A Visual Recall Paradigm to Assess Implicit Statistical Learning

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Abstract

Implicit statistical learning, whereby regularities between stimuli are detected without conscious awareness, is important for language acquisition. This form of learning has often been assessed using measures that require conscious decision making or explicit reflection (e.g., 2AFC tasks). We aimed to measure statistical learning more implicitly. We leveraged the fact that frequently co-occurring stimuli may be chunked into a single cognitive unit, reducing working memory demands. We developed an artificial grammar in which sequences contained pairs of stimuli which always co-occurred (chunks) and more variable between-chunk transitions. In a novel visual recall paradigm, participants were asked to remember and recreate sequences of serially presented images. Recall of predictable sequences improved over the course of the experiment. However, recall dropped to initial levels when participants were presented with random sequences containing no predictable chunks. This approach represents a valuable method to measure statistical learning implicitly, without requiring conscious reflection.