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Growing knowledge culturally across generations to solve novel, complex task

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Abstract

Knowledge built culturally across generations rests on language, but the power and mechanisms of language as a means of cultural learning are not well understood. We take a first step towards reverse-engineering cultural learning through language. We developed a suite of complex, high-stakes video games, which we deployed in an iterated learning paradigm. Game participants were limited to only two attempts (lives) per game, after which they wrote a message to a future participant who read the message before playing. Knowledge accumulated gradually across generations, with later generations advancing further in the games while performing more efficient actions, in a manner strikingly similar trajectory to the learning trajectories of isolated, immortal individuals. These results suggest that language is sufficient to accumulate diverse repertoires of knowledge acquired in these tasks. The video game paradigm is thus a rich test-bed for theories of cultural transmission and learning from language.