SPATIAL MEMORY IN ADULT MALE RHESUS MACAQUES: RELATIONSHIP BETWEEN SEASON AND THE INFLUENCE OF TESTOSTERONE

S.B.Z. Stephens, R.A. Herman, and K. Wallen

Department of Psychology and Yerkes National Primate Research Center, Emory University, Atlanta, GA

Presenter's Email: ssteph3@emory.edu

Sex differences in spatial memory generally favor male performance. One explanation for a male advantage is that organizational or activational effects of testosterone improve spatial memory. Testosterone enhances spatial memory in both humans and rodents. However in rhesus macaques, testosterone was not related to spatial memory performance and a female advantage was found on certain spatial tasks (Herman, 2006). The previous study tested males during the nonbreeding season, when testosterone levels are low. Using the methodology of Herman & Wallen (2007), this study examined male performance on three spatial tasks during the breeding season, when testosterone is elevated. Adult male rhesus macaques were prenatally exposed, either early or late in gestation, to a control vehicle or flutamide, an androgen receptor blocker. Males performed better when only local markers were available and females initially performed better when only spatial information was available. Testosterone and performance were positively correlated for control males when both local markers and spatial information were available and negatively correlated when only spatial information was available. Testosterone did not correlate with performance on any task for males that received prenatal flutamide. Control male performance improved from nonbreeding to breeding season when using local markers, whereas flutamide treated males showed no seasonal difference. Activational effects of testosterone depend on the cues available and this effect differs based on season and prenatal androgen exposure. This research was approved by Emory University's Institutional Animal Care and Use Committee.

Keywords: spatial memory, testosterone, sex differences, flutamide