

Dog attention towards the owner in two insoluble problem-solving tasks: a pilot study about the effect of skull conformation and selection to cooperate with man

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Abstract: The aim of this study was to evaluate whether brachycephalic breeds selected for companionship or for utility behave differently for the attention paid to the owner in two insoluble problem-solving tasks. Eleven adult dogs, 5 belonging to companion breeds and 6 belonging to breeds selected for utility were involved. The study consisted of two behavioral tests (“bin-opening” and “rope-pulling”). After the training, dogs were subjected to two kinds of insoluble problem-solving tasks, evaluating the latency of the first gaze toward the owner and the number of these gazes. The statistical analysis did not show any differences in the first test “bin-opening” (latency: $U = 13.5$, $p = 0.93$; number of gazes: $U = 14.5$; $p = 0.79$) nor in the second one “rope-pulling” (latency: $U = 13.5$, $p = 0.93$; number of glances: $U = 11.0$; $p = 0.54$). Our preliminary results suggest that within the group of brachycephalic dogs there are no differences in the attention paid to the owner in situations that require collaboration with him/her, despite the different selection carried out within this group of dogs according to the functions to be performed by different breeds. Given the small number of subjects tested, further research is needed to verify whether the selection for fighting influence the human-directed gazing.

Key Words: attention to owner, brachycephalic, dog, problem solving.

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Introduction

Paedomorphosis has enabled the creation of many canine breeds differing for both morphology and certain behavioral traits. Based on the cephalic index, breeds are classified as dolichocephalic, mesocephalic or brachycephalic. Brachycephalic breeds are considered neotenic because the development of their behavior and of some parts of their body (e.g. the muzzle) is blocked at a very early stage compared to the result of the wolf (Coppinger et al., 1987). Besides physical differences, there are also considerable differences in the behavior depending on the breed. Trainability of the dog is one of the more studied aspects of canine behavior. Undoubtedly dog trainability is based both on the ability to maintain dog’s attention on the owners and on the motivation to cooperate with them.

The aim of this study was to evaluate whether brachycephalic breeds, selected for companionship or for utility, behave differently for the attention paid to the owner in two insoluble problem-solving tasks.

Materials and methods

Eleven adult dogs, 5 belonging to companion breeds (2 Pugs, 2 French Bulldogs, and 1 Cavalier King Charles Spaniels; 3 males and 2 females) and 6 belonging to breeds selected for utility

(2 American Pitbull Terriers, 2 American Staffordshire Terriers, 1 Rottweiler, and 1 Boxer; 4 females and 2 males), were involved. The study consisted of two behavioral tests: “bin-opening” (Fig. 1) and “rope-pulling” (Fig. 2), (Miklósi et al., 2003).



Fig. 1. Bin-opening test.



Fig. 2. Rope-pulling test.

Both brachycephalic breeds (companion and utility) were given the opportunity to learn how to solve the problem situation in six repeated training trials. After the training, dogs were subjected to two kinds of insoluble problem-solving tasks.

The first consisted in trying to reach food located in a container having a closed lid (“bin-opening”).

In the second test, the dog had to retrieve the food tied to a rope and placed inside a wire mesh cage (“rope-pulling”). After the dogs had mastered the task, that is, they opened the bin (which contained a piece of meat) or pulled out a rope (with a piece of meat attached to its end) from a cage, within 20s from the moment it was released from the leash, in the 80% of the trials, the researcher presented the dogs with the same problem, but this time the problem was insoluble (“blocked test trials”: bin was closed mechanically; a hidden end of the rope was fastened to the cage).

From the moment the dog was freed from the leash, two minutes were timed: during this time, the first look at the owner and the number of glances towards him were noted.

The statistical analysis carried out using Mann-Whitney test ($p < 0.05$) to compare the two groups.

Results

Statistical analysis did not show any differences between the two groups in both tests (Fig. 3; Fig. 4). In fact, in the “bin-opening” test, any difference was not detected in the latency of the first glance ($U = 13.5$, $p = 0.93$) and in the number of gazes ($U = 14.5$; $p = 0.79$). Also in the “rope-pulling” test no difference was noted (latency: $U = 13.5$, $p = 0.93$; number of glances: $U = 11.0$; $p = 0.54$).

Discussion

These preliminary results suggest that, within the group of brachycephalic dogs, there are no differences in the attention paid to the owner in situations that require collaboration with him/her, despite the different selection carried out within this group of dogs, according to the functions to be performed by different breeds. The lack of differences may be due to the relevance of experience on the display of dog behavior. In fact, behavior is due to both environmental and genetic factors.

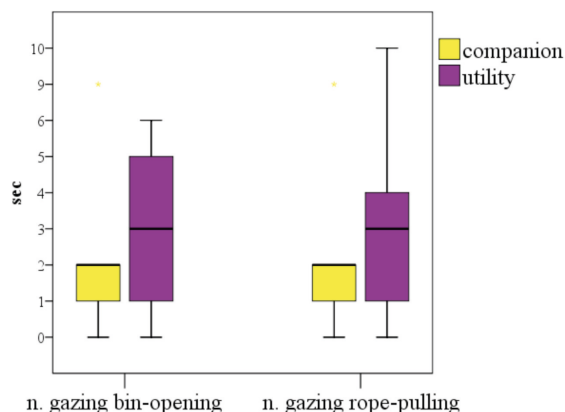


Fig. 3. Number of glances directed to the owner in the two behavioral tests considered.

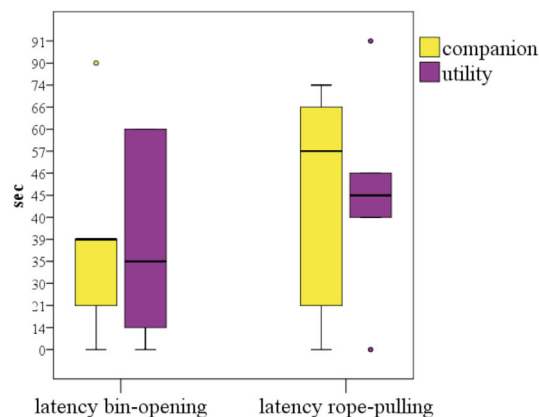


Fig. 4. Latency of the first glance directed to the owner in the two behavioral tests considered.

Brachycephalic dogs are probably selected for tenacity (Gazzano et al., 2015), and this can go to the detriment of motivation to cooperate with the owner. However, gazing behavior is strongly affected by the relationship with the owner (Mariti et al., 2013) as well as by other factors such as everyday life.

Conclusions

Given the small number of subjects tested, further research is needed to verify whether the selection for fighting influence the human-directed gazing.

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L'attenzione del cane nei confronti del proprietario: uno studio pilota sull'effetto della conformazione del cranio e della selezione per la cooperazione con l'uomo

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Sintesi

Lo scopo dello studio è stato quello di valutare se individui appartenenti a razze brachicefale, selezionate come animali da compagnia o per utilità e difesa, si comportino in modo diverso per quanto riguarda l'attenzione rivolta

al proprietario nel tentativo di risolvere una prova impossibile. Undici cani adulti, 5 appartenenti a razze da compagnia e 6 a razze selezionate per l'utilità e difesa, sono stati reclutati per la ricerca.

Lo studio consisteva in due test comportamentali: "bin-opening" (apertura di un contenitore) e "rope-pulling" (tirare una fune). Dopo un periodo di training la prova era resa irrisolvibile da parte del cane ed erano valutati la latenza del primo sguardo rivolto al proprietario ed il numero di sguardi. L'analisi statistica dei dati non ha mostrato differenze significative sia nel test "bin-opening" (latenza: $U = 13,5$; $p = 0,93$; numero di sguardi: $U = 14,5$; $p = 0,79$) sia nel "rope-pulling" (latenza: $U = 13,5$; $p = 0,93$; numero di sguardi: $U = 11,0$; $p = 0,54$).

Questi risultati preliminari suggeriscono che nel gruppo dei cani brachicefali, non ci siano differenze nell'attenzione rivolta al proprietario, in situazioni che richiedano la collaborazione con esso/a, nonostante la diversa selezione condotta sugli individui in base alle funzioni svolte dalle diverse razze.

Dato il piccolo numero di soggetti testati, ulteriori studi saranno necessari per verificare se la selezione per il combattimento influenzi il livello d'attenzione rivolta al proprietario.