

Abstract

Episodic memory decline is one of the earlier deficits occurring during normal aging in humans. The question of spatial *versus* non-spatial sensitivity to age-related memory decline is of importance for a full understanding of these changes. Here, we characterized the effect of normal aging on both non-spatial (object) and spatial (object location) memory performances as well as on associated neuronal activation in mice. Novel-object (NOR) and object-location (OLR) recognition tests, respectively assessing the identity and spatial features of object memory, were examined at different ages. We show that memory performances in both tests were altered by aging as early as 15 months of age: NOR memory was partially impaired whereas OLR memory was found to be fully disrupted at 15 months of age. Brain activation profiles were assessed for both tests using [immunohistochemical](#) detection of c-Fos (neuronal activation marker) in 3 and 15 month-old mice. Normal performances in NOR task by 3 month-old mice were associated to an activation of the [hippocampus](#) and a trend towards an activation in the perirhinal cortex, in a way that did significantly differ with 15 month-old mice. During OLR task, brain activation took place in the hippocampus in 3 month-old but not significantly in 15 month-old mice, which were fully impaired at this task. These differential alterations of the object- and object-location recognition memory may be linked to differential alteration of the neuronal networks supporting these tasks.