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Reinstatement of Old Memories and Integration with New Memories

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Abstract

The acquisition of new knowledge relies on our ability to connect old information to new information using semantic networks. This process can be referred to as memory integration. In this study, we investigated how such integration may aid memory reactivation, defined as the retrieval of previously encoded information. In addition, we were interested in whether congruency (or semantic similarity) between two separately learned associations (AB-AC) enhances memory integration. University students learned congruent and incongruent AB-AC associations in an fMRI scanner and reported subjective reactivation. In addition to a behavioral score, we measured the degree of neural activity in the PPA to test for potential effects of reinstatement (neural reactivation) using the multivoxel pattern analysis (MVPA) technique. Our analyses revealed a robust effect of memory reactivation (behaviorally) and reinstatement (neurally). An effect of congruency was also found behaviorally, but was not evident in the PPA.