

Preschoolers use statistics to understand others

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Children are natural psychologists. By the time they're in preschool, they understand that other people have desires, preferences, beliefs, and emotions. But how they learn this isn't clear. A new study published in *Psychological Science*, a journal of the Association for Psychological Science, finds that children figure out another person's preferences by using a topic you'd think they don't encounter until college: statistics.

In one experiment, [children](#) aged 3 and 4 saw a puppet named "Squirrel" remove five toys of the same type from a container full of toys and happily play with them. Across children, the toys that Squirrel removed were the same (for example, all five were blue flowers). What varied, however, were the contents of the container. For one-third of the children, 100 percent of the toys were the same type (so, in this example, all were blue flowers). For another third of the children, only 50 percent were that type (that is, half were blue flowers and half were red circles). Finally, for the last third of the children only 18 percent were of that type (that is, 82 percent were red circles). Later on, children were asked to give Squirrel a toy that he likes. The children were more likely to give Squirrel the blue flowers if he had selected them out of the container that had other toys in it.

More amazingly, the proportion of other toys mattered as well; they gave Squirrel the blue flowers more when the container included only 18 percent blue flowers, and slightly less often when the container had 50 percent blue flowers. When the container had 100 percent blue flowers, they gave him toys at random. That means the child inferred that the

puppet liked blue flowers best if the sample of five toys didn't match the proportion of toys in the population (the container). This is a statistical phenomenon known as non-random sampling.

In another experiment, 18- to 24-month-olds also learned about the preferences of an adult experimenter from non-random sampling. They watched the adult choose five toys that were either 18 percent or 82 percent of the toys in a box. The adult played happily with the toy either way, but the toddler only concluded that the adult had a preference if they'd picked the [toys](#) from a box in which that toy was scarce.

Of course, statistical information isn't the only way children learn about the preferences of other people. Emotion and verbalization are also important—but this is a new cue that no one had identified before, says Tamar Kushnir of Cornell University. She carried out the study with Fei Xu of the University of California, Berkeley and Henry M. Wellman of the University of Michigan.

"Babies are amazing," says Kushnir. "Babies and children are like little scientists. Mostly they learn by observing and experiencing the world. Just let them do it. Later on, there will be time for formal instruction, but when they're really young, this sort of informal learning is critical."

Provided by Association for Psychological Science

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