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The role of exploration in the development of category learning

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Abstract

Categorization is a critically important aspect of cognition that undergoes development. Previous studies found that children of age four acquired categories through multiple features, forming a similarity-based representation, whereas adults relied on a single feature, forming a rule-based representation. One possible interpretation is that children cannot inhibit the distraction of multiple features. We designed a categorization task with all features covered in the present study. Children were asked to uncover one feature at a time until they could categorize the items. As a result, we minimized distraction and encouraged rule-based learning. Nonetheless, even when given incentives to uncover fewer features, children learned the categories with significantly higher entropy, as calculated by the number of features they uncovered, than adults did. Such a result suggests that inhibition failures cannot fully explain categorization in children. Instead, children's tendency to over-explore (and thus over-sample features) may also contribute to early category learning.

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