
Hypo-retrieval, hyper-suppression and emotional deficit in functional amnesia

Eve Tramoni-Negre*^{†1}, Stéphanie Khalfa , Maxime Guye , Jean-Philippe Ranjeva ,
Olivier Felician , and Mathieu Ceccaldi

¹INSERM – Inserm : U751 – France

Abstract

Functional amnesia (FA) is characterized by an extensive retrograde memory loss in the absence of detectable brain damage. Hypotheses put forward to explain FA involve a global retrieval deficit or a selective inability to explicitly retrieve pre-onset memories. In order to test these hypotheses, we extensively examined P.P., a patient with FA. In Experiment 1, encoding of post-onset events was monitored in a laboratory setting. P.P.'s performances, taking into account the state of consciousness associated with retrieval, were normal. In Experiment 2, implicit recognition of pre-onset memories was tested using skin conductance responses. Results showed that P.P. responded implicitly to photographs of pre-onset events that were not explicitly recognized. In Experiment 3, designed to assess the patient's ability to suppress newly acquired information, P.P. suppressed more items than controls. In Experiment 4, using video stimuli conveying strong emotions, we explored its emotional responses considering both conscious emotional judgements and automatic psychophysiological responses. Findings demonstrated the presence of an emotional deficit, characterized by a failure to generate appropriate somatic responses to positive and negative stimuli. Additionally, we obtained imaging data showing significant metabolic and structural changes within the white matter of the right prefrontal lobe. In conclusion, our results suggest that FA may result from a combination of "hypo-retrieval" of pre-onset memories, tentatively due to white matter tract damage, and "hyper-suppression" mechanism, concomitantly preventing the retrieval of pre-onset memories. This study therefore suggests that FA is not limited to a mnemonic impairment, but also involved the processing of emotionally loaded experiences.

*Speaker

[†]Corresponding author: