Previous studies with rodents have found that adolescent exposure to psychoactive drugs can alter neurophysiology and produce behavioral effects that persist into adulthood. While several studies have examined the effects of adolescent exposure to nicotine on the subsequent rewarding value of various drugs of abuse in adulthood, to date, no known studies have examined the converse of this relationship. d-Amphetamine (i.e., dextroamphetamine, ProCentra®) is a potent psychostimulant that is commonly used in the treatment of Attention-Deficit/Hyperactivity Disorder (ADHD) in adolescents. The present study assessed the effects of adolescent exposure to _d_-amphetamine on the rewarding value of nicotine in adulthood.

Seventy-two male Sprague-Dawley rats received subcutaneous (sc) injections of _d_-amphetamine (_d_-AMPH) (0.5 mg/kg; _n_ = 36) or saline (1.0...
ml/kg; \( n = 36 \) once-daily for 10 days during adolescence, beginning on postnatal day (PND) 31. Subjects were then allowed to mature to early adulthood (PND 70), and the reward potential of nicotine was evaluated using a 10-day biased conditioned place preference (CPP) procedure. Side preference for a two-compartment CPP apparatus was assessed for each subject during a pre-test session, followed by eight once-daily 30-minute conditioning trials. During conditioning trials, subjects were confined to one side of the CPP apparatus and received injections of nicotine (0.04 or 0.10 mg/kg sc; \( n = 24 \) each) or saline (1.0 ml/kg sc; \( n = 24 \)) in the non-preferred compartment (conditioning trials 1, 3, 5 and 7). All subjects received injections of saline in the preferred compartment (conditioning trials 2, 4, 6 and 8). Following conditioning trials, a post-test session assessed for the emergence of place preference for the drug-paired compartment. As a secondary measure of drug effects, locomotor activity was recorded during all sessions.

Subjects in the \( d \)-AMPH pre-treatment group exhibited a significant reduction in locomotor activity across nicotine drug trials not seen in saline pre-treated subjects. Both doses of nicotine tested produced significantly less activity compared to saline controls in the \( d \)-AMPH group, but not in the saline pre-treatment group. Subjects pre-treated with \( d \)-AMPH did show a greater increase in preference for the drug-paired compartment with both nicotine doses versus saline pre-treated subjects, though this difference was not statistically significant. These results indicate that adolescent exposure to \( d \)-AMPH produces moderate behavioral effects that may persist into adulthood. Additional studies investigating the neurobehavioral effects of adolescent \( d \)-AMPH exposure on the rewarding properties of drugs of abuse are warranted to further elucidate this relationship.