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The role of top-down attention in statistical learning of speech

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Abstract

Statistical learning (SL) refers to the ability to extract regularities in the environment and has been well-documented to play a key role in speech segmentation and language acquisition. Whether SL requires top-down attention is an unresolved question. The current study examined whether SL can occur outside the focus of attention. Participants either focused or diverted their attention away from a heard nonsense language. Visual attention was taxed by requiring tracking of multiple randomly moving dots. Linguistic attention was taxed through a self-paced reading task. SL was assessed with an explicit familiarity rating task, and an implicit reaction-time (RT) based memory task. Explicit learning was only reduced when linguistic resources were taxed, but unimpaired when visual resources were taxed. On our implicit measure of SL, learning was unimpaired when attention was taxed. These results suggest implicit aspects of SL to be more robust to an attention diversion as compared to explicit aspects of SL. Findings suggest L2 learners may engage in demanding visual tasks, as well as offer insight into the neurocognitive underpinnings of SL.