



Departmental Seminar

Harnessing Visual Unawareness in the Modulation of Fear-related Memories



Ms Letian Lei

PhD student
Department of Psychology
The University of Hong Kong

11:00a.m. – 12:00n.n.

Chamber, 11/F
The Jockey Club Tower
Centennial Campus
The University of Hong Kong

Abstract

Anxiety and fear-related disorders are highly prevalent, yet many affected individuals fail to benefit from exposure-based therapies, likely due to the intense distress of repeatedly confronting feared stimuli. To address this challenge, I used a two-day threat conditioning paradigm combined with continuous flash suppression to test whether fear-related memories can be modulated while bypassing perceptual awareness and subjective discomfort. Across three studies, I demonstrated that extinction with minimal or absent visual awareness reduces defensive pupillometric responses and elicits less arousal than extinction with full awareness. Neuroimaging data revealed that aware extinction engaged the amygdala, hippocampus, and prefrontal regions, whereas unaware extinction primarily involved the cerebellum, posterior cingulate cortex (PCC), and precuneus, with distinct representational patterns observed in the hippocampus and cerebellum. Resting-state functional connectivity further showed that cerebellar networks supported extinction independently of awareness level, while cortical pathways differentiated between aware (right angular gyrus–PFC) and unaware (left angular gyrus–PCC) extinction. Together, these findings provide converging evidence that threat extinction can occur with minimal visual awareness and subjective discomfort, supported by both cortical and cerebellar circuits. They contribute to the limited literature on unconscious fear modulation and highlight new directions for interventions that may improve treatment seeking and adherence in anxiety and fear-related disorders.

About the Speaker

Grace is a PhD candidate at HKU under the supervision of Prof Charlene Lam and Prof Tatia Lee. She obtained her MPhil in Psychology from the Chinese University of Hong Kong and her bachelor's degree from Beijing Normal University. Her doctoral thesis investigated whether fear-related memories could be modulated bypassing visual awareness and subjective discomfort. She has a broad interest in cognitive and affective neuroscience, including learning, memory, unconscious emotional processing, and their interplay with other mental processes.

Zoom Meeting (For participants who couldn't attend the Seminar in person)

<https://hku.zoom.us/j/6985555998?pwd=V05yTGJWNTIzazd2OFZ0Q3FRReHVkdz09>

Meeting ID: 698 555 5998 | Password: Psyc

~ All are Welcome ~

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