



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

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## Departmental Seminar

# Reducing Trauma and Fear Memories Using Emotion Regulation-Based Interventions and Neuromodulation

**Ms. Helen Yanyao Zhou**

PhD candidate  
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**11:00a.m. – 12:00n.n.**

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

### Abstract

Post-traumatic stress disorder (PTSD) affects millions of people globally, with intrusive memories as its hallmark symptom. Emotion regulation (ER) deficits are common in PTSD, and evidence shows bidirectional influence of ER and memory processes. Memory can be suppressed through memory control, which is the ability to inhibit unwanted thoughts. Because memory control shares neural pathways with ER, it may be possible to reduce intrusive memories by modulating ER. To test this, I used the trauma film paradigm and two ER interventions differing in explicitness to see if they reduced intrusive memories. I also used the fear conditioning and extinction paradigm to examine whether neuromodulation of ER-related circuits could reduce fear memory. Across five studies, explicit ER (with conscious goals) activated frontal and temporal cortical regions, while implicit ER (without conscious goals) engaged subcortical areas. Neither intervention reduced overall intrusive memories when applied 24 hours post-trauma. However, implicit ER delivered with minimal visual awareness significantly lowered intrusion frequency compared to full visual awareness among those experiencing intrusions. Both explicit and implicit ER reduced distress or impact of intrusions. Symptomatic individuals showed opposite neural profiles to healthy individuals, but neuromodulation targeting protective sites normalized abnormalities and facilitated early extinction learning. In summary, explicit and implicit ER engage distinct neural substrates but similarly reduce distress or impact associated with experiment-analog trauma. Neuromodulation modulates extinction learning mechanisms. Combining interventions may enhance future PTSD treatments.

### About the Speaker

Helen is a PhD candidate under the supervision of Prof. Charlene Lam. She obtained her research master degree in Psychology: Theory and Research from KU Leuven. Her doctoral thesis investigated the impact of emotion regulation-based interventions and neuromodulation on the reduction of aversive memories.

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

<https://hku.zoom.us/j/98633728048?pwd=jtReaT7YnzQg0fbxTCrdKE8qyfCYAH.1>

Meeting ID: 986 3372 8048 | Password: 013581

~ All are Welcome ~

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