1: Neurotoxicol Teratol. 1992 Jul-Aug;14(4):235-45. Related Articles, Links

Behavioral effects of lead in monkeys tested during infancy and adulthood.

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A total of 12 monkeys (Macaca fascicularis) were dosed orally from birth with 0 or 2000 micrograms/kg/day of lead as lead acetate. Blood lead concentrations of treated monkeys peaked at an average of 115 micrograms/dl by 100 days of age and decreased to a steady state level of 33 micrograms/dl after withdrawal of infant formula at 270 days of age. At 5-6 months of age, they were tested on a nonspatial discrimination reversal paradigm. At 2.5-3.0 years of age, they were tested on a series of nonspatial discrimination reversal problems, including irrelevant cues. As adults, performance was assessed on a differential reinforcement of low rate (DRL) schedule of reinforcement, a spatial delayed alternation task, and during training on a visual discrimination task for a visual psychophysics experiment. There were no or marginal deficits on the discrimination reversal task during infancy. Although lead-treated monkeys were impaired on this task as juveniles, they were less impaired than would have been predicted based on their history of blood lead concentrations. Treated monkeys exhibited decreased interresponse times and a greater ratio of responses per reinforcement on the DRL schedule compared to controls. Four of five treated monkeys were unable to learn the visual discrimination task without a remedial training procedure in which the relevant visual stimuli were arranged to appear as if they were on the response buttons. Treated monkeys were unimpaired on the delayed spatial alternation task. The results are interpreted as suggestive of an interaction between the behavioral history of the monkeys as infants with the results of later behavioral testing.

PMID: 1522828 [PubMed - indexed for MEDLINE]

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May 9 2006 14:13:00