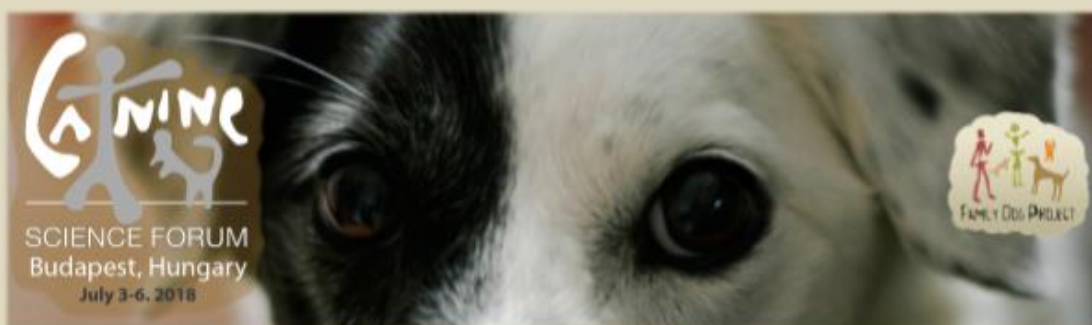




6th Canine Science Forum

Abstract Book



Companion dog, Oral presentation

Age effects on cognitive performance of family dogs

Piotti Patrizia¹, Szabó Dóra¹, Wallis Lisa J¹, Bognár Zsófia¹, Egerer Anna¹, Stiegmann Bianka¹, Marosi Sarolta¹, Kubinyi Enikő¹

¹Eötvös Loránd University, Department of Ethology, Budapest, Hungary

Dogs (*Canis familiaris*) are good models to study cognitive ageing due to relatively short life spans and social complexity. Dogs kept as pets ("family dogs") are also exposed to the same environmental risk factors as humans. However, to date, the tests measuring cognitive ageing are designed for laboratory settings.

We designed 16 tests aiming to measure skills and behaviours that supposedly decline with age: exploration, motivation, trainability, persistency, sociality, attention, memory, learning, complex reasoning, and visuospatial and executive function. We tested 127 adult family dogs (M age=8.33 years, range 3.0-14.5; F=65, M=62), free from overt medical and sensory-motor issues, hypothesising performance decline in function of age. Dogs' behaviour was measured as they explored a novel environment and novel objects, interacted with a stranger, underwent a pointing task, clicker training, and eye contact training, a social and non-social attention task, a problem solving task, an unsolvable task, a memory task, a cognitive bias test, a discrimination and a reversal learning task.

Dogs' ability to remember the location of food in a memory test declined with increasing age (Generalised Linear Mixed Model: N=124, $p < 0.001$). The number of trials necessary to learn a discrimination and a reversal learning increased with age (Cox Regression: Ndiscrimination=107, $p = 0.003$; Nreversal=89, $p < 0.001$). The latency to approach a novel object was higher as age increased (Cox Regression: N=106, $p = 0.023$). The number of mistakes committed in a problem solving test also increased with age (Cumulative Link Mixed Model: N=124, $p = 0.003$). We found no age difference in tests for manipulative persistency, attention, and a cognitive bias test (all $p > 0.05$). There was also no relationship between age and dogs' vocalisations, activity levels, or orientation towards the owner (all $p > 0.05$).

We identified 5 tasks (memory test, discrimination learning, reversal learning, novel object test, and problem solving) where the performance of healthy-ageing family dogs declined as a function of age. The decline does not appear to be related to decreased activity levels, overall interest in the environment or social interaction. Thus, the tasks are promising measures for working and short-term memory, learning, and visuospatial function. Future research should investigate the cognitive domains relevant to each task and explore the relationship between performance and brain function.