Size matters for dog's behaviour. And so does skull shape

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A yellow labrador retriver dog with pink nose. Credit: Wikipedia.

(Phys.org) —A variation of Short Man's syndrome applies to man's best friend, new evidence from the University of Sydney suggests.

The shorter the dog, regardless of breed, the more likely it is to march to the beat of its own drum, according to the University led research on the relationship between a dog's shape and its behaviour.

"There will always be exceptions but these data on large numbers of dogs help to define a 'new normal'. What is normal in terms of dog behaviour clearly depends on more than simply its breed," said Professor Paul McGreevy from the University's Faculty of Veterinary Science. Professor McGreevy is lead author of a journal article on the findings published in *PLOS One* today.

"The most comprehensive study undertaken to date, our research shows that certain physical characteristics in dogs are consistently associated with certain types of behaviour.

"Essentially, the shorter the dogs the less controllable their behaviour is for their owners."

The study used owners' reports on the behaviour of over 8,000 dogs from across 80 breeds and related them to the shape of 960 dogs of those breeds, revealing strong relationships between height, bodyweight, skull proportions (relative width and length) and behaviour.

It discovered that thirty-three, out of thirty-six undesirable behaviours considered, were associated with height, bodyweight and skull shape.

For example, as a breed's average height decreased, the likelihood of behaviors such as mounting humans or objects, owner-directed aggression, begging for food and attention-seeking increased.

"The only behavioral trait associated with increasing height was 'trainability'. When average bodyweight decreased, excitability and hyperactivity increased," said Professor McGreevy.

"The ratio of skull width to length was an interesting case. Long skulled dogs - such as afghans, salukis and whippets - appear to be a product of selection for hunting/chasing characteristics as they excelled on those indicators.

"According to owners' reports, they flunked on fear of strangers, barking persistently, and stealing food. Given hunting dogs have not traditionally been companion animals sharing close quarters with humans this may not be surprising."

In contrast, the results confirmed short-skulled dogs, such as pugs and boxers, the result of generations of selective breeding, retain some 'puppyish' characteristics as adults but have lost many of their hunting traits entirely.

"Undesirable behaviours such as owner aggression, or mounting, occur more often among small dogs. This suggests that, in small dogs, these behaviours are tolerated more than they would be in larger dogs where such behaviours are more unwelcome and even dangerous. Equally, such behaviours in small dogs may be a result of their being overindulged and over-protected," said Professor McGreevy.

"These findings will interest dog owners, breeders, veterinarians and evolutionary biologists. They remind us that domestic dogs are an extremely useful model for exploring the biological forces that produce diverse animal structures and their related behaviours.

The latest report follows previous studies by the same group that showed dogs' eye and brain structure depends on skull shape and that skull shape depends on sex.

"The interaction of nature and nurture in producing the relationships we have described in this study creates a raft of fascinating questions that

further studies will address."

More information: McGreevy PD, Georgevsky D, Carrasco J, Valenzuela M, Duffy DL, et al. (2013) "Dog Behavior Co-Varies with Height, Bodyweight and Skull Shape." *PLoS ONE* 8(12): e80529. DOI: 10.1371/journal.pone.0080529