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Delayed search for non-social goals by Equids (*Equus caballus* and *Equus asinus*)

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Delayed-responses have been traditionally employed to investigate the temporal characteristics of animals' ability to represent and recall objects that have disappeared. In the typical condition, the animal, usually a mammal, observes the experimenter hiding an interesting goal (e.g. some food) in a certain location. A delayed-response task (DRT) was administered to 4 female Esperia pony (2 years old) coming from a free-range breed (Frosinone, Italy) and to 7 female Amiata donkeys (4.2±2 years old) coming from a conservation stock (University of Pisa, Italy). The DRT's apparatus was located in a square fence. A single „U-shaped“ screen (330x160x140 cm) made by wood shavings blocks was positioned in the centre of the fence. A gap (40x50 cm) on the ground was in the middle of the central side of the U-shaped-screen and served to make the food-attractor disappear. The food-attractor consisted in cereal flakes and fresh grass for ponies and cereal flakes for donkeys. A bucket full of food was placed on a dolly tied on a rope which could be pulled by an experimenter. In a preliminary training each animal was allowed to eat food from the bucket and, while the animal was eating, the dolly was gently pulled away from the animal, and beyond the screen through the gap. The subjects needed to move around of the screen in order to retrieve the food. As a reinforcement, they were allowed to eat some food from the bucket once behind the screen. From trial to trial, the bucket was presented farther and farther (starting with a distance of 1 m in front of the screen to reach 7 m). Therefore subjects were tested in the DRT requiring them to rejoin the bucket with the goal-food disappearing behind the screen as in the preliminary training but following a 10 s delay. For the DRT, the bucket was placed 7 m in front of the screen, 3 m away from the animal's starting area. Then the dolly was pulled away from the animal. Ten seconds after the disappearance of the dolly behind the screen the animal was released from the starting area. The DRT ended when the subject had reached the attractor behind the screen on 3 consecutive trials. Results showed that all animals were able to rejoin the food behind the screen after 10 s delay. The mean time of the delayed-response (mean±sd, in s) in the ponies (1st: 19.8±8; 2nd: 10.8±2.2; 3rd: 12.8±2.8) and in the donkeys (1st: 28.4±10; 2nd: 26.9±13; 3rd: 24.3±16.6) showed a trend to decrease from first trial to third. These preliminary results suggest that like other mammals our ponies and donkeys can maintain a working memory trace of the location where biologically attractive objects have been seen to disappear. In conclusion, this study paves the way to set up a viable model system for the investigation of the more sophisticated aspects of Equids' cognitive abilities such as working memory.