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Conceptual Change During Recursive Pattern Learning in Children and Adults

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Abstract

There are two hypotheses about complex pattern processing: one proposes that people are predisposed towards simple, local patterns; the other proposes that prefer more complex hierarchical patterns. Children and adults can both learn to preferentially generate hierarchical sequences. One unanswered question is whether children and adults generate complex patterns spontaneously. We investigated the predispositions or inductive biases of human children and adults in a novel open-ended sequence generation task. We found that children and adults display strong biases to generate simple patterns. Both groups overcome this inductive bias by generating more complex patterns in subsequent learning tasks. However, children find it more difficult to override their biases. Our results suggest that people possess an inductive bias towards simple patterns that are well-organized but minimally hierarchical. With some experience, humans learn complex hierarchical patterns. These findings reveal substantial encoding flexibility for patterns in humans—a flexibility beginning in childhood.