

Elementary school children can learn evolutionary concepts that stump adults, new study finds

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Credit: Marta Wave/Pexels

Story time took on a whole new twist in a recent study by UTM psychology professor Samuel Ronfard.

Working with collaborators Sarah Brown, Erin Doncaster, and Deborah Kelemen from the Department of Psychological and Brain Sciences at Boston University (BU), Ronfard and his colleagues used storybooks to teach [elementary school children](#) how new [species](#) evolve. The researchers examined whether [children](#) could learn, apply, and retain that understanding over time.

The study, "Inhibiting intuition: Scaffolding children's theory construction about [species evolution](#) in the face of competing explanations," is part of BU's Evolving Minds Project funded by the National Science Foundation, and was just published in *Cognition*.

"Our research project examined children's ability to construct an accurate account of natural selection at the between-species level, that is, in relation to the evolution of new species," says Ronfard, who is the lab director at UTM's Childhood Learning and Development Lab.

"This is a really hard concept to learn. Even adults struggle with learning it because it goes against our intuitions about species—the idea that species members possess a special unchanging essence that makes them what they are."

Study participants were seven- and eight-year-old children.

"When we embarked on this study, we could not find trade books that provided an accurate description of the process of adaptation and speciation at the elementary school level," says Ronfard. "By designing our own books about novel animals we could create storybooks that built on one another and continued the evolutionary story of one species. We were also able to keep the illustrations simple to support the explanations described in the narrative text and control children's knowledge about the animals."

Although concepts like natural selection aren't introduced until high school, Ronfard and his colleagues showed that elementary school children can overcome their intuitions about species and learn an accurate explanation for the process of speciation that focusses on variability within a species over time. Their findings demonstrated that even young children can engage in challenging and complex conceptual change when it is presented in this format.

"Our work suggests that instruction on certain hard-to-learn concepts like the evolution of [new species](#) should start earlier than it currently does because earlier instruction allows children to construct a scientifically accurate understanding of complex scientific processes before intuitive but incorrect explanations take root and entrench themselves," Ronfard says.

More information: Samuel Ronfard et al. Inhibiting intuition: Scaffolding children's theory construction about species evolution in the face of competing explanations, *Cognition* (2021). [DOI: 10.1016/j.cognition.2021.104635](#)

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