Birds display lateralization bias when selecting flight paths

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Flocks of birds manage to navigate through difficult environments by individuals having predispositions to favour the left- or right-hand side, according to research published in *PLOS Computational Biology* this week.

Scientists at The University of Queensland's Queensland Brain Institute (QBI) and the Australian Research Council Centre of Excellence in Vision Science found that budgerigars display individual bias to fly to the left or right. This allows flocks to quickly navigate past obstacles by being able to split and not slow down due to crowding.

Dr Partha Bhagavatula, the study's first author, says:

"We were looking at finding out how birds decide to navigate, because they're very good at travelling through environments with narrow gaps such as dense bush and forests quickly and without collisions."

Researchers flew the budgerigars down a tunnel where they were met by an obstacle, and a choice of two paths to fly through. Sometimes the paths were of equal size, and sometimes one would be bigger than the other.

"By giving birds the choice of flying left or right, through a pair of two adjacent openings, we were able to see that they displayed individual preferences," Dr Bhagavatula said.

Some birds had no bias and would choose the wider gap every time, while others with a distinct bias preferred going to one side, even if it was significantly narrower than the alternative.

"This is very interesting and unexpected – because it's generally expected for an animal species to have one dominant side that they prefer, so we theorised why this is the case," Dr Bhagavatula commented.

Project leader Professor Mandyam Srinivasan says that more investigations need to be done on this by flying the birds in groups, and seeing how individuals behave in a group dynamic, and whether they maintain those preferences when flying in a flock.

"What's remarkable is that birds display a lateralisation bias in one task, such as route choice, but will have a bias for another task, such as what side they land on a perch, or what leg they favour to land on," Professor Srinivasan said.

"This shows how complex animal thought can be, and essentially we're throwing a spanner in the works with research such as this," he said.

More information: Bhagavatula PS, Claudianos C, Ibbotson MR, Srinivasan MV (2014) Behavioral Lateralization and Optimal Route Choice in Flying Budgerigars. *PLoS Comput Biol* 10(3): e1003473. DOI: 10.1371/journal.pcbi.1003473

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