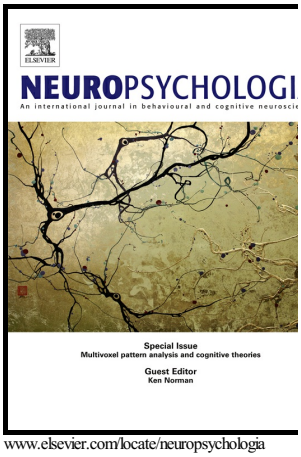

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Specifying the core network supporting episodic simulation and episodic memory by activation likelihood estimation

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Abstract

It has been suggested that the simulation of hypothetical episodes and the recollection of past episodes are supported by fundamentally the same set of brain regions. The present article specifies this core network via Activation Likelihood Estimation (ALE). Specifically, a first meta-analysis revealed joint engagement of core network regions during episodic memory and episodic simulation. These include parts of the medial surface, the hippocampus and parahippocampal cortex within the medial temporal lobes, and the lateral temporal and inferior posterior parietal cortices on the lateral surface. Both capacities also jointly recruited additional regions such as parts of the bilateral dorsolateral prefrontal cortex. All of these core regions overlapped with the default network. Moreover, it has further been suggested that episodic simulation may require a stronger engagement of some of the core network's nodes as wells as the recruitment of additional brain regions supporting control functions. A second ALE meta-analysis indeed identified such regions that were consistently more strongly engaged during episodic simulation than episodic memory. These comprised the core-network clusters located in the left dorsolateral prefrontal cortex and posterior inferior parietal lobe and other structures distributed broadly across the default and fronto-parietal control networks. Together, the analyses determine the set of brain regions that allow us to experience past and hypothetical