

Young infants' imitation not guided by rational thinking

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The model before performing the head touch action in the hands-occupied and hands-occupied familiarization condition (A), the hands-free condition (B), and the hands-free distraction condition (C). Credit: MPI for Human Cognitive and Brain Sciences.

In a widely noticed study, developmental psychologists reported that 14-month-old infants imitate an unusual action if it was chosen deliberately by the person they observed, but not if it could be attributed to external constraints. This selective imitation was put forth as evidence for an early understanding of rational action and action goals. Scientists at the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig now present a much simpler explanation for the finding. A replication study revealed that the observed differences in imitation were likely caused by a distraction during the experiments.

Infant imitation is a key factor in early learning and has been studied by developmental psychologists for a long time. In 2002, a study published in the [journal Nature](#) seemingly showed astonishing [cognitive abilities](#) in children that were only 14 months old. In the experiment, a child would

observe an adult performing the unconventional action of illuminating a lamp by touching it with the head. Being presented with the lamp later on, 70 percent of the children would copy this curious behaviour – but only if the hands of the person were free during the observed action. If the hands were occupied by holding a blanket wrapped around the body, which was before worn loosely over the shoulders, imitation rates dropped to around 20 percent.

This result has been explained with the children evaluating the rationality of the model's actions. Had the model freely chosen to use her head for illuminating the lamp, they may have assumed that there must be good reasons for it. But if the model acted under obvious constraints that they themselves did not have, there was no reason to imitate. It seemed that infants were able not only to understand the goals but also to follow the situational context of the observed behaviour.

This interpretation may now have to be revised, due to a factor that had previously not been taken into account. "The eye-catching sight of the person wrapped in a blanket may have distracted infants from the action they were observing", says Miriam Beisert of the Research Group "Infant Cognition and Action". To test if the outcome of the experiment was indeed influenced, the scientists replicated the original study, but added two additional conditions.

One alteration underlined how much eye-catching distractions influenced the children's response: When two red Smileys were put on the table before the experiment, imitation of the "hands-free"-condition dropped considerably. In order to reduce [distraction](#) during the second condition, the children were given time to familiarize themselves with the sight of the blanket in a five-minute warm-up phase, which preceded the demonstration of the head touch action. The imitation rate went up to around 70 percent, showing that it made no actual difference whether the model person's hands were free or not.

"Assuming rational imitation, seeing the blanket-wrapped person for a longer time should have, if anything, resulted in an even lower imitation rate", says Moritz Daum, head of the research group. "With these results, rational thinking can be ruled out as a reason for children's selective [imitation](#) at this age."

More information: Beisert M, Zmyj N, Liepelt R, Jung F, Prinz W, et al. (2012) Rethinking 'Rational Imitation' in 14-Month-Old Infants: A Perceptual Distraction Approach. *PLoS ONE* 7(3): e32563. [doi:10.1371/journal.pone.0032563](https://doi.org/10.1371/journal.pone.0032563)

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