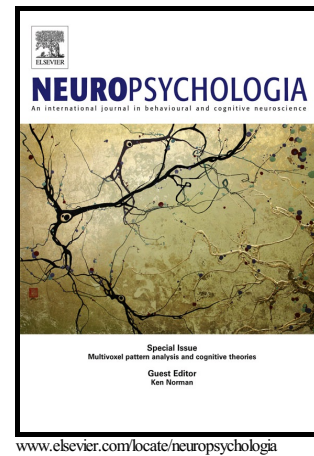


Author's Accepted Manuscript

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PII: S0028-3932(16)30246-9
DOI: <http://dx.doi.org/10.1016/j.neuropsychologia.2016.07.008>
Reference: NSY6061

To appear in: *Neuropsychologia*

Received date: 16 November 2015
Revised date: 5 July 2016
Accepted date: 7 July 2016

Cite this article as: Robin Hellerstedt, Mikael Johansson and Michael C Anderson, Tracking the Intrusion of Unwanted Memories into Awareness with Event-Related Potentials, *Neuropsychologia*, <http://dx.doi.org/10.1016/j.neuropsychologia.2016.07.008>

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Tracking the Intrusion of Unwanted Memories into Awareness with Event-Related Potentials

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Abstract

Involuntary retrieval of unwanted memories is a common symptom in several clinical disorders, including post-traumatic stress disorder. With an aim to track the temporal dynamics of such memory intrusions, we recorded electrophysiological measures of brain activity while participants engaged in a Think/No-Think task. We presented the left hand word (the cue) of previously encoded word pairs in green or red font. We asked participants to think of the associated right hand word (the associate) when the cue appeared in green (Think condition) and to avoid thinking of the associate when the cue appeared in red (No-Think condition). To isolate cases when participants experienced an intrusive memory, at the end of each trial, participants judged whether the response had come to mind; we classified memories that came to mind during No-Think trials, despite efforts to stop retrieval, as intrusions. In an event-related potential (ERP) analysis, we observed a negative going slow wave (NSW) effect that indexed the duration of a trace in mnemonic awareness; whereas voluntary retrieval and maintenance of the associate was related to a sustained NSW that lasted throughout the 3-second recording epoch, memory intrusions generated short-lived NSWs that were rapidly truncated. Based on these findings, we hypothesize that the *intrusion-*

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