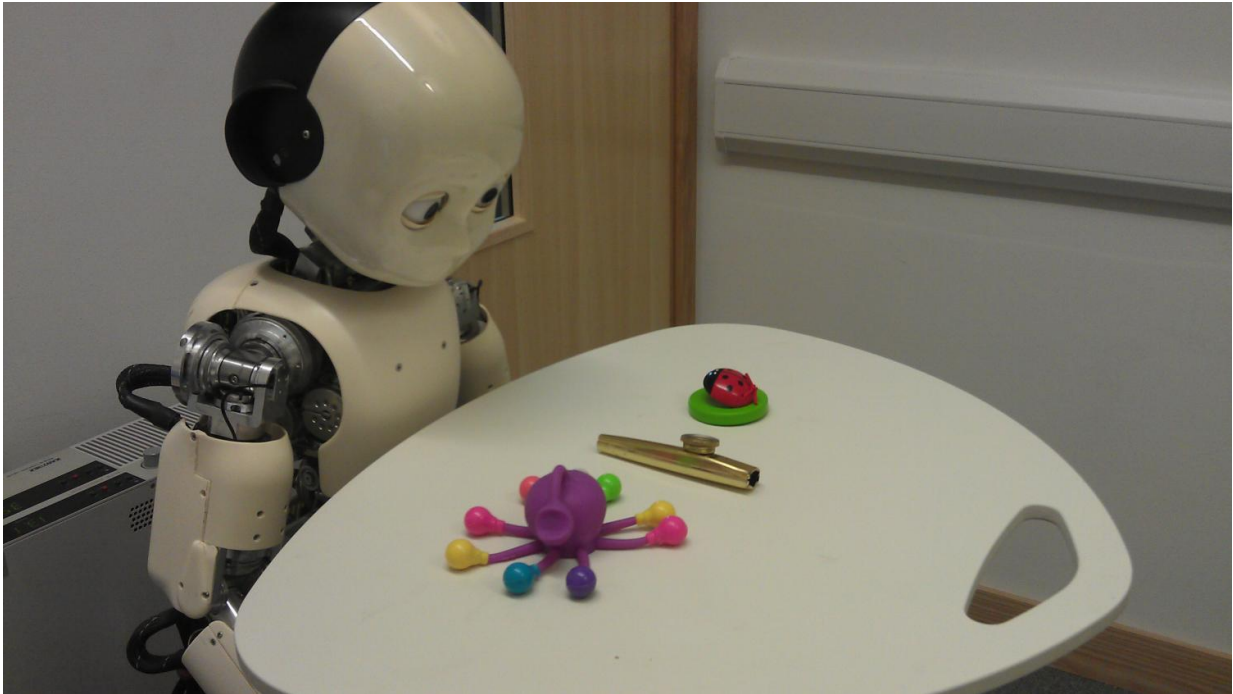


Toddler robots help solve how children learn

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A robot toddler. Credit: Lancaster University

Children learn new words using the same method as robots according to psychologists.

This suggests that [early learning](#) is based not on conscious thought but on an automatic ability to associate objects which enables babies to quickly make sense of their environment.

Dr Katie Twomey from Lancaster University, with Dr Jessica Horst from Sussex University, Dr Anthony Morse and Professor Angelo Cangelosi from Plymouth wanted to find out how [young children](#) learn new [words](#) for the first time. They programmed a humanoid robot called iCub designed to have similar proportions to a three year old child, using simple software which enabled the robot to hear words through a microphone and see with a camera. They trained it to point at new objects to identify them in order to solve the mystery of how young children learn new words.

Dr Twomey said: "We know that two-year-old children can work out the meaning of a new word based on words they already know. That is, our toddler can work out that the new word "giraffe" refers to a new toy, when they can also see two others, called "duck" and "rabbit"."

It is thought that toddlers achieve this through a strategy known as "mutual exclusivity" where they use a process of elimination to work out that because the brown toy is called "rabbit", and the yellow toy is called "duck", then the orange toy must be "giraffe".

What the researchers found is that the robot learned in exactly the same way when shown several familiar toys and one brand new toy.

Dr Twomey said: "This new study shows that mutual exclusivity behaviour can be achieved with a very simple "brain" that just learns associations between words and objects. In fact, intelligent as iCub seems, it actually can't say to itself "I know that the brown toy is a rabbit, and I know that that the yellow toy is a duck, so this new toy must be giraffe", because its software is too simple.

"This suggests that at least some aspects of early learning are based on an astonishingly powerful association making ability which allows babies and toddlers to rapidly absorb information from the very complicated

learning environment."

More information: Katherine E. Twomey et al. Children's referent selection and word learning, *Interaction Studies* (2016). [DOI: 10.1075/is.17.1.05two](https://doi.org/10.1075/is.17.1.05two)

Provided by Lancaster University

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