

Sheep that shed light on personality differences

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The team led by Denis Reale, a professor in the Department of Biological Sciences at UQAM and Canada Research Chair in Behavioural Ecology, recently completed a study showing the link between personality, survival and reproductive success in male bighorn sheep.

Their results were published in an article entitled "Male [personality](#), life-history strategies and [reproductive success](#) in a promiscuous mammal" in the prestigious [Journal of Evolutionary Biology](#) (22(8): 1599-1607). In addition to being a significant advance in our knowledge of these mammals, the research offers insight into personality differences in animals and humans, from an evolutionary perspective.

Since 1969, several teams of researchers have been studying this population of bighorn sheep in Alberta, Canada. They have collected considerable data over the years. Denis Reale and his collaborators, Julien Martin and Marco Festa-Bianchet, University of Sherbrooke, and Dave Coltman and Jocelyn Poissant, University of Alberta, focused on the animals' personality. Initially, the team identified the rams in terms of boldness and docility. They then conducted paternity tests to determine which rams were reproducing.

In a system like that of bighorn sheep where there is strong competition among the males for impregnating females, large size and high dominance status are normally key factors in a male's success. Males usually attain these conditions in the prime of life (between 6 and 12

years). However, the paternity tests showed that some young males manage to fertilize females.

Given the risk associated with participation in the rut (males can be injured or fall from a cliff in fighting), Denis Reale and his colleagues hypothesized that the young males that manage to reproduce would be the boldest and most combative. Analysis of the data confirmed this hypothesis. However, in exchange for sexual precocity and risk-taking, these rams often die younger than their more docile peers! The latter, instead, invest in the long term, breed later and reach an older age.

The research thus indicates a variation in the personalities and life histories of the population, with two extreme types: one that could be characterised as "live fast and die" and the other as "slow and steady wins the race." Depending on their personality, the males managed to breed and to transmit their genes, but in different ways. This study demonstrates that personality has a direct influence on the lifestyle of individuals.

Source: Université du Québec à Montréal

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