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 recogmized 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*-penenkephalin, 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 provided 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