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Cognitive and Neural Origins of Persistent Mental Content

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Abstract

Some thoughts and experiences persist in our minds. For example, topics discussed earlier remain fresh in mind and may persist for minutes after the end of a conversation. What cognitive and neural mechanisms underlie this mental persistence? We quantified persistent content by asking participants to generate word chains before and after reading an immersive story and measuring how related generated words were to the story. Across a series of behavioral and one fMRI study, we found that content persisted in mind after reading even if participants had performed an intervening distractor task such as theory of mind reasoning, triangle counting, or reading a new story. Furthermore, instructing participants to suppress story thoughts eliminated semantic biases in generated words, but not conscious thoughts about the story. We propose that persistent content arises from a slowly changing 'deep context' representation that continually biases memory retrieval.

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