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# Learning and Memorization of a Multi-modality and Multi-cue Sequence

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Statistical learning allows us to detect and acquire different types of regularities from the environment but how multiple regularities could be integrated and learnt across time remain uncertain. This study set out to examine the multidimensional capacity and learning phases of statistical learning. We exposed 40 healthy adults to an audio-visual sequence with both conditional and distributional cues in a serial reaction time (SRT) task. The SRT task consisted of multiple exposure phases (initial, middle, and final), with each followed by a random block. Our results demonstrated that the participants could implicitly learn the multi-regularity sequence from each of the exposure phases. However, the amount of learning from the initial and middle phases was smaller than that from the final phase. We further showed that the participants could simultaneously acquire and maintain some but not all statistical information. Therefore, these results suggested that statistical learning could be implicitly operated across modalities to learn multiple regularities but there were some constraints. Particularly, the difference in the amount of learning between phases and that between regularities might be accounted for by a multi-component neuro-cognitive mechanism underlying statistical learning.

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