

Author's Accepted Manuscript

Lateralised sleep spindles relate to false memory generation

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PII: S0028-3932(17)30415-3
DOI: <https://doi.org/10.1016/j.neuropsychologia.2017.11.002>
Reference: NSY6558

To appear in: *Neuropsychologia*

Received date: 13 June 2017
Revised date: 31 October 2017
Accepted date: 1 November 2017

Cite this article as: John J. Shaw and Padraic Monaghan, Lateralised sleep spindles relate to false memory generation, *Neuropsychologia*, <https://doi.org/10.1016/j.neuropsychologia.2017.11.002>

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Abstract

Sleep is known to enhance false memories: After presenting participants with lists of semantically related words, sleeping before recalling these words results in a greater acceptance of unseen "lure" words related in theme to previously seen words. Furthermore, the right hemisphere (RH) seems to be more prone to false memories than the left hemisphere (LH). In the current study, we investigated the sleep architecture associated with these false memory and lateralisation effects in a nap study. Participants viewed lists of related words, then stayed awake or slept for approximately 90 minutes, and were then tested for recognition of previously seen-old, unseen-new, or unseen-lure words presented either to the LH or RH. Sleep increased acceptance of unseen-lure words as previously seen compared to the wake group, particularly for RH presentations of word lists. RH lateralised stage 2 sleep spindle density relative to the LH correlated with this increase in false memories, suggesting that RH sleep spindles enhanced false memories in the RH.

Keywords

Sleep spindles, memory, false memory, sleep consolidation, hemispheric lateralisation

1. Introduction

Sleep has a profound impact on the consolidation of new memories. Contemporary models of memory consolidation suggest that during sleep memories are repeatedly reactivated in hippocampal networks (Rasch, Büchel, Gais, & Born, 2007; Rudoy,

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