

ZMATH 2012d.00175

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Empty sets as part of the numerical continuum: Conceptual precursors to the zero concept in Rhesus monkeys.

J. Exp. Psychol.: Gen. 138, No. 2, 258-269 (2009).

Summary: The goal of the current research was to explore whether monkeys possess conceptual precursors necessary for understanding zero. We trained rhesus monkeys on a nonsymbolic numerical matching-to-sample task, and on a numerical ordering task. We then introduced nondifferentially reinforced trials that contained empty sets to determine whether monkeys would treat empty sets as numerical values. All monkeys successfully matched and ordered the empty sets without any training. Accuracy showed distance effects, indicating that they treated empty sets as values on a numerical continuum.

Classification: C30 C80 F20

Keywords: cognitive science; cognitive psychology; experimental psychology; research; nonhuman animals; monkeys; numerical abilities; numerosity; zero; empty sets; numerical cognition; distance effects; numerical continuum

doi:10.1037/a0015231