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How the Systematicity of Relational Language Affects the Learning of a Compositional System via Changing Attention

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Abstract

It is well established that relational language with different structures (e.g., “top, middle, bottom” used together are more systematic than “on, in, under”) can lead to differences in learners’ relational representations. However, the underlying mechanism or processes are less specified. We advance the “language systematizes attention hypothesis” through two eye-tracking experiments in which undergraduate students learn to map novel spoken artificial language (object names + relational terms) to novel visual configurations (shapes + relative locations). Participants either heard more systematic relational terms (consistently referring to relative spatial locations) or less systematic relational terms (probabilistically referring to relative spatial locations). Results confirmed that more systematic relational language elicits more selective and sustained attention patterns in learners, compared to less systematic language. However, the benefit in behavioral accuracy depends on the task difficulty. Findings have implications for how to structure language to guide attention and enhance learning outcomes.