

Heritable behavioral differences between cat breeds

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The research group studied the heritability of behaviour traits in three different breeds: Maine Coon, Ragdoll and Turkish Van. Credit: University of Helsinki

Cat breeds differ from each other in behavior with regard to activity, aggressiveness, shyness, sociability and stereotypical behavior. A study conducted at the University of Helsinki discovered that behavioral traits are highly heritable. Heritability of behavior explains differences between breeds.

Cats are our most popular pets but few studies have been conducted on their behavior. "Dozens of international studies have been conducted on dog breeds' behavior traits and heritability, whereas ours is the first study on behavior trait heritability in cats," says Milla Salonen (formerly Ahola), doctoral student at the University of Helsinki.

All studied traits manifested differences in behavior between various breeds: activity level, sociability with humans, shyness, aggressiveness and stereotypical behavior. The largest differences in behavior were observed in activity and the smallest in stereotypical behavior.

"Since the age of about two weeks, activity is a reasonably permanent [trait](#), whereas stereotypical behavior is affected by many environmental factors early on in the cat's life as well as later. This may explain the differences observed," says Professor Hannes Lohi, the principal investigator of the feline genetic research group.

The research group studied the heritability of behavior traits in three different breeds: Maine Coon, Ragdoll and Turkish Van. These breeds were chosen because there was a sufficient number of questionnaire responses on them and there was also enough information on the parents of the cats.

"Furthermore, these breeds are genetically diverse. Based on prior research, the Maine Coon is related to Nordic cat breeds and landrace cats, while the Ragdoll is related to Western European and American cat breeds. The Turkish Van and Angora seem to have separated from other breeds," says Lohi.

Approximately half of behavior traits are inherited

The study discovered that the [heritability](#) estimate of behavior traits varied from 0.40 to 0.50 on average. This means that little under half of

the variation in behavior traits is explained by hereditary variation. Heritability estimates are fairly similar between cat breeds regardless of genetic differences between the breeds.

There are a number of alternative explanations for behavioral differences. It is possible that behavior has been subject to selection in the breeding of cats. It is possible that the aim has been to make some cats active and some docile. Behavior traits can also "hitchhike" with some other selected gene, such as the gene for fur or eye color.

"On the other hand, cat breeds have been bred from local landrace populations, which they continue to genetically resemble. Consequently, the behavior of breeds descended from cats in the same region may resemble each other due to their common history," says Salonen.

Based on the current research, differences can be explained partly by genetic similarity and partly by preference for certain features, such as long hair.

"However, discovering the evolutionary background of differences in behavior traits requires further studies," says Lohi.

The study utilized feline behavior questionnaire material on 6,000 cats collected earlier. The material consists of questionnaire responses on 40 different cat breeds. It is the world's second largest body of material on feline behavior.

"In March, we published a new and improved feline behavior and personality questionnaire on the Petsofi platform with the aim of collecting responses on more than 20,000 [cats](#). A sample size this large would allow us to conduct unique research as well as to confirm our current results, and I wish to take this opportunity to thank those cat owners who have already responded to the questionnaire," says Lohi.

More information: Milla Salonen et al. Breed differences of heritable behavior traits in cats, *Scientific Reports* (2019). [DOI: 10.1038/s41598-019-44324-x](https://doi.org/10.1038/s41598-019-44324-x)

Petsofi: petsofi.com/

Provided by University of Helsinki

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