

Babies remember even as they seem to forget

December 19 2011

Fifteen years ago, textbooks on human development stated that babies 6 months of age or younger had no sense of "object permanence" – the psychological term that describes an infant's belief that an object still exists even when it is out of sight. That meant that if mom or dad wasn't in the same room with junior, junior didn't have the sense that his parents were still in the world.

These days, psychologists know that isn't true: for young babies, out of sight doesn't automatically mean out of mind. But how much do babies remember about the world around them, and what details do their brains need to absorb in order to help them keep track of those things?

A new study led by a Johns Hopkins psychologist and child development expert has added a few pieces to this puzzle. Published in a recent issue of the journal [Psychological Science](#), the study reveals that even though very young babies can't remember the details of an object that they were shown and which then was hidden, the infants' brains have a set of built in "pointers" that help them retain a notion that something they saw remains in existence even when they can't see it anymore.

"This study addresses one of the classic problems in the study of infant development: What information do [infants](#) need to remember about an object in order to remember that it still exists once it is out of their view?" said Melissa Kibbe, a postdoctoral researcher in the Department of Psychological and Brain Sciences at the Krieger School of Arts and Sciences at Johns Hopkins, who collaborated with colleague Alan Leslie at Rutgers University on the study. "The answer is, very little."

The team found that even though infants cannot remember the shapes of two hidden objects, they are surprised when those objects disappear completely. The conclusion? Infants do, indeed, remember an object's existence without remembering what that object is.

This is important, Kibbe explains, because it sheds light on the brain mechanisms that support memory in infancy and beyond.

"Our results seem to indicate that the brain has a set of 'pointers' that it uses to pick out the things in the world that we need to keep track of," explains Kibbe, who did the majority of the work on this study while pursuing her doctorate in Leslie's laboratory at Rutgers. "The pointer itself doesn't give us any information about what it is pointing to, but it does tell us something is there. Infants use this sense to keep track of objects without having to remember what those objects are."

In addition, the study may help researchers establish a more accurate timeline of the mental milestones of infancy and childhood.

In the study, 6-month-olds watched as a triangle was placed behind a screen and then as a second object (a disk) was placed behind a second screen. Researchers then removed the first screen to reveal either the expected original triangle, the unexpected disk, or nothing at all, as if the triangle had vanished completely.

The team then observed the infants' reactions, measuring how long they looked at expected versus unexpected outcomes.

In the situation where the objects were swapped, the babies seemed to hardly notice a difference, Kibbe said, indicating that they didn't retain a memory of that object's shape. In their minds, a triangle and a disk were virtually interchangeable.

However, when one of the objects had disappeared, the [babies](#) were surprised and gazed longer at the empty space, indicating that they expected something to be where something was before.

"In short, they retained an inkling of the object," said Leslie, of Rutgers.

More information: *Psychological Science*:
pss.sagepub.com/content/22/12/1500

Provided by Johns Hopkins University

Citation: Babies remember even as they seem to forget (2011, December 19) retrieved 5 May 2024 from <https://medicalxpress.com/news/2011-12-babies.html>

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