



HAL
open science

Age-related changes in the cerebral substrates of cognitive procedural learning.

Valérie Hubert, Hélène Beaunieux, Gaël Chételat, Hervé Platel, Brigitte Landeau, Fausto Viader, Béatrice Desgranges, Francis Eustache

► To cite this version:

Valérie Hubert, Hélène Beaunieux, Gaël Chételat, Hervé Platel, Brigitte Landeau, et al.. Age-related changes in the cerebral substrates of cognitive procedural learning.. *Human Brain Mapping*, 2009, 30 (4), pp.1374-86. 10.1002/hbm.20605 . inserm-00494376

HAL Id: inserm-00494376

<https://inserm.hal.science/inserm-00494376v1>

Submitted on 23 Jun 2010

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.

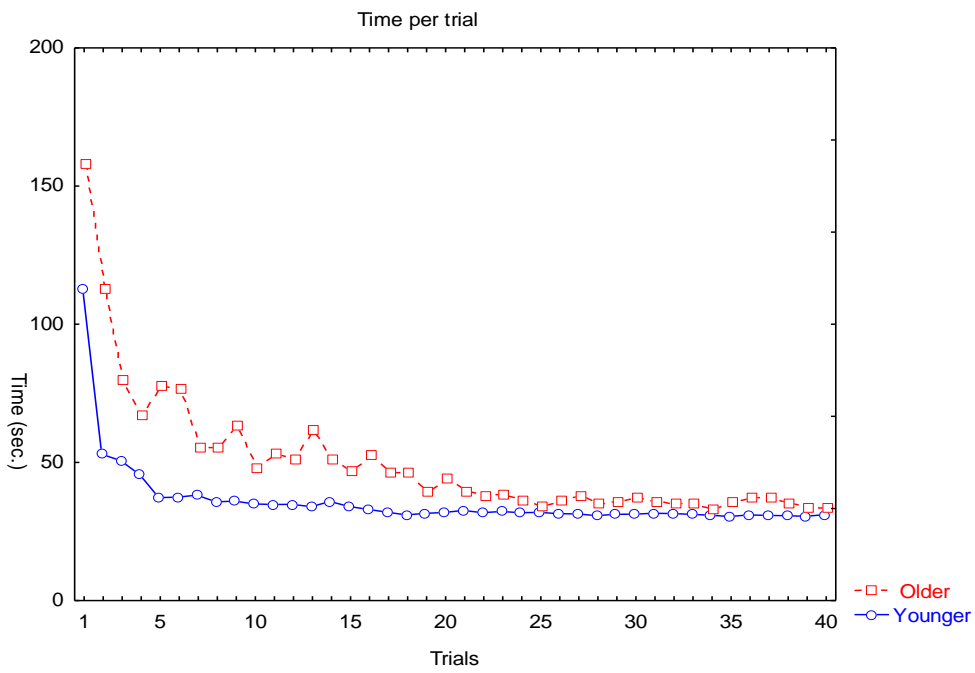
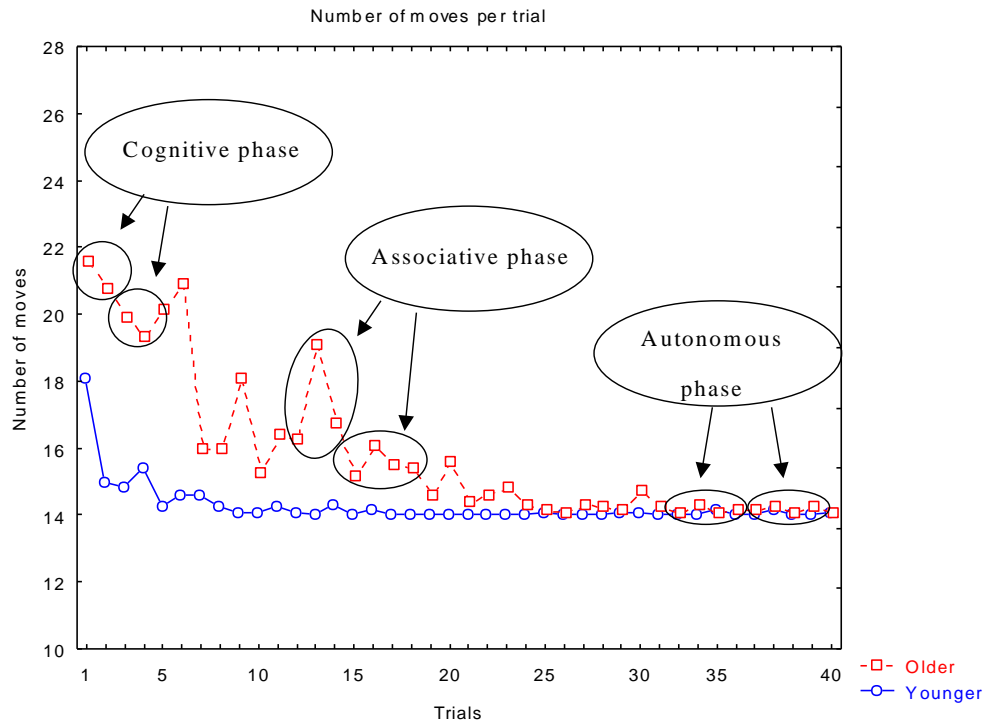


Figure 1: Performance in terms of number of moves (A) and time (B) per trial in the TT task. The results show a significant learning effect during the 40 trials, a significant group effect and a significant interaction between learning and groups in term of moves (A) and time (B).

Figure 2: PET scan comparisons:

Brain activation of the 3 phases of cognitive procedural learning (TT task). Significantly activated regions at the threshold of $p < .001$ uncorrected for multiple comparisons and time course of activation across learning.

The plots represent the relative contribution of the different conditions of our paradigm, according to the “effects of interests” for selected peaks (The plots represented in this figure correspond to the regions in bold type. All the regions cited under this first region presented the same evolution of activation). The 1st, 2nd and 3rd histograms correspond to the cognitive, associative and autonomous phases respectively.

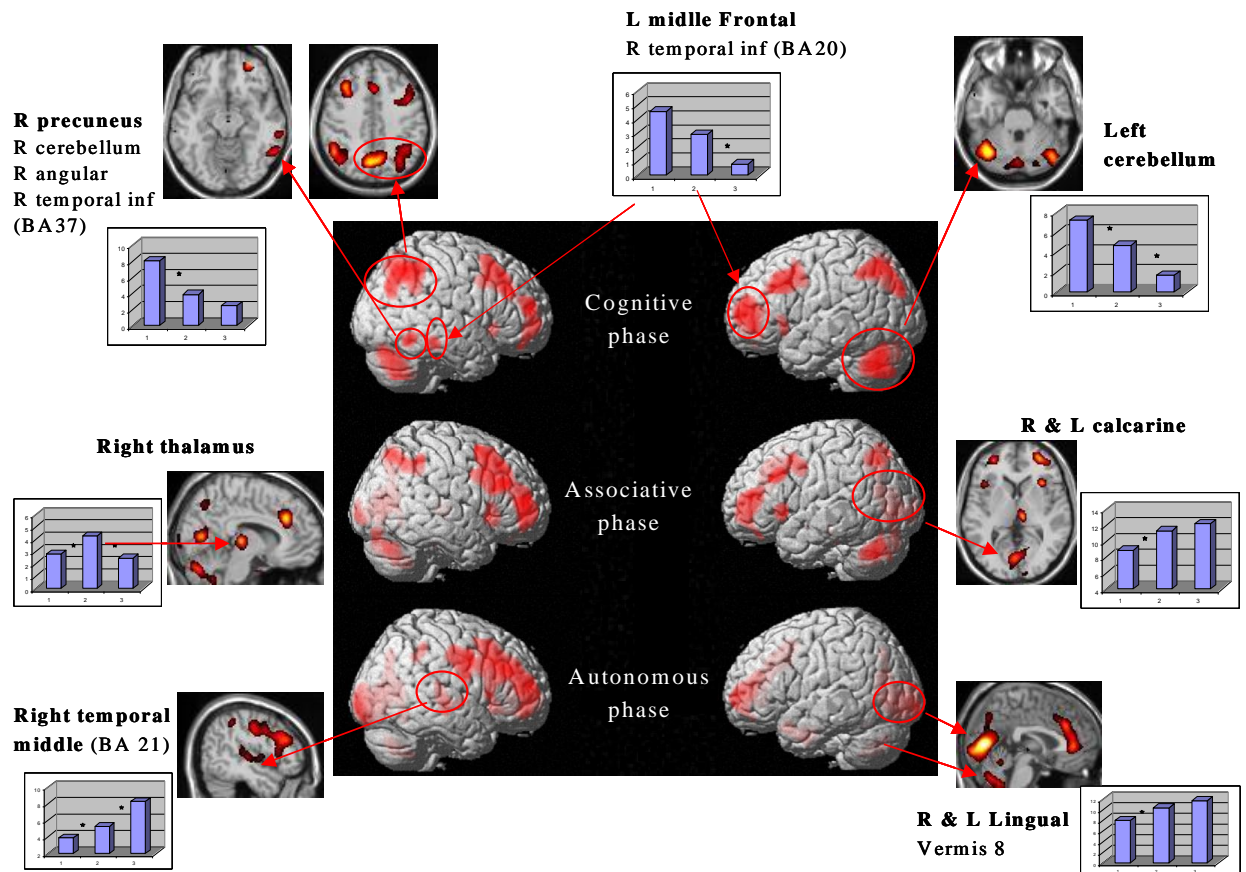


Figure 3: Between-group comparisons of the activations of the three phases of learning. The regions more activated in the older group are represented in red. Comparisons did not reveal supplementary activations for the younger group.

