingdom. His last appointment was at the MRC Cognition and Brain Sciences unit, University of Cambridge as a visiting scientist, where he investigated the causal role of the medial prefrontal cortex on retrieval-induced forgetting, a memory phenomenon suggesting that forgetting of memories is a consequence of recalling of other memories. His findings from brain stimulation studies extend our understanding of the neural mechanisms of cognitive control and provide evidence that stimulation can influence cognitive control processes in attention and memory contexts. In addition to his work on cognitive control, he has investigated the effectiveness of different rehabilitation interventions on stroke patients. In his talk, Ahsan will be sharing his findings from the studies on brain stimulation and cognitive control in attention and memory contexts.

Zoom Meeting

https://hku.zoom.us/j/3951550048?pwd=SncvL3RYakEycUtpL29vdDJEdlEwdz09
Meeting ID: 395 155 0048 | Password: psyc

~All are Welcome~

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