A willingness to be bullied may be inherited

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Himalayan Marmot - (Marmota himalayana) - photographed at Tshophu Lake altitude 4100 metres near Jangothang, Bhutan. Image: Christopher Fynn, via Wikipedia.

(PhysOrg.com) -- A new study of the behavior of marmots suggests that a willingness to accept some extent of bullying, rather than shying away from interactions that could lead to conflict, may be inherited.

Amanda J. Lea of the Department of Ecology and Evolutionary Biology at the University of California in Los Angeles, and her colleagues wanted to test the hypothesis that traits concerned with relationships that are initiated or directed by an individual may be more heritable than other traits. To find out, they studied a population of yellow-bellied marmots during the period 2003 to 2008.

The marmots live in large networks among the burrows of the Rocky

Mountains in Colorado, and the scientists observing them were able to map out these networks and and determine the relationships, the number of ties each individual had, and the interactions between the various individuals. Some of the interections, such as mutual grooming, were friendly, but marmots can also be antagonistic towards each other, chasing other individuals or nipping them. By collating data on their interactions and data on family relationships, the researchers were able to determine which traits were likely to have been inherited.

The researchers were surpprised to find that there was no evidence of heritability of traits concerned with initiating social interactions themselves, but there was a small genetic influence in traits concerned with being on the receiving end of interactions, particularly antagonistic ones. The tendency to be victimized was especially inheritable.

Another of the paper's authors, Daniel Blumstein, said marmots thrive if they are "in the middle of things socially," but being in the thick of it also means they are likely to encounter more conflicts with others, and they may be on the losing end. Blumstein said being willing to tolerate abuse instead of avoiding interactions that may turn sour could be a trait that is favored by evolutionary forces, since the benefits of living in a group are greater than the drawback of at times being the victim of bullying.

Blumstein said marmots that were well-connected tended to live longer and reproduce more than those that interacted less with others. This was true even if the interactions of well-connected marmots tended to lead to aggression towards them. He said interacting with others was beneficial "even if the interactions are nasty." This may be because being in a group provides protection against predation, and being bullied is a better option than becoming prey.

Lea said the study, which was published in the journal *Proceedings of the*

National Academy of Sciences (*PNAS*) on November 29, suggests scientists need to re-think their traditional view of friendly interactions as being good and unfriendly ones as bad.

More information: Heritable victimization and the benefits of agonistic relationships, *PNAS* November 29, 2010. Published online before print, doi:10.1073/pnas.1009882107

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