

Miczek. Tufts University, Medford, MA.

Ultrasounds (US) in rats may serve a communicative purpose or indicate affective state as they occur only in highly significant situations, such as sex and aggression. Sixty male Long-Evans rats with differential social experience were withdrawn from morphine or placebo pellets; equally treated pairs were observed for 10 min and while solitary at 6, 24 and 96 hr after pellet removal. Withdrawn rats lost weight, displayed "wet dog" shakes, hyperactivity and US, peaking at 24 hr. Defeat experienced withdrawn rats markedly increased their rate and duration of US. Opioid involvement in US generation is demonstrated and is influenced by previous behavioral experience.

ANTAGONISM OF THE PROAGGRESSIVE EFFECTS OF ETHANOL IN SQUIRREL MONKEYS. E. M. Weerts and Klaus A. Miczek. Tufts University, Medford, MA.

Dominant male squirrel monkeys treated with 0.1, 0.3 g/kg ETOH threatened rival males more frequently, whereas 1.0, 1.5 g/kg ETOH reduced these behaviors and produced ataxia. A beta-carboline benzodiazepine receptor antagonist, ZK 93426 (3 mg/kg) antagonized only the aggression-enhancing effects of ETOH as well as the frequency of ETOH-induced staggering. ZK may possess mild agonist and inverse agonist properties. ZK (1, 3, 10 mg/kg) administered to animals in the social group significantly decreased the duration of being the target of aggression, and 10 mg/kg ZK decreased aggressive threats. Blockage of the benzodiazepine receptor attenuates the proaggressive and motor incoordinating effects of ETOH.

CONTACT TRACING IS NEEDED, MANDATORY HIV TESTING IS NOT. Dominic A. Phillipis, David S. Metzger, George E. Woody and Helen Navaline. University of Pennsylvania, Veterans Administration Medical Center, Philadelphia, PA.

Central to both HIV testing and contact tracing issues is the need to achieve a balance between the individual's right to privacy (and, if necessary, treatment) and the public health. The success of any legislation designed to achieve this balance depends on the compliance of those groups most affected by such legislation. With this in mind, an opinion survey on the two aforementioned issues was conducted on one such group—196 methadone clients from two Philadelphia clinics. We conclude that voluntary testing is preferable to testing mandated by law, especially in light of the success of voluntary testing initiatives. However, contact tracing of partners (sexual and/or needle sharing) of infected individuals is endorsed as a means of introducing these individuals most at risk for contracting HIV in the health care delivery system.

TREATING ISRAELI OPIATE ADDICTS WITH METHADONE MAINTENANCE VS. CLONIDINE DETOXIFICATION. Y. ShamHam, E. Shufman, Y. K. Bar-el, J. M. Scher, Z. Zlotogorski and E. Cohen. Uniformed Services University of the Health Sciences, Bethesda, MD.

This 13-month longitudinal study compared the effectiveness of two treatment programs, Methadone Maintenance (MM) with adjunct long-term psychotherapy and Clonidine Detoxification (CD) with adjunct long-term psychotherapy and antidepressants in Israel. One hundred and five heroin addicts participated in the study. The results showed that the combined treatment of CD, antidepressants was more effective than the traditional MM

treatment in reducing the heroin use and dropout rate. The fact that the Israeli drug addicts use low dosages of heroin, and that methadone is a popular illegal drug in Israel may explain the greater efficacy of the clonidine detoxification approach.

ALCOHOL DOSE EFFECTS ON THE CARDIOVASCULAR STRESS RESPONSE OF MEN AT DIFFERING RISKS FOR ALCOHOLISM. Sherry H. Stewart, Peter R. Finn, Robert O. Pihl. McGill University, Montreal, Quebec, Canada.

The cardiovascular hyperreactivity to stressors observed in males with multigenerational family histories of alcoholism (i.e., high-risk MFH men) has been found to be significantly dampened by high doses of alcohol (Finn and Pihl, 1987, 1988; Finn, Zeitouni and Pihl, 1990). The present study examined the effects of different doses of alcohol on cardiovascular reactivity in MFH men versus FH controls. Subjects were assigned to one of five alcohol doses (active placebo, 0.50, 0.75, 1.00, or 1.32 ml/kg body weight). Cardiovascular reactivity to a shock stressor was examined in these men while sober and after consuming alcohol. The cardiovascular reactivity dampening effect in MFH males was evident only at moderate to high doses of alcohol, suggesting that these men must consume moderately high doses in order to obtain the potentially reinforcing effects of alcohol.

BEHAVIORAL PERFORMANCE IN AN MPTP-PARKINSONIAN CO-GRAFTED MONKEY. J. E. Ellis and L. D. Byrd. Yerkes Primate Research Center; and R. A. E. Bakay. Emory University School of Medicine, Atlanta, GA.

In order to characterize an animal model of MPTP-induced hemiparkinsonism and the recovery of motor function following transplantation of adrenal tissue into the lesioned area, a rhesus monkey (*Macaca mulatta*) was trained to perform a discrete-trial, operant task which resulted in food presentation. After behavioral performance had stabilized on the task and a high level of accuracy was maintained, MPTP (2.0 mg/kg) was injected via the left carotid artery to produce marked impairment of movement of the right arm. Subsequently, medullary tissue was removed from the left adrenal gland and transplanted along with peripheral nerve to the left caudate nucleus. Right and left hand performances were comparable on all dependent measures in the baseline condition, including response time, response accuracy and trials completed. Performance with the right hand was severely impaired following unilateral MPTP treatment, however, and the dependent measures reflected decreased motor control with the right hand. When adrenal medullary tissue was transplanted along with peripheral nerve into the brain, right hand performance exhibited a recovery of function over time. The data indicate that the rhesus monkey and the behavioral task developed during this study can be efficacious in characterizing the effects of MPTP, a neurotoxin, on the CNS and on motor function and in assessing the recovery of function following transplantation into lesioned areas of the brain. (Supported by the American Parkinson Disease Association, Veterans Administration, and USPHS Grants NS-24340, DA-01161 and RR-00165.)

PANCREATIC INSULIN PARTIALLY MEDIATES THE NICOTINE-BODY WEIGHT RELATIONSHIP. Margarita Raygada, Stephanie M. Nespor and Neil E. Grunberg. Uniformed Services University, Bethesda, MD.

The inverse relationship between nicotine and body weight is

well documented, and it is clear that this phenomenon results from effects of nicotine on specific food intake and on energy expenditure. Recent research indicates that chronic nicotine administration and cessation affect plasma and hypothalamic insulin levels and may thereby affect specific food intake and energy expenditure. The present study was designed to examine the effects of nicotine on insulin levels in the pancreas to try to determine how nicotine alters insulin levels. Nicotine administration decreased pancreatic insulin, body weight, and sweet food intake. Therefore, nicotine appears to alter insulin production and may thereby affect body weight through behavioral and biological mechanisms.

A MULTIDISCIPLINARY PARADIGM OF SUBSTANCE USE IN COLLEGE STUDENTS. Roger J. Segalls and Mary Ann Hoffman. University of Maryland, College Park, MD.

Substance use in college students was examined by a model incorporating the following three variables: self-esteem, temperament, and peer use of substances. One hundred randomly selected University of Maryland students completed an instrument packet containing a drug and alcohol use survey, the Strelau Temperament Inventory, the Rosenberg Self-Esteem Scale, and the Peer Association Scale. Results of ordered multiple regressions showed the peer association scale and the self-esteem measure accounting for a significant proportion of variance. Temperament, specifically reactivity, did not prove to be a significant predictor of college student substance use. Theory based multidisciplinary paradigms are recognized as an important direction for future etiologic research.

PHARMACOLOGICAL SPECIFICITY OF ENHANCED SENSITIVITY TO NALTREXONE IN RATS. C. W. Schindler, S. R. Goldberg and J. L. Katz. National Institute on Drug Abuse, Addiction Research Center, Baltimore, MD.

Rats treated weekly with cumulative doses (1–100 mg/kg, IP) of naltrexone develop an enhanced sensitivity to the operant response-rate decreasing effect of naltrexone. In the present experiment the pharmacological specificity of that enhanced sensitivity was determined by testing a variety of drugs for cross-sensitivity to naltrexone. Only the opioid antagonist naloxone showed clear cross-sensitivity to naltrexone. The mu agonist morphine also showed some cross-sensitivity, but not to the degree that naloxone did. No evidence of cross-sensitivity was observed for the optical isomer of naloxone, *d*-naloxone, the kappa agonists U-50,488H and ethylketocyclazocine, or for the sigma agonist *N*-allylnormetazocine. In addition, the nonopioids chlordiazepoxide and phencyclidine also showed no evidence of cross-sensitivity. The results for the opioid antagonists Mr 2266 and quadazocine, the delta agonists LY 127623 and *d*-pen,*d*-penkaphalin, and for the benzodiazepine antagonist flumazenil were difficult to interpret as none of these compounds produced clear decrements in responding even at the highest dose tested. Thus, the results of the present experiment clearly demonstrate the pharmacological specificity of the enhanced sensitivity which develops to naltrexone in rats.

THE EFFECTS OF ETHANOL AND RESPONSE COST ON HUMAN AGGRESSIVE RESPONDING. Ralph Spiga, Don R. Cherek and Robert H. Bennett. University of Texas Health Science Center, Houston, TX.

This study examined the effect of ethanol and response cost on human aggressive responding. Male research subjects were pro-

vided nonaggressive and aggressive response options. Nonaggressive responses were maintained by presentation of points exchangeable for money. Aggressive responses, engendered by point loss, were button presses ostensibly subtracting points from a fictitious partner. Subtractions were attributed to a fictitious partner. Aggressive responding was maintained by escape from schedule point losses for 125 sec. The effect of 0.125, 0.25 and 0.5 g/kg ethanol on aggressive responding was examined when 10, 20, 40 and 80 responses subtracted a point. Ethanol was administered by a cumulative dosing procedure.

VITAL SIGNS DURING SLEEP DEPRIVATION: EFFECTS OF METHYLPHENIDATE AND PEMOLINE. Sterien A. Gomey, Harvey Babkoff, Tamsin L. Kelly, Paul Naitoh and Sheryl A. Hansen. Naval Health Research Center, San Diego, CA.

Physiological changes as a result of a 64-hour period of sleep deprivation and administration of a stimulant were studied in 36 Naval Special Services trainees (mean age: 21 ± 2.75 years). Subjects were administered the stimulants methylphenidate (10 mg every 6 hours \times 8 doses) or pemoline (37.5 mg every 12 hours \times 4 doses). Neither drug affects pulse or blood pressure (systolic, diastolic or mean). Pemoline tends to elevate body temperature the first day of sleep deprivation especially during the circadian nadir. These findings may be useful in testing the hypothesis that increased body temperature may be associated with increased arousal levels.

EFFECTS OF OPIOID AGONISTS AND ANTAGONISTS IN MORPHINE-TOLERANT PIGEONS AND RATS RESPONDING UNDER A SCHEDULE OF FOOD PRESENTATION. Mitchell J. Picker, S. Stevens Negus, Rebecca M. Craft, Jill Yarbrough and Linda A. Dykstra. University of North Carolina at Chapel Hill, Chapel Hill, NC.

The effects of various opioid agonists and antagonists were examined before and during exposure to a chronic morphine regimen in pigeons and rats responding under a fixed ratio schedule of food presentation. In both species, the chronic regimens engendered tolerance to the rate-decreasing effects of the mu agonist morphine and cross-tolerance to the effects of the mu agonists (-)-pentazocine and (-)-metazocine. Cross-tolerance was also conferred to butorphanol in the rat, but not the pigeon. The chronic morphine regimen did not alter the dose-effect curves for the nonopioids (+)-pentazocine and (+)-metazocine or the kappa agonist bremazocine. In contrast, sensitivity was obtained to the effects of the opioid antagonists naloxone and levallorphan. The present findings indicate that chronic morphine administration in pigeons and rats results in the selective development of tolerance to other mu agonists and sensitivity to mu antagonists.

THE EFFECTS OF NICOTINE ON MEMORY AND ATTENTION. Caroline Cohen. NIDA, Addiction Research Center, Baltimore, MD; Jacques Le Houezec and Collette Martin. University de Paris, Paris, France.

The present study tested the effects of smoked nicotine on memory, attention and concomitant psychophysiological reactions in smokers. The smokers were tested after 9 hours of tobacco deprivation. Two cigarettes differing in nicotine delivery (they delivered similar amounts of CO and tar in standard machine tests) were compared to a cigarette of the subjects' usual brand. The speed of performance on a letter cancellation task increased over