SYMBOLIC REPRESENTATION AND QUANTITY DISCRIMINATION IN OLIVE BABOONS (*PAPIO ANUBIS*)

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In contrast to the predictions of evolutionary theory some studies have suggested that nonhuman primates are effectively more accurate in quantity discriminations when tested with symbolic representations of items than with simple food pieces, suggesting that other factors might interfere in the decision-making process. To investigate whether food or non-food items are more appropriate to investigate numerical abilities, we systematically varied the discriminatory stimulus (food/non-food) and reward scheme. We tested five olive baboons at the German Primate Center in different two-choice tasks using 1 to 8 raisins or black pebbles as choice stimuli. The baboons chose the larger amount more accurately when it was represented by non-food items, suggesting that the direct view and award of food items impedes discrimination abilities. Intriguingly, the baboons could overcome these problems when they did not receive the raisins they pointed at but an equivalent amount of other food items, thus, when choice stimuli and reward were separate entities. Therefore, monkeys are not only able to assign a symbolic quality to non-edible items, but to edible ones as well. Taken together, a reduction of the physical salience of a stimulus helps to achieve psychological distancing (i.e. guiding attention away from prominent features of a stimulus by separating cognitively from the immediate behavioural environment). In addition, distinguishing between the discriminatory stimulus and the outcome might further increase the capacity for abstract reasoning. Previous studies that relied on simple food amount perception may have underestimated the true capabilities in quantity discrimination of the species tested.

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