

DISTINGUISHING BETWEEN D1 AND D2 ANTAGONISTS' BEHAVIORAL EFFECTS. Stephen C. Fowler, J. Michael Chase, Ruey M. Liao, Paul D. Skjoldager, Susanne A. Beatty, Julie S. Johnson, Laura R. Johnson and Michael R. Durnam. University of Mississippi, University, MS.

The effects of dose ranges of haloperidol and raclopride (both are D2 dopamine receptor blockers), SCH23390 (a D1 antagonist), and clozapine (an atypical neuroleptic) on rats' operant response rate, duration, and force were examined under two different response topographies and two different levels of required force. Appropriate quantitative methods permitted the comparison of drug effects on force and duration at doses of each drug that produced equivalent rate reductions. The D2 blockers were characterized by dose-related elevated force and lengthened duration, while SCH23390 affected neither of these measures. (Supported by MH43429.)

EVIDENCE FOR AND AGAINST CONSIDERING CAFFEINE A DRUG OF DEPENDENCE. John R. Hughes, Alison H. Oliveto, Stephen T. Higgins and Warren K. Bickel. University of Vermont, Burlington, VT.

There is strong human experimental evidence that caffeine is psychoactive, can serve as a reinforcer and can produce withdrawal effects. The evidence for tolerance is less robust. There is no, or poor, clinical evidence that coffee users have difficulty stopping caffeine use, have craving upon cessation, lose control over caffeine use or develop physical or psychological problems from caffeine use. The results of well-designed clinical studies are needed before a decision on whether, in some individuals, caffeine use can be considered a form of drug dependence.

PREDICTIVE POWER OF THE COCAINE EXPECTANCY QUESTIONNAIRE. Adam J. Jaffe. Yale University, New Haven, CT; M. Marlyne Kilbey. Wayne State University, Detroit, MI; Gerald Rosenbaum. University of California at San Diego, San Diego, CA.

The current study explored the ability of the Cocaine Expectancy Questionnaire (CEQ) to predictively discriminate cocaine abusers from nonusers. The CEQ subscales demonstrated highly significant discriminative power. The linear discriminant function predicted abusers vs. nonusers with 87-89.5% accuracy. The expectancy scales that demonstrated significant predictive power include physiological sensations, grandiosity, physical functioning, relaxation, antisocial and aggressive behavior and sexual functioning. In addition, abusers and nonusers had significantly different mean scores on eight of the eleven CEQ subscales. Etiological implications are discussed.

PAPER SESSION

Effects of Methylphenidate on Attention Deficit Disorder

Chair: *Mark D. Rapport*, State University of New York Medical School at Stony Brook, Stony Brook, NY

ATTENTION DEFICIT DISORDER: METHYLPHENIDATE DOSE-RESPONSE EFFECTS ON CLASSROOM BEHAVIOR. Mark C. Rapport. SUNY Stony Brook, Stony Brook, NY.

This multi-year investigation was designed to examine the effects of methylphenidate (MPH) at four doses (5, 10, 15, 20 mg) on the attention, academic efficiency, and teacher-rated behavior

of 84 children with Attention Deficit Disorder/Hyperactivity (using direct observations), and to compare these effects to functioning under baseline and placebo conditions. MPH significantly improved all areas of classroom functioning in a linear, dose-dependent fashion. Intermediate and individual level analyses, however, indicate a wide range of optimal responses across subjects. Implications for the construction of individual dose-response potency profiles and the ability to predict behavioral response are discussed.

ATTENTION DEFICIT DISORDER: DOES METHYLPHENIDATE NORMALIZE CLASSROOM FUNCTIONING? George DuPaul. University of Massachusetts Medical School, Worcester, MA.

This study was designed to investigate whether methylphenidate (MPH) normalizes the classroom behavior and academic performance of children with Attention Deficit Disorder (ADD). MPH was found to significantly reduce the intrasubject variability in task-related attention of 30 children with ADD. Further, teacher ratings of ADD behavior and children's attention to academic tasks were improved to the extent that these measures were no different from those obtained by a Normal Control group of 25 children. Alternatively, the academic performance of ADD students was improved, but not to the point of normalization, thus implicating the need for adjunctive interventions.

METHYLPHENIDATE: EMERGENT SYMPTOM PROFILE OF DOSE-RESPONSE EFFECTS IN ADDH CHILDREN. Kevin Kelly and Mark Rapport. SUNY Medical School at Stony Brook, NY.

This study was designed to assess treatment emergent symptoms in children with Attention Deficit Disorder/Hyperactivity treated with methylphenidate (MPH). Sixty children participated in a double-blind, placebo control, within-subject design in which each subject received four doses of MPH (5, 10, 15, 20 mg) and a placebo in a counter-balanced order (following baseline) and was rated by their parent on three emergent symptom scales. Scale items were reduced to factor scores and subjected to both group and individual analyses. Results indicated significant *reductions* in severity ratings from baseline to placebo, as well as to most active medication conditions.

PAPER SESSION

The Psychopharmacology of Alcohol

Chair: *Stephen Fowler*, University of Mississippi, University, MS

ANALYSIS OF AMNESIA FOLLOWING ALCOHOL WITHDRAWAL. J. R. Gerrein. Choate Symmes Hospitals, Woburn, MA.

The study examined the memory changes that occur in alcoholic patients during the first 13 days following hospital admission requiring alcohol detoxification. In an independent groups design of 50 patients, 9- and 3-day groups performed significantly better than the 5-day group on several Wechsler Memory Quotient Measures, with older subjects recovering most slowly. The number of years since first detoxification was related to increased Visual Reproduction impairment and to a retrieval deficit in short-term verbal memory, while depression score was related to storage deficits. Practical and theoretical implications are discussed.

ETHANOL CONSUMPTION AS A FUNCTION OF ETHANOL PROCUREMENT COST. Anthony Liguori, Paula Steffen and Henry Marcucella. Boston University, Boston, MA.

In a simulated foraging environment, seven rats lever-pressed to obtain access to food, water, and ethanol. As the response requirement for ethanol access was increased from fixed ratio 1 to fixed ratio 175, six of the animals continued to respond for ethanol. Rats with high food access costs were less likely to reduce ethanol consumption than were rats with low food access costs. The results suggest that 1) ethanol served as a partial substitute for food when food access cost was high, and 2) animals without food access constraints will respond at high rates for ethanol access.

AN ALCOHOL COMPENSATION EFFECT PRODUCED BY EXPECTATIONS AND NOT ALCOHOL. W. M. Lapp, R. L. Collins and C. V. Izzo. New York State Research Institute on Alcoholism, Buffalo, NY.

An alcohol compensation effect (ACE) was observed using the balanced placebo design that depended upon the subject's expectation that they had consumed alcohol and not by alcohol itself. The effect was observed using a multidimensional categorization task that factorially combined three separable stimulus dimensions and was diagnostic with respect to both selective and divided attention. Results showed that the ACE varied as a function of task complexity such that harder tasks produced a larger ACE and were therefore consistent with a general resource allocation model of attention that is equipped with a pool of resources of variable size.

TOWARD A MEDIATIONAL MODEL OF ALCOHOL EXPECTANCY. Gregory T. Smith. University of Kentucky, Lexington, KY; Mark S. Goldman. University of South Florida, Tampa, FL.

Recent developments in alcohol expectancy theory suggest that expectancies can be understood as mediators of the influence of prior alcohol-related learning on drinking behavior. This study tested such a model on a large sample of adolescents ($n = 608$ 16- to 18-year-olds). As hypothesized, it was found that (a) an index of family drinking behavior, the expectancy for social enhancement from alcohol, and adolescent drinking were all related; (b) the expectancy partially mediated the influence of family drinking; and (c) the expectancy accounted for 10 times the adolescent drinking variance than did family drinking, and so likely mediates the influences of other important independent variables as well. Experimental studies are necessary to complement correlation-based models such as this one. (Supported by NIAAA.)

GROUP POSTER SESSION

Chair: *Stephen T. Higgins*, University of Vermont, Burlington, VT

EFFECTS OF ACRYLAMIDE ON NEUROBEHAVIORAL FUNCTIONING IN THE PIGEON. Stephen A. Daniel. Mercy College, Dobbs Ferry, NY; Hassan A. N. El-Fawal, Frederick R. Moon and Hugh L. Evans. New York University Medical Center, New York, NY.

Acrylamide, an industrial chemical with well-described neurotoxic effects, is an important reference neurotoxicant. The dose- and time-effects of subchronic acrylamide on feeding behavior and motor function in pigeons were tested. All doses of

acrylamide resulted in effects on either posture (20, 30 or 60 mg/kg/day) or stride length (45 mg/kg/day). Effects on accuracy of feeding behavior were noted at 30, 45 and 60 mg/kg/day. Behavioral tests of motor function and feeding behavior both revealed early effects of acrylamide, which is of interest to scientists who require non-invasive tests for neurobehavioral functioning.

MEDIATION OF MORPHINE WITHDRAWAL AGGRESSION BY DOPAMINERGIC AGENTS. J. W. Tidey and Klaus A. Miczek. Tufts University, Medford, MA.

Altered motor and enhanced aggressive behavior during opiate withdrawal may be due to disruptions of dopamine activity. Male CFW mice were administered d-amphetamine, SKF38393 (D1 agonist), quinpirole (D2 agonist), or a combination at different times after morphine pellet removal. Rearing and walking were greatly reduced and grooming was increased 5 hr into withdrawal; these effects returned to control levels by 48 hr. Morphine withdrawal provoked heightened attack and threat behavior toward a male conspecific, persisting at least 96 hr. In withdrawn mice d-amphetamine maintained the enhanced aggression; more selective D1/D2 agonists partially mimicked the effects of d-amphetamine on aggressive but not motor behaviors.

DISCRIMINATIVE STIMULUS PROFILE OF BUPRENORPHINE IN MORPHINE-DEPENDENT PIGEONS. Eve M. Versage, Philip J. Goushaw and Alice M. Young. Wayne State University, Detroit, MI.

Experiments compared the generalization patterns of the mu opioid partial agonist buprenorphine in morphine-dependent and withdrawn pigeons. Pigeons ($N = 5$) were trained to discriminate among IM injections of 17.8 mg/kg morphine, saline, and 0.056 mg/kg naltrexone. Performance was maintained under FR 30 schedules of food delivery six hours after daily treatment with 10 mg/kg morphine. In four subjects, withholding the morning morphine injection evoked complete naltrexone-appropriate responding. Buprenorphine (1.0–32 mg/kg) evoked only saline-appropriate responding in both dependent and withdrawn birds, followed by a prolonged antagonism of the morphine training dose. Thus, buprenorphine displayed limited agonist efficacy in morphine-dependent birds. (Supported by USPHS grants DA-03796 and K02-DA00132.)

CLONIDINE, DIAZEPAM AND TELEMETERED AUTONOMIC RESPONSES TO SOCIAL STRESS. W. Tornatzky and Klaus A. Miczek. Tufts University, Medford, MA.

Animals confronted with an aggressing opponent react with defensive, submissive behavior and increased cardiovascular activity. The heart rate and core temperature of the experimental rats were monitored by telemetry while being exposed for 1 hr to the threats of an opponent. The tachycardia and hyperthermia were dose-dependently attenuated by clonidine. Diazepam, in contrast, did not affect the tachycardia but delayed the hyperthermic reaction during the interaction. With either diazepam or clonidine the high levels of defensive behavior were maintained even at muscle relaxant doses. The massive autonomic reactions during social conflict appear to be differentially affected by adrenergic and GABA-A-receptor agonists.

ULTRASOUNDS AS A MEASURE OF DISTRESS DURING MORPHINE WITHDRAWAL. J. A. Vivian and Klaus A.