

Memory retrieval of complex and naturalistic episodes

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Rich contextual associations are ought to characterize episodic memory, but the majority of the paradigms employed to understand this fundamental brain function still rely on relatively simple and stereotyped conditions. Here I will present a series of innovative approaches that aim to generate complex and naturalistic episodes by using cinematographic material, active exploration of virtual environments or Smartphone technology. Following encoding in these complex conditions, we use behavioral tests and functional neuroimaging to investigate memory retrieval, asking how the different episode's dimensions - what, where, when, plus context structure - contribute to the retrieval process. Our results point to a central role of the precuneus and the inferior parietal lobe, where retrieval-related activation is sensitive to the multiple dimensions that characterize naturalistic episodes. Albeit still somewhat exploratory, ecological experiments provide us with a new perspective about the role of contextual information for memory formation and retrieval, and will contribute to the understanding of memory functioning in real-life situations.