

# Young toddlers can tell when others hold false beliefs, study finds

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University of Illinois professor Renée Baillargeon and her colleagues found that young children know when others hold false beliefs. Credit: Photo by L. Brian Stauffer

A new study finds that, under the right conditions, 2 1/2-year-old

children can answer questions about people acting on false beliefs, an ability that most researchers believe does not develop until age 4.

The results are reported in the *Proceedings of the National Academy of Sciences*.

"Having the ability to represent false beliefs means recognizing that others can have different thoughts from us," said Peipei Setoh, who, as a [graduate student](#), conducted the study with University of Illinois psychology professor [Renée Baillargeon](#) and fellow graduate student Rose Scott. Setoh is now a professor at Nanyang Technological University, Singapore.

Young [children](#)'s understanding of others' false beliefs is at the heart of a debate among psychologists trying to explain years of inconsistent findings. Some think that [false-belief](#) understanding develops at age 4, when children can answer direct questions about it. Others, including Baillargeon, believe the tests psychologists traditionally use are too difficult for young children to successfully demonstrate their understanding of how others view the world.

"The field is very divided and we are trying to reconcile all of the evidence," Baillargeon said.

In the study, she and her colleagues found that 30- and 33-month-old toddlers were able to successfully demonstrate false-belief understanding using a modified version of a well-known test.

Called the Sally-Anne test, the experiment evaluates a child's expectations of how someone will act based on that person's false beliefs. If Sally hides a toy in a basket before she leaves the room, when she returns she expects the toy to be where she left it, in the basket. If her friend Anne moves the toy from the basket to a box while Sally is

away, Sally will still think the toy is in the basket when she returns. Someone observing this scene will expect Sally to act on that false belief.

When directly asked about the expected location in this test, 4-year-old children are able to correctly identify the basket. However, younger children respond with the actual, and not the expected, location of the toy.

Baillargeon's previous research shows that children's nonverbal behavior - for example, looking longer when something unexpected happens - confirms that they understand others' false beliefs, even though the children are unable to verbally convey it in the traditional test.

She hypothesizes that toddlers fail at traditional false-belief understanding tests because the test design overwhelms their ability to pay attention and respond appropriately. To address this flaw, she developed a simpler version of the Sally-Anne test, in which she uses a character named Emma. In the traditional task, when asked the direct question about where Sally will look for her toy, young children struggle to suppress information they have about the actual versus expected location. In Baillargeon's new version of the test, Emma's toy is moved to an unknown location completely out of the scene.

"It's much easier to inhibit or suppress that response when you don't know where the toy actually is," Baillargeon said.

The new approach also gives children a chance to prepare for the test question by giving them two practice questions.

With these modifications to the test, both 30- and 33-month-old toddlers are able to tell researchers where Emma will look for the object, verbally demonstrating their understanding that Emma has a false belief about the object's location.

Baillargeon and her colleagues found that 33-month-old toddlers, but not 30-month-olds, were able to answer correctly when given two practice trials that were different from the [test](#) trial. Receiving only one practice trial foiled all of the toddlers however, as did having the object moved to another hiding location in the scene and not taken away.

"What we are showing is that a little bit of practice goes a long way," Baillargeon said. Other researchers have reported that children with more exposure to talking about other's mental states - including children with more siblings, or better language ability - perform better on the traditional Sally-Anne task.

"Practice will increase the range of tasks where you can show false-belief understanding, because you won't be taken so much by surprise with the question," she said.

With her ongoing research, Baillargeon hopes to identify the necessary conditions for [young children](#) to succeed at more difficult versions of false-belief tests.

**More information:** Peipei Setoh et al, Two-and-a-half-year-olds succeed at a traditional false-belief task with reduced processing demands, *Proceedings of the National Academy of Sciences* (2016). [DOI: 10.1073/pnas.1609203113](#)

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