shown to reduce subjective withdrawal symptoms in general, there may be a potentiation of conditioned withdrawal symptoms with nicotine replacement.

MONDAY P.M.

PAPER SESSION

Stimulants and Anxiolytics: Behavioral and Physiological Effects
Chair: *Stephen C. Fowler,* University of Mississippi, University, MS

COCAINE BASE SMOKING IN RHESUS MONKEYS. Marilyn E. Carroll, Gilberto N. Carmona and Kelly L. Krattiger. University of Minnesota, Minneapolis, MN.

Three rhesus monkeys had been trained to drink a drug and/or water by making lip-contact responses on solenoid-operated drinking spouts. Responding on a similar spout activated a circuit that heated a coil of wire containing 10 mg of cocaine base. The coil was heated for 75 msec and the smoke exited the smoking tube protruding into the monkey's cage. The number of licks and sucking responses on this tube were recorded, and the results showed that the monkeys were actively inhaling on the tube. The monkeys rapidly self-administered the cocaine-base smoke *without* additional reinforcement with food or water. The fixed-ratio requirement for a smoke delivery was gradually increased to 16. Subsequently, a second-order schedule was implemented, whereby responding on a lever resulted in a brief stimulus associated with cocaine delivery after every 16 lever presses. The first FR 16 responses on the smoking spout completed after 85 brief stimulus deliveries activated the smoking device. A maximum of 4 deliveries were allowed per 1-hr session, and these were almost always earned. Lidocaine (10 mg) was then substituted for cocaine for 8 days and responding decreased substantially indicating that cocaine was functioning as a reinforcer. Extinction responding (increased intertrial licks and sucking responses) was also associated with the presentation of lidocaine. When access to the cocaine base was reinstated, responding increased and 4 deliveries were reliably earned each session. In subsequent experiments the number of smoking opportunities per day was increased to 8, a dose response function was obtained, withdrawal effects were examined and the effects of serotonin reuptake inhibitors, fluoxetine and sertraline as well as dietary L-tryptophan (a serotonin precursor), on cocaine-base smoking were investigated. (This research was supported by DA 02486.)

INTRANASAL COCAINE: EFFECTS OF LEARNING AND PERFORMANCE IN HUMANS. Stephen T. Higgins, John R. Hughes, Warren K. Bickel, Mark A. Capeless and Mary R. Lynn. University of Vermont, Burlington, VT.

The acute effects of intranasally administered cocaine (4, 48, 96 mg/70 kg) on human learning and performance were investigated in two recreational drug users. Subjects performed under a multiple schedule of repeated acquisition and performance of response sequences and the digit symbol substitution test (DSST), and also completed visual-analog ratings of drug effect. These tasks were performed immediately before and every 15–30 min for 2 hr after drug administration. Heart rate was measured every 5 min. Cocaine produced no discernible effects on accuracy of responding in the repeated acquisition and performance procedure; effects on overall rates of responding in that procedure differed as a function of drug dose and subject. In the DSST procedure, overall rates of responding and the total number of trials completed correctly increased as a function of drug dose in both subjects. Visual-analog ratings of drug effect and heart rate also increased as an orderly function of drug dose. Cocaine's effects on DSST performance, visual-analog ratings of drug effect and heart rate were discernible throughout the 120-minute session. These preliminary results contribute important new information on the human behavioral pharmacology of cocaine.

COCAINE-RELATED EXPECTANCIES: THEIR DOMAIN AND IMPLICATIONS FOR TREATMENT. Adam J. Jaffe. Yale University School of Medicine, New Haven, CT; and M. Marlene Kilbey and Gerald R. Rosenbaum. Wayne State University, Detroit, MI.

The present study involved the construction of a Cocaine Expectancy Questionnaire (CEQ) designed to explore the domain of adult cocaine-related expectancies. The questionnaire was based on extensive open-ended interviews with 73 adult noncocaine users, 12 experimental users and 20 abusers, as well as a review of the relevant literature. The items were then administered to a second, similar group. Item analysis was conducted to determine final item inclusion. A content analysis of the interviews and resulting questionnaire revealed that adults seem to hold well-formed expectancies about the effects of cocaine. Etiological and treatment implications of expectancies and the CEQ are discussed.

DISCRIMINATIVE STIMULUS EFFECTS OF *d*-AMPHETAMINE, METHYLPHENIDATE AND DIAZEPAM IN HUMANS. Stephen J. Heishman, W. Robert Lange and Jack E. Henningfield. National Institute on Drug Abuse Addiction Research Center, Baltimore, MD.

Human subjects were trained to discriminate between 30 mg *d*-amphetamine (Drug A) and placebo using a second-order schedule color tracking procedure. Daily experimental sessions tested one drug dose or placebo. All subjects learned the discrimination and reported increased subjective ratings of drug liking, drug strength, and good drug effects after administration of *d*-amphetamine compared to placebo. Subjects were then tested with *d*-amphetamine (3.75, 7.5, 15 and 30 mg), diazepam (5, 10, 20 and 40 mg), and methylphenidate (7.5, 15, 30 and 60 mg) to determine if the discriminative stimulus effects of these drugs would substitute for Drug A. Doses of *d*-amphetamine substituted for Drug A in some, but not all subjects; however, subjective effects corresponded to discriminative stimulus effects. None of the doses of diazepam substituted for Drug A. Only the highest dose of methylphenidate (60 mg) substituted for Drug A in all subjects, producing Drug A-like subjective effects. These results indicated that this procedure is useful for studying the discriminative stimulus effects of drugs in humans and that the subjective and discriminative stimulus effects of the tested drugs closely paralleled one another.

EFFECTS OF BUSPIRONE AND DIAZEPAM ON MOOD AND BEHAVIOR. Warren K. Bickel, John R. Hughes, Stephen T. Higgins and Mark Capeless. University of Vermont, Burlington, VT.

The present study examined the effects of buspirone and diazepam on subjects' reports of drug effects and on performance. Subjects were administered either buspirone (0, 10, 20, and 30 mg/70 kg of bodyweight) or diazepam (0, 10, 20, and 30 mg/70 kg