Effects of Acute Smoked Marijuana on Complex Cognitive Performance

by Carl L. Hart, Wilfred van Gorp, Margaret Haney, Richard W. Foltin, & Marian W.Fischman

Source: *Neuropsychopharmacology*, vol. 25, pp. 757-765. doi:10.1016/S0893-133X(01)00273-1
Date: 2001

About: Researchers Hart, van Gorp, Haney, Foltin, and Fischman's double-blind study concludes that an experienced marijuana user's ability to perform complex cognitive tasks is minimally affected, if at all. This provides further evidence that reliance on urine testing alone as a fit-for-duty screen may unfairly penalize employees who may not be impaired despite a positive test.

Article abstract: "Although the ability to perform complex cognitive operation is assumed to be impaired following acute marijuana smoking, complex cognitive performance after acute marijuana use has not been adequately assessed under experimental conditions. In the present study, we used a within-participant double-blind design to evaluate the effects acute marijuana smoking on complex cognitive performance in experienced marijuana smokers. Eighteen healthy research volunteers (8 females, 10 males), averaging 24 marijuana cigarettes per week, completed this three-session outpatient study; sessions were separated by at least 72-hrs. During sessions, participants completed baseline computerized cognitive tasks, smoked a single marijuana cigarette (0%, 1.8%, or 3.9% Δ^9-THC w/w), and completed additional cognitive tasks. Blood pressure, heart rate, and subjective effects were also assessed throughout sessions. Marijuana cigarettes were administered in a double-blind fashion and the sequence of Δ^9-THC concentration order was balanced across participants. Although marijuana significantly increased the number of premature responses and the time participants required to complete several tasks, it had no effect on accuracy on measures of cognitive flexibility, mental calculation, and reasoning. Additionally, heart rate and several subjective-effect ratings (e.g., "Good Drug Effect," "High," "Mellow") were significantly increased in a Δ^9-THC concentration-dependent manner. These data demonstrate that acute marijuana smoking produced minimal effects on complex cognitive task performance in experienced marijuana users.**"**