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Learning the internal structure of novel categories

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Abstract

How do we learn the internal feature co-occurrence structure of a new category? We constructed novel animal categories using a network science framework in order to examine category structure learning. Two categories were defined by distinct graph structures in which nodes corresponded to features (e.g., bushy tail, black fur) and edges captured within-category feature co-occurrences. The graphs contained isomorphic core structures, in which certain features occurred in all category exemplars. In a high-modularity graph, additional features formed clusters of co-occurring features, whereas in the low-modularity graph additional features were randomly distributed. Participants learned about these categories in a missing-feature task which probed different kinds of category structure knowledge. Though core structure was identical across categories, core structure was better learned in the high- relative to low-modularity category. This suggests that learning features of a new category is influenced by the global structure of the concept.

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