

Humans appear hardwired to learn by 'over-imitation'

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Adult retrieves turtle from puzzle box as part of experiment that determined children "over-imitate" adult behavior. Credit: Yale Department of Psychology

Children learn by imitating adults—so much so that they will rethink how an object works if they observe an adult taking unnecessary steps when using that object, according to a Yale study today in *Proceedings of the National Academy of Sciences*.

“Even when you add time pressure, or warn the children not to do the unnecessary actions, they seem unable to avoid reproducing the adult’s irrelevant actions,” said Derek Lyons, doctoral candidate, developmental psychology, and first author of the study. “They have already

incorporated the actions into their idea of how the object works.”

Learning by imitation occurs from the simplest preverbal communication to the most complex adult expertise. It is the basis for much of our success as a species, but the benefits are less clear in instances of “over-imitation,” where children copy behavior that is not needed, Lyons said.

It has been theorized that children over-imitate just to fit in, or out of habit. The Yale team found in this study that children follow the adults’ steps faithfully to the point where they actually change their mind about how an object functions.

The study included three-to-five-year-old children who engaged in a series of exercises. In one exercise, the children could see a dinosaur toy through a clear plastic box. The researcher used a sequence of irrelevant and relevant actions to retrieve the toy, such as tapping the lid of the jar with a feather before unscrewing the lid.

The children then were asked which actions were silly and which were not. They were praised when they pinpointed the actions that had no value in retrieving the toy. The idea was to teach the children that the adult was unreliable and that they should ignore his unnecessary actions.

Later the children watched adults retrieve a toy turtle from a box using needless steps. When asked to do the task themselves, the children over-imitated, despite their prior training to ignore irrelevant actions by the adults.

“What of all of this means,” Lyons said, “is that children’s ability to imitate can actually lead to confusion when they see an adult doing something in a disorganized or inefficient way. Watching an adult doing something wrong can make it much harder for kids to do it right.”

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