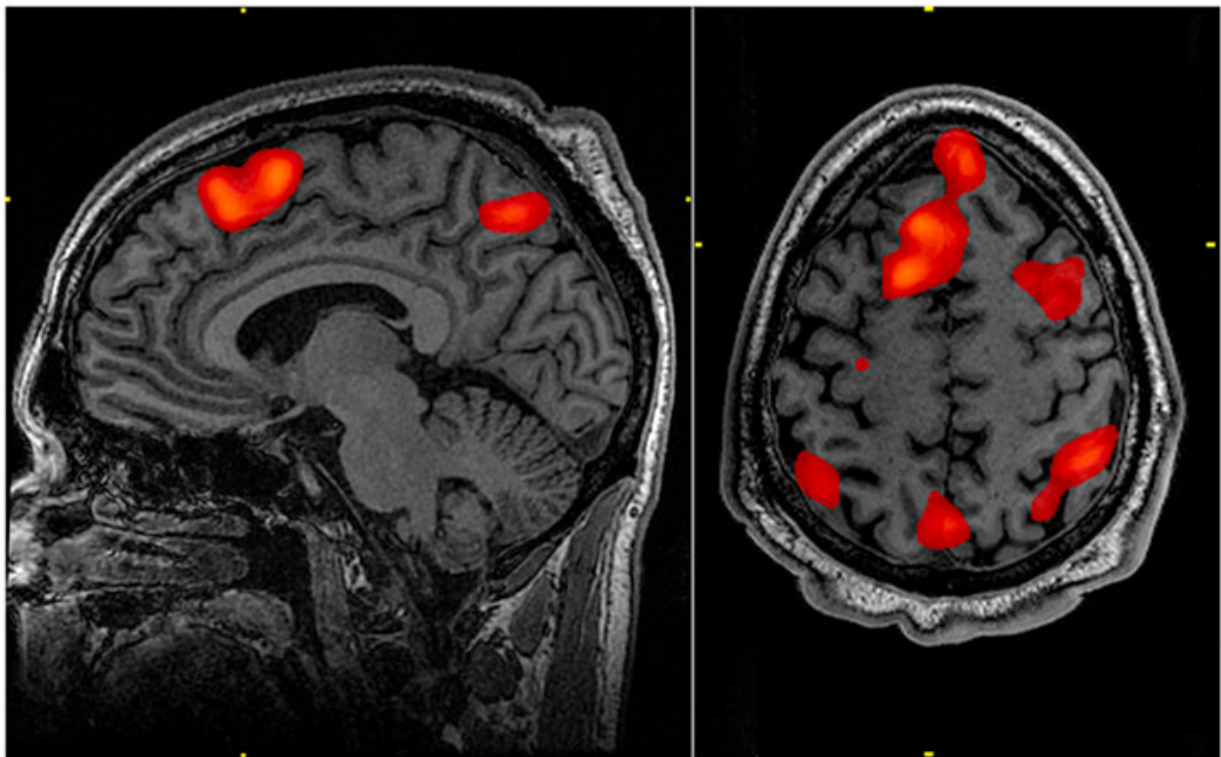


# It's not your fault—your brain is self-centered

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A functional MRI scan of a brain during working memory tasks, showing activity in the bilateral and superior frontal cortex as well as the superior bilateral parietal cortex. Credit: John Graner, Neuroimaging Department, Walter Reed National Military Medical Center (Rights Free)

You're in the middle of a conversation and suddenly turn away because you heard your name. Don't worry, you aren't rude.

Our minds automatically pull attention to our names in a crowded room and to our faces in photographs.

While this "cocktail party effect" of turning our attention toward self-related stimulation is well-known, scientists don't know if something similar happens inside our heads. If a particular idea is associated with our selves, so we think about it faster than other thoughts? By testing for this "self-referential bias" in working memory, Duke researchers are starting to understand how our brains make us naturally self-centered.

Their work appears in the March 1 edition of *Psychological Science*.

"People prioritize themselves in their minds," said senior author Tobias Egner, an associate professor in the Department of Psychology & Neuroscience. "The question is, how automatic is that prioritization? Is this something that you can't help? If so, that could really bias how you make decisions."

Working memory, sometimes called short-term memory, is "our interface with the world," said Egner, who is also a member of the Duke Institute for Brain Sciences. In order to read this sentence, for example, your working memory holds each word in temporary storage for a few seconds until you reach the period. "We use working memory to make complex decisions where we have to weigh different pieces of information and keep them in mind," Egner said. "If you always put self-related information first, then this bias could drive your decisions by weighting that information more strongly and outcompeting other things in your [short-term memory](#) when you evaluate different options."

To test for self-referential bias in working memory, the research team, a collaboration between Duke University, the University of Bath in the U.K. and Southwest University in China and funded by Chinese government grants, created a computer program and tested it on 102

### [study participants.](#)

First, participants learned to associate the colors blue, green and purple to labels of "friend," "stranger" or "self" with a simple game. Then, two different-colored dots, like green and purple, would briefly flash on the screen. After a five-second pause, during which participants had to remember the locations and colors of the previous dots, a black dot would appear on screen. Participants then indicated if the black dot flashed in the same place as one of the colored dots, and if so, which label fit.

Participants correctly identified the "self"-labeled dots significantly faster than the "friend" or "stranger" dots. That meant their working [memory](#) focused on the dots labeled with the "self" color.

"Imagine you keep two things in mind," Egner said. "If you're being tested for either one of those, and you reliably answer one faster than the other, then you're prioritizing it."

"Even though it's an arbitrary association of colors and locations that has nothing to do with you, and there's no point in you prioritizing one over the other for doing well at the task, we reliably show across four experiments that you're always faster to respond to the 'self'-reference cue."

In a variation of the experiment, the researchers made the "self"-labeled color appear half as often as the "stranger" or "friend" colors, to see if participants would still prioritize "self" even if it made them worse at the task.

"In spite of the fact that it would be much smarter for them to prioritize the other two, they are still faster with the 'self' color," Egner said. "That really suggests that there's automaticity there: we can't help but prioritize

the stimulus that's associated with ourselves."

Future research could include seeing if the effects hold with more difficult tasks, as almost all of the participants did each task correctly over the 80- to 100-minute trials.

They could test if people who prioritized "self" more than others make more selfish decisions, by pairing this experimental set-up with altruism experiments. Researchers could also find a "price" for this automatic selfishness, by paying participants different amounts for identifying "stranger" or "other" labels.

"You could differentially pay people for responding quickly to the different colors," Egner said. "Then you could literally figure out how much more to pay for the 'stranger' color than the 'self' color to get the same performance speed."

**More information:** Shouhang Yin et al, Automatic Prioritization of Self-Referential Stimuli in Working Memory, *Psychological Science* (2019). [DOI: 10.1177/0956797618818483](https://doi.org/10.1177/0956797618818483)

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