Available online at www.sciencedirect.com
SCIENCE DIRECT®
ELSEVIER
Applied Animal Behaviour Science 96 (2006) 293–313
APPLIED ANIMAL BEHAVIOUR SCIENCE
www.elsevier.com/locate/applanim

Breed-typical behaviour in dogs—Historical remnants or recent constructs?

Kenth Svartberg *

Department of Zoology, Stockholm University, SE-10691 Stockholm, Sweden

Accepted 24 June 2005
Available online 1 August 2005

Abstract

Dogs show considerable variation in morphology, genetics and behaviour caused by long periods of artificial selection. This is evident in the large number of breeds we have today. Behavioural differences among breeds have often been regarded as remnants from past selection during the breeds' origin. However, the selection in many breeds has, during the last decades, gone through great changes, which could have influenced breed-typical behaviour. In order to investigate this, breed differences were studied using data from a standardized behavioural test from 13,097 dogs of 31 breeds from the Swedish dog population. Based on the test results, breed scores were calculated for four behavioural traits: playfulness, curiosity/fearlessness, sociability and aggressiveness. These traits have previously been found to be stable and valid, and hence regarded as personality traits in the dog. The present results suggested large differences between breeds in all of the investigated traits, even though there were within-breed variations. No relationships between breed-characteristic behaviour and function in the breeds' origins were found. Instead, there were correlations between breed scores and current use of the breeding stocks, which suggest that selection in the recent past has affected breed-typical behaviour. The breeds' use in dog shows, the dominating use in general, was negatively correlated with all investigated traits, both in sires and in dams. In contrast, use in Working dog trials was positively correlated with playfulness and aggressiveness in sires. Thus, these results suggest that selection for dog show use is positively correlated with social and non-social fearfulness, and negatively with playfulness, curiosity in potentially threatening situations and aggressiveness, whereas selection for Working dog use is positively correlated with playfulness and aggressiveness. Furthermore, correlation analyses show that popular breeds have higher sociability and playfulness

* Present address: Department of Anatomy and Physiology, Faculty of Veterinary Medicine and Animal Science, Swedish University of Agricultural Sciences, Box 7011, SE-750 07 Uppsala, Sweden.
Tel.: +46 18 67 28 21; fax: +46 18 67 21 11.
E-mail address: kenth.svartberg@afys.slu.se.

0168-1591/$ – see front matter
doi:10.1016/j.applanim.2005.06.014

scores than less popular breeds, suggesting that a positive attitude towards strangers is an important characteristic of a functional pet dog and desirable by dog owners. This indicates that selection towards use in dog shows may be in conflict with pet dog selection. Furthermore, these results suggest that basic dimensions of dog behaviour can be changed when selection pressure changes, and that the domestication of the dog still is in progress. A standardized behavioural test, like the one used in this study, is suggested to be highly useful as a tool in dog breeding programs.

Keywords: Dogs; Breed differences; Personality; Temperament; Fearfulness; Aggressiveness; Domestication

1. Introduction

Artificial selection can induce great behavioural changes in domestic species. This has been known at least since Roman times in Europe, and was perhaps already practiced by the early Neolithic farmers in ancient Egypt (Clutton-Brock, 1999). The domestic dog is probably the species that has been put under artificial selection during the longest period of time. The earliest archaeological finding of the domestic dog is dated to 14,000 year BP (Nobis, 1979, in Clutton-Brock, 1999), but results based on mitochondrial DNA suggest that the domestication of the dog may have begun 40,000 years from now (Savolainen et al., 2002). The domestication of the dog has resulted in considerable variety in morphology, genetics and behaviour (e.g. Scott and Fuller, 1965; Wayne, 1986; Wayne and Ostrender, 1999). The first evidence of distinct dog types is dated back to 3000–4000 year BP (Harcourt, 1974), and since then there has been increased variation and specialization. During Roman times, most of the dog types that we know about today – hunting dogs, guard dogs, sheep dogs and lap dogs – were well defined (Clutton-Brock, 1995). Varieties of each type have evolved since then, which is evident in the large number of recognized dog breeds seen today.

Even though studies on breed differences in behaviour are scarce, the existing results suggest that breeds differ in several aspects of behaviour. Breed differences have been found in traits such as emotionality and aggressiveness (Scott and Fuller, 1965; Cattell et al., 1973); the tendency to approach and withdraw in novel situations (Plutchik, 1971); activity and playfulness (Hart and Miller, 1985); predatory behaviour (Coppinger et al., 1987; Christiansen et al., 2001); agonistic signalling (Goodwin et al., 1997). Several authors, both in the non-scientific and scientific dog literature, have suggested that behavioural breed differences can be explained by differences in selection during the breeds' origin (e.g. Hart, 1975; Scott and Fuller, 1965). There are some results supporting this suggestion. Breeds selected for rat hunting and fighting – such as the Terriers – have been shown to be less fearful compared with breeds selected for bird hunting and Herding (Mahut, 1958). These breeds, together with working breeds, are also over-represented as initiators in dog-fights (Roll and Unshelm, 1997). This is supported by Bradshaw et al. (1996), whose results suggested that Working dogs/guard dogs and Terriers are more aggressive than other breeds. Bradshaw et al. (1996) also reported other differences between breed groups in the behavioural traits ''reactivity'' and ''immaturity'', which might be explained by differences in selection pressures in historical time. Seksel et al. (1999) reported breed group differences in social behaviour towards humans, where Gun