

Wakeful rest promotes the viewpoint invariance, but not the fine discriminability, of entities mnemonic representations for subsequently familiarity-based recognition

Gabriel Besson, Pierre-Yves Jonin, Christian Barillot

► To cite this version:

Gabriel Besson, Pierre-Yves Jonin, Christian Barillot. Wakeful rest promotes the viewpoint invariance, but not the fine discriminability, of entities mnemonic representations for subsequently familiarity-based recognition. 2019 - Cognitive Neuroscience of Memory: Recollection Familiarity Novelty detection, Oct 2019, Liège, Belgium. inserm-02384508

HAL Id: inserm-02384508

<https://www.hal.inserm.fr/inserm-02384508>

Submitted on 28 Nov 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Wakeful rest promotes the viewpoint invariance, but not the fine discriminability, of entities mnemonic representations for subsequently familiarity-based recognition.

Gabriel Besson(1), Pierre-Yves Jonin(2,3), Christian Barillot(3)

(1)GIGA-CRC In-Vivo Imaging, Université de Liège, Liège, Belgique ; (2)Rennes University Hospital, Neurology Department, Rennes, France(3)Univ Rennes, Inria, CNRS, INSERM, IRISA, EMPENN ERL U-1228, Rennes, France

Abstract

Post-encoding wakeful rest has recently been shown to benefit memory, such as object recognition memory requiring fine discrimination. Hence, early consolidation has been proposed to promote the specificity of memory representations. Yet parallel work showed that wakeful rest also benefits insight, suggesting on the contrary that early consolidation promotes the building of more abstract representations. Capitalizing on the recent proposition that visual objects can be represented at the ‘entity’ level, namely as unique and viewpoint-invariant conjunctions of features, we hypothesized that wakeful rest may in fact enhance the building of memory representations at this level. We evaluated the effect of post-encoding rest (instructing either a 2-min imagery navigation or 2-min wakeful rest) on a fine discrimination familiarity task specifically tapping the entity level, i.e. preventing recollection, low-level fluency (targets being differently presented at test) and categorical fluency (lures being drawn from studied categories) to contribute. In 15 participants, entity-level familiarity was well-succeeded, but post-encoding rest did not affect global accuracy. However, following imagery navigation, performance on targets was significantly affected by their study-test perceptual distance, while this relationship disappeared following wakeful rest. Our findings confirm that objects can be represented at the entity level. However, the building of their viewpoint-invariant memory representation may not be automatic, but rather dependent upon early consolidation. Thus, considering familiarity, wakeful rest may not increase the specificity of memory representations, but rather enhance their abstraction (at least up to viewpoint-invariance), shedding new light on the nature and dynamics of the representation underlying object memory.