The neural correlates of recollection and familiarity during aging.

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The present experiment aimed to investigate age differences in the neural correlates of familiarity and recollection, when performance is kept similar across age groups by varying task difficulty. Twenty young and twenty older adults performed an episodic memory task in an event-related fMRI design. At encoding, participants were presented with pictures, either once or twice. Then, they performed a recognition task, with a Remember/Know paradigm. A similar performance was observed for the two groups in the Easy condition for recollection and in the Hard condition for familiarity. Imaging data revealed the classical recollection-related network and familiarity-related network, common to young and older groups. In addition, we observed that activity related to recollection (left frontal, left temporal, left parietal cortices and left parahippocampus) and familiarity (bilateral anterior cingulate, right frontal gyrus and left superior temporal gyrus) was reduced in older compared to young adults. However, for recollection processes only, older adults additionally recruit the right precuneus, possibly to successfully compensate for their difficulties.