

# Is anxiety contagious? Surprising research finds common stress levels in social groups

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(PhysOrg.com) -- Anxiety, or the reaction to a perceived danger, is a response that differs from one animal or human to another -- or so scientists thought. Now researchers at Tel Aviv University are challenging what we know about stress, and their study has implications for helping clinicians better treat victims of terrorism or natural disasters.

Prof. David Eilam and his graduate student Rony Izhar of Tel Aviv University's Department of Zoology are spearheading a study designed to investigate the anxieties experienced by an entire social group. Using the natural predator-and-prey relationship between the barn owl and the

vole, a small animal in the rodent family, researchers were able to test unified group responses to a common threat.

The results, which have been reported in the journals *Behavioural Brain Research and Neuroscience* and *Biobehavioral Reviews*, demonstrated that while [anxiety](#) levels can differ among individuals in normal circumstances, surprisingly, group members display the same level of anxiety when exposed to a common threat.

## Standing together

Prof. Eilam says that this explains human behavior in response to trauma or terror, such as the citizens of New York City in the days after the 9/11 terror attacks, or after [natural disasters](#) such as the recent earthquakes in Haiti and Chile. These are times when people stand together and accept a general code of conduct, explains Prof. Eilam.

Prof. Eilam and his fellow researchers measured the [anxiety levels](#) of three groups of ten voles each. They placed the voles in a peaceful environment and measured how much time each vole spent out in the open and then in protected areas. The more time a vole spent in protected areas, the higher the anxiety level, though this varied among individual voles.

Then the researchers exposed the voles to a common threat, placing the voles' cage within a barn owl enclosure, and attracted owls to the cages by placing meat on top of the cage. The voles' experience, says Prof. Eilam, was one of being attacked. After a night of exposure to their natural predator, the voles were tested once again for anxiety. Now, researchers found that each vole was equally stressed.

According to Prof. Eilam, this result is surprising compared to the control group, in which each vole went through the stressful night in the

owl's enclosure individually. When facing their predators alone, there was no common level among all thirty of the voles when it came to their stress levels. While they showed heightened anxiety, it was directly in relation to their base level anxiety response, as measured before the first experiment.

"It's not a question of being more or less afraid," says Prof. Eilam. "Under threat, members of a social group will adopt a common behavioral code, regardless of their individual tendency towards anxiety."

## **The hero effect**

Another interesting finding, says Prof. Eilam, was the difference in group stress levels among an all-male group, an all-female group, and a mixed-gender group. Typically, such experiments have been done with all-male groups, he explains — females are affected by factors such as menstrual cycles and other gender-specific features can change behavior. But in this case, Prof. Eilam and his fellow researchers wanted to know what would happen if they added female voles to the mix.

Though both female and male voles experienced heightened anxiety when exposed to barn owls in an all-female or all-male group, their response to stress changed in the mixed groups. The female voles in the mixed group exhibited a standard heightened anxiety level, says Prof. Eilam, but the males did not.

Instead, male [voles](#) remained relatively "calm," perhaps a result of their protector role within vole populations. "Males are responsible for protecting the nest," he explains. "This is an adaptive behavior that reflects work division within the family."

While the studies focused on rodents, Prof. Eilam says that this research

provides a model with which human group behavior can be assessed.

Provided by Tel Aviv University

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