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The influence of mismatched network topologies on learning across levels of the language hierarchy

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Abstract

We test here the two-way influence of word and sentence level network topologies on learning. Participants viewed a self-paced stream of "letters" in the form of novel glyphs. Glyphs were shown individually with words separated by spaces and sentences denoted with a prompt. In one condition, streams were generated via a walk along a scale-free graph at both levels, with nodes corresponding to either single glyphs (word level) or single words (sentence level). In a mismatched condition, sentences were generated from a graph with a scale-free degree distribution and words were instead generated from a random graph. After exposure to the streams, participants completed familiarity judgments on words and sentences. Interestingly, performance on the word test was enhanced for participants exposed to mismatched topologies. Future work will tease apart whether: (1) contrasting topologies boost learning; or (2) words that do not display scale-free degree distribution are inherently easier to learn.