

Give them a hand: Gesturing children perform well on cognitive tasks

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In the first study of its kind, SF State researchers have shown that younger children who use gestures outperform their peers in a problem-solving task.

The task itself is relatively simple—sorting cards printed with colored shapes first by color, and then by shape. But the switch from color to shape can be tricky for children younger than 5, says Professor of Psychology Patricia Miller.

In a new study due to be published in the August, 2013 issue of *Developmental Psychology*, Miller and SF State graduate student Gina O'Neill found that young children who gesture are more likely to make the mental switch and group the shapes accurately.

In fact, gesturing seemed to trump age when it came to the sorting performance of the children, who ranged from 2 and a half years old to 5 years old. In the color versus shape task, as well as one that asked children to sort pictures based on size and [spatial orientation](#), younger children who gestured often were more accurate in their choices than older children who gestured less. The children's [gestures](#) included rotating their hands to show the orientation of a card or using their hands to illustrate the image on the card, for example gesturing the shape of rabbits' ears for a card depicting a [rabbit](#).

"Gina and I were surprised by the strength of the effect. Still, the findings are consistent with a growing body of research showing that

mind and body work closely together in early [cognitive development](#)," Miller said.

"The findings are a reminder of how strong individual differences are among children of a particular age," she added. "Certain 3-year-olds look like typical 4-year-olds. This likely reflects an interaction of natural talent and particular experiences—both nature and nurture, as usual."

There is a growing body of research that suggests gesturing may play a significant role in the processes that people use to solve a problem or achieve a goal. These processes include holding information in memory, keeping the brain from choosing a course too quickly and being flexible in adding new or different information to handle a task.

Studies have shown that gesturing can help older children learn new math concepts, for example. "Really, though, there is evidence that gesturing helps with difficult cognitive tasks at any age," Miller said. "Even we adults sometimes gesture when we're trying to organize our tax receipts or our closets. When our minds are overflowing we let our hands take on some of the cognitive load."

O'Neill and Miller observed the children's spontaneous gestures as they performed the tasks, as well as gestures they were encouraged to make to explain their sorting choices. Both kinds of gestures were counted in comparing high and low gesturing children.

Children who did a lot of gesturing did better at the sorting task than those who didn't gesture as much—even when they did not use gesturing during the task itself, the researchers found. This makes it difficult to determine whether it's the gesturing itself that helps the children perform the task, or whether children who use a lot of gestures are simply at a more advanced cognitive level than their [peers](#). It is a question that Miller hopes to answer in further studies.

Miller said there is "quite a bit of evidence now that gestures can help children think," perhaps by helping the brain keep track of relevant information or by helping the brain reflect on the possibilities contained within a task. "In my opinion, children shouldn't be discouraged from gesturing when they want to gesture during learning," she said. "Adults sometimes—appropriately—say to children, 'use your words,' but some [children](#) may think this applies to all situations."

The study, "A Show of Hands: Relations between Young Children's Gesturing and Executive Function," will be published in the August, 2013 issue of the journal *Developmental Psychology*.

More information: "A Show of Hands: Relations between Young Children's Gesturing and Executive Function," *Developmental Psychology*.

Provided by San Francisco State University

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