



Department of Psychology
The University of Hong Kong

香港大學心理學系

Brown Bag Lunchtime Seminar (Via Zoom)
(Theme: Cognition and Neuroscience)

Affect Updating of Unwanted Memories
during Human NREM Sleep

12:30 p.m. – 1:30 p.m. | June 24, 2022 (Friday)



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Abstract

Post-learning sleep contributes to memory consolidation. Yet, it remains contentious whether sleep affords opportunities to modify or update memory, particularly those unwanted memories that people prefer not to remember. For the first time, we examined whether we can update unwanted memories via pairing positive emotional words (vs. neutral words) with aversive memory cues during human non-rapid-eye-movement (NREM) sleep. We found that such pairing during NREM sleep reduced negative affect judgments toward paired aversive memory cues during the post-sleep tests. Cue-elicited EEG analyses showed that theta power differences between the positive words and the paired aversive memory cues predicted affect changes across sleep. Particularly, if the positive words elicited larger theta powers than the subsequent memory cues, participants judged the cues less negatively. The single-trial analysis further showed that slow oscillation upstate, a state characterized by cortical excitability during NREM sleep, was conducive to effective affect updating: when the onset of the first positive words coincided with slow oscillation upstates, affect updating was more likely to happen. Our study revealed that the affect tones of unwanted memories can be updated via pairing with emotional stimuli during human deep sleep, with both theta power and slow oscillation upstates contributing to affect updating. These findings offer novel possibilities for modifying unwanted memories during sleep, without people being consciously confronted with such aversive memories.

About the speaker

Tao is a fourth-year Ph.D. student in Dr. Xiaoqing Hu's Social Cognitive Neuroscience Lab. His current research focuses on using targeted memory reactivation and sleep learning to modify unwanted memories during human NREM sleep. In addition, he is also interested in using auditory stimuli to modulate sleeping brain oscillations in order to better understand the neural mechanisms responsible for memory consolidation during sleep.

Zoom

<https://hku.zoom.us/j/3951550048?pwd=SncvL3RYakEycUtpL29vdDJEdlEwdz09>

Meeting ID: 395 155 0048 | Password: psyc



~All are Welcome~

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