Identifying the structure of hypotheses that guide search during development

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Abstract

People use hypothesis-driven search to learn about novel concepts, favoring information sources that reduce uncertainty across a set of hypotheses about a target concept. We used childrens information search to investigate their reliance on two types of hypothesis spaces: exemplar-based representations or a hierarchical hypothesis space based on cue abstraction. Five- to seven-year-olds learned to rank monsters according to a hierarchical decision rule involving two cues (shape and color). Children generated evidence by selecting pairs of monsters and observing which one ranked higher; they were then tested on whether they learned the decision rule and correct ranking. A comparison of exemplar-based and cue-based Bayesian models revealed that all children made search decisions predicted by the exemplar-based model, but older children could use collected evidence to infer the underlying hierarchical structure. These results suggest a dissociation between the representations used to drive search and to make inferences from evidence during development.