



## Gesturing while talking helps change your thoughts, study finds

By [William Harms](#)  
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Sometimes it's almost impossible to talk without using your hands. These gestures seem to provide a visual clue to our thoughts, and a new theory suggests they may even change our thoughts by grounding them in action.

University of Chicago researchers [Sian Beilock](#), Associate Professor in Psychology, and [Susan Goldin-Meadow](#), the Beardsley Ruml Distinguished Service Professor in Psychology, are bringing together two lines of research: Beilock's work on how action affects thought and Goldin-Meadow's work on gesture.

For the study, detailed in "Gesture Changes Thought by Grounding it in Action" in the journal *Psychological Science*, Beilock and Goldin-Meadow had volunteers solve a problem known as the Tower of Hanoi, a game in which stacked disks have to be moved from one peg to another. Volunteers were later asked to explain their actions — which is virtually impossible without using one's hands. Then volunteers tried the task again, but there was a trick: For some people, the weight of the disks had secretly changed, such that the smallest disk, which used to be light enough to move with one hand, now needed both hands.

People who used one hand in their gestures when talking about moving the small disk struggled when that disk got heavier. They took longer to complete the task than people who used two hands in their gestures—and the more one-handed gestures they used, the longer they took. This shows that gesture affects thought. Goldin-Meadow and Beilock suggest that the volunteers had cemented how to solve the puzzle in their heads by gesturing about it (and were thrown off by the invisible change in the game).

In another version of the experiment, published in *Perspectives in Psychological Science*, the volunteers were not asked to explain their solution; instead, they solved the puzzle a second time before the disk weights were changed. But moving the disks didn't affect performance in the way that gesturing about the disks did. The people who gestured did worse after the disk weights switched, but the people who moved the disks did just as well as before.

"Gesture is a special case of action. You might think it would have less effect because it does not have a direct impact on the world," said Goldin-Meadow. But she and Beilock think it may actually be having a stronger effect, "because gesturing about an act requires you to represent that act." You aren't just reaching out and handling the thing you're talking about; you have to abstract from it, by moving your hands, Goldin-Meadow added.

In an article published in *Perspectives in Psychological Science*, "Action's Influence on Thought: The Case of Gesture," the two authors review the research on action, gesture and thought. Gestures make thought concrete, bringing movement to the activity that's going on in one's mind.

Goldin-Meadow and Beilock have been working on helping students to understand abstract concepts in mathematics, physics and chemistry by using gesture. "When you're talking about angular momentum and torque, you're talking about concepts that have to do with action," Beilock said. "I'm really interested in whether getting kids to experience some of these actions or gesture about them might change the brain processes they use to understand these concepts."

But even in math, in which concepts have little to do with action, gesturing helps children learn—perhaps because gestures themselves are grounded in action.



### PHOTOS



In order to understand gesture and thought, UChicago researchers had volunteers play the Tower of Hanoi, a game in which stacked disks have to be moved from one peg to another. Volunteers were later asked to explain how they did it — which is virtually impossible without using one's hands.



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The two conducted the experiments after a conversation at a conference with Ed Diener, the founding editor of *Perspectives on Psychological Science*.

The work was supported with grants from the National Institute of Child Health and Human Development and the National Science Foundation.

*The APS journals Psychological Science and Perspectives on Psychological Science are among the highest ranked journals in psychology. For copies of the articles "Gesture Changes Thought by Grounding It in Action" and "Action's Influence on Thought: The Case of Gesture," please contact Keri Chiodo at 202-293-9300 or [kchiodo@psychologicalscience.org](mailto:kchiodo@psychologicalscience.org).*

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