

Researchers find that some guppies can count

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Credit: Steve Harwood

The humble guppy may not look like the smartest fish in the school, but research conducted by Associate Professor Culum Brown, from the Department of Biological Sciences at Macquarie University, and colleagues from the University of Padova, has shown that they are far smarter than we thought. Their research, published in *Frontiers in Behavioural Neuroscience*, examined the ability of guppies to count.

"We found that guppies that have very strongly lateralised brains are better at counting than those that have non-lateralised brains," said Professor Brown.

Scientists have often wondered why humans and other animals have lateralised brains, where the two halves of their [brain](#) execute different

functions. In humans, for example, the left hemisphere is often associated with language and maths, while the [right hemisphere](#) is more artistic. One theory suggests that having strongly lateralised brains allows each hemisphere to analyse information separately.

"It's a bit like having a dual processor in a computer," explained Professor Brown. "Obviously information processing is far more efficient and faster if two processors can independently analyse two different sources of information simultaneously."

"Our experiments show that fish with strongly lateralised brains could differentiate between three versus four objects, both in natural and artificial contexts, whereas those with non-lateralised brains could only differentiate two versus three."

Keeping track and comparing sets of objects containing four items seems to be the upper limit of most animals; after this animals (including humans) switch to an alternative system that relies on ratios when comparing sets. This latter method is faster but less accurate.

There are lots of reasons why it might be important for animals to keep track of objects or accurately compare sets.

"Imagine a scenario where one pack of wolves faces another in a territorial dispute. The smaller pack is much less likely to win and should back down if they are out-gunned. When faced with a predator guppies must chose the largest shoal to join because there is safety in numbers," said Professor Brown.

The results suggest that animals with strongly lateralised brains would have an advantage in these contexts and may well explain why other [animals](#), like us humans, have evolved lateralised brains.

More information: Marco Dadda et al. Laterality enhances numerical skills in the guppy, *Poecilia reticulata*, *Frontiers in Behavioral Neuroscience* (2015). [DOI: 10.3389/fnbeh.2015.00285](https://doi.org/10.3389/fnbeh.2015.00285)

Provided by Macquarie University

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