Abstraction and Generalization: Comparing Adaptive Models of Categorization

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Abstract

Between prototype and exemplar models of categorization lie adaptive models, which represent categories using a varying number of reference points. They regulate the amount of abstraction they make depending on the category structure. Motivated by ecological considerations, we investigate whether adopting such adaptive strategies could improve generalization in realistic environments. We compare performance of four adaptive models: RMC, SUSTAIN, REX, VAM with that of prototype and exemplar models on three artificial and three natural category structures. Both the exemplar model with adapted sensitivity parameter and VAM perform well on category structures requiring different amount of abstraction. Our results confirm the importance of the link between abstraction and generalization.