

Are there breed difference in referential behavior in horses (*Equus caballus*)?

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Domesticated animals are characterized by variability of breeds. There is a great diversity in body size and/or coat color between different breeds. However, there are few scientific researches about difference in cognition and behavior between breeds. Comparison of behavior between breeds may be useful for the study of genetics behind the diversity of cognition and behavior. In the present study, we investigated behavioral differences between horse breeds. We tested two different breeds which have different histories, thoroughbreds and creoles. Thoroughbreds are racing horses which have been exposed to strict selection toward racing performance for about 300 years. Creoles are descendants of horses which were brought to South America by Spanish people in 15th century and used by native cowboys for riding. We compared the behavior in a difficult situation by using an "unsolvable task". The experimenter put a food reward into a transparent box and closed it firmly so that horses could not take the reward. We compared the referential behavior (gazing behavior toward the experimenter) between thoroughbreds and creoles. We analyzed referential behavior by using generalized linear models (GLM) and model selection by Akaike's information criterion (AIC). There were no effect of breed in the frequency and the duration of the referential behavior. But the latency before looking at the experimenter tended to be shorter in thoroughbreds than in creoles. This result suggests that there may be breed differences in horses' social cognition and behavior. However, the effect of sex was also seen. Furthermore, we could not exclude the environmental effect (e. g. feeding environments, trainings) in this study. So we cannot explain the variation in referential behavior by breed effect only. We need to replicate the result by controlling environmental effects.

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