

Left and right brain hemispheres found to store memories differently in ants

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A pair of researchers at the University of Sussex in the U.K. has found that like many other creatures, ants store memories differently in their two brain hemispheres. In their paper published in the journal

Proceedings of the Royal Society B, Ana Sofia David Fernandes and Jeremy Niven describe Pavlovian-type experiments they conducted with ants and what they learned from them.

Prior research has shown that the human brain stores different kinds of memories in its two hemispheres—the left hemisphere retains verbal information, for example, while the right hemisphere tends store visual memories. Other research has shown that the brains of other animals also store memories differently in their hemispheres. Researchers in the field have called such differences lateralization. In this new effort, the researchers wondered if the same might be true for wood ants.

To learn more about how ant brains store memories, the researchers carried out an experiment that involved allowing ant specimens to touch and eat a droplet of sugar as they were shown a cue. Ants use their antennae to touch or smell an object to figure out if it is food. Thus, to train an ant to expect a treat, the researchers allowed them to touch a sugar droplet with their left antenna, their right antenna, both of them, or neither of them—all while being shown a blue object. The goal was to get the ants to respond to the sight of the blue object the way dogs did in Pavlov's experiments. Once the ants were trained, the researchers time-tested them on how they responded to seeing the object—at 10 minutes, an hour and then a day later.

The researchers found that when an ant was trained using just its right antenna, it demonstrated a strong response at 10 minutes, a weaker response after that, and no response for longer times. In sharp contrast, those [ants](#) that were trained using the left antenna showed no response at 10 minutes, or even after an hour. But the next day they had a strong response. The researchers suggest this is solid evidence for [short-term memory](#) being stored in the [right hemisphere](#) and long-term [memory](#) in the [left hemisphere](#).

More information: Lateralisation of short- and long-term visual memories in an insect, *Proceedings of the Royal Society B* (2020).
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