

Schooling fish: Wild zebrafish assess risk through social learning

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Sarah Zala and Dustin Penn from the Konrad Lorenz Institute of Ethology of the University of Veterinary Medicine, Vienna investigated whether zebrafish use social learning to assess risk. They found that wild zebrafish, which are more timid than their domesticated counterparts, became emboldened after interacting with domesticated zebrafish. The opposite did not occur, however. The study is published in the current issue of the journal *Animal Behavior*.

Individuals in some species learn information about food, [predators](#), and potential mates indirectly from conspecifics, without taking unnecessary risks by learning directly for themselves ('social learning'). Sarah Zala and Dustin Penn from the Konrad Lorenz Institute of [Ethology](#) of the University of Veterinary Medicine, Vienna investigated whether zebrafish use social learning to assess risk ('boldness/shyness' behaviour). They found that wild zebrafish, which are more timid than their domesticated counterparts, became emboldened after interacting with domesticated zebrafish. The opposite did not occur, however. When the bolder domesticated zebrafish came in contact with wild zebrafish, they did not become more cautious.

To test fish disposition, the [scientists](#) scored "[boldness](#)" as the response to a moving object. If fish approached the object relatively closely, they were classified as "bold", while those who tended to stay at the back of the tank were considered "shy". When the [wild fish](#) were allowed to interact with bolder domesticated fish, they became less likely to avoid the moving object.

These results confirm the researchers' hypothesis that zebrafish use social learning for assessing risk: they observe other individuals' behaviour, and change their own behaviour accordingly. The findings also indicate that zebrafish adapt their social-learning strategies to the costs of a perceived risk, as the domesticated bold fish did not change their behaviour after interacting with the shy fish.

"When a zebrafish moves a few centimetres closer to an unfamiliar object than its buddies it may not seem like a big deal to human observers," says Sarah Zala, "but 3 cm is about one fish length and in nature might mean exposing the fish to a predatory attack. So in reality, from the fish's point of view, he is taking a big chance."

The researchers also investigated whether zebrafish adapt their behaviour to conform to the behaviour of a larger group ('social conformity'), but found no evidence for this hypothesis. Future studies should be able to utilize this model species to incorporate genetic and genomic tools to study the development and evolution of [social learning](#).

More information: The article "Different social-learning strategies in wild and domesticated zebrafish, *Danio rerio*" by Sarah M. Zala, Ilmari Määttänen, and Dustin J. Penn is published in the June 2012 issue of the journal *Animal Behaviour* (83 (2012) pp. 1519-1525 [DOI: 10.1016/j.anbehav.2012.03.029](#)).

Provided by University of Veterinary Medicine -- Vienna

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