

# The Economist

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## Great, big puppies

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MAN'S best friend was probably also man's first friend, for the evidence suggests that dogs were the earliest domesticated animals. Partly as a result, dogs are also the domestic animals that have been most changed by people. Dozens, if not hundreds, of recognisable breeds have been established by humans choosing, with more or less deliberation, which of their canine companions would reproduce, and which would not.

Although geneticists have long been interested in the resulting diversity of physical form, they have only recently turned their attention to the parallel diversity of behaviour. Now that they have done so, a group of researchers from Southampton University, in Britain, has concluded that what makes dogs behave differently is how much they have grown up.

It is widely agreed among geneticists that many of the features which make dogs different from their wild ancestors, wolves, are the result of paedomorphosis—the retention into adulthood of juvenile features. The more paedomorphosis a dog displays, the less wolf-like it appears. Observing this, Deborah Goodwin and her colleagues wondered whether the same might be true of canine behavioural differences.

The group (whose results are published in the current edition of *Animal Behaviour*) looked at ten different breeds, ranging from the extremely un-wolf-like Cavalier King Charles spaniel to the Siberian husky. In each case, it located one or two dog owners who kept a number of animals of the same breed, and were willing to have them observed interacting with each other for a few hours.

The researchers decided to concentrate on aggressive and submissive signals, because they found that these could be stimulated fairly easily, for example by introducing food, toys and unfamiliar dogs into a group. They identified nine aggressive signals and six submissive signals in at least some of the dogs, but only one breed, the huskies, showed all 15 of them. The King Charles spaniels exhibited only two.

When they asked a group of independent experts on morphology to assess how wolf-like each of the breeds they had studied appeared, they found that the degree of wolfish looks a breed

exhibited correlated closely with the number of different aggressive and submissive signals shown by that breed. And when they compared their results with the order in which these signals first appear in growing wolf cubs, they found that the behaviour patterns of the least wolf-like dogs are those that appear earliest in young wolves. Arrested physical development, in other words, correlates with arrested behavioural development.

There were, however, some suggestive deviations from the pattern. Gun dogs (cocker spaniels, labradors and golden retrievers, for example) tend to have more wolf-like behaviour than their physical appearances might have suggested. And, perhaps surprisingly, the wolf-like German shepherd was not as lupine in its behaviour as its looks suggest it ought to be. But German shepherds are only secondarily wolf-like, having been deliberately bred to look that way in the relatively recent past.

How the loss of particular signals affects the social lives of dogs is not yet clear. In some cases signals seemed to mean different things to different breeds. Golden retrievers, for example, used several signals in play that German shepherds and huskies apparently reserved for real conflict.

There is thus the potential for misunderstanding between dogs of different breeds. Dr Goodwin, however, observed that one particular threatening posture known as “stand erect”—which appears late in a developing wolf cub—was retained in eight of the observed breeds. Posture, she notes, seems to be one of the principal ways that mixed-breed groups of dogs regulate behaviour, so this particular signal may turn out to be important in inter-breed diplomacy. Unfortunately for the King Charles spaniels, they were one of the two breeds that could not manage it. Perhaps standing your ground is not a cavalier trait.

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