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

the session in all conditions. The greatest improvement occurred after smoking the medium nicotine delivery cigarette which was always the subject's usual brand. Accuracy on this task deteriorated after smoking a low-nicotine delivery cigarette. The results suggested a direct effect of nicotine dose on memory performance.

EFFECTS OF EXERCISE AND DIET ON NICOTINE CESSATION WEIGHT GAIN. Kathryn A. Popp. Uniformed Services University of the Health Sciences, Bethesda, MD.

One reason given by smokers for continuing to smoke in spite of health consequences is that smoking controls body weight. Finding ways to prevent smoking cessation-induced weight gain may help reduce the number of smoking-related deaths. This study examined the effects of exercise and the availability of sweet food on weight gain resulting from the cessation of chronic nicotine administration in rats. Exercise reduced rate of weight gain, proportion of body fat and fasting plasma insulin levels. Restricting access to sweet food reduced proportion of body fat and fasting insulin levels.

MULTIDIMENSIONAL SCALING FOR MEASURING ALCOHOL EXPECTANCIES. Bruce Rather, Brian Levine and Mark Goldman. University of South Florida, Tampa, FL.

Although expectancies for alcohol have been shown to influence drinking behavior, current expectancy questionnaires do not lend themselves to the study of how expectancies are represented in memory. Two studies are described which utilize statistical techniques (e.g., multidimensional scaling) that are designed to produce hypothesized representations of cognitive structures. In one study, the cognitive representation of effects for alcohol are presented for heavy versus light drinkers. In another study, drinkers' respresentations of the effects of alcohol are compared across situations. Both studies yielded "cognitive maps" which suggest mechanisms by which decisions to drink are made.

AGGRESSION ATTENUATES PSYCHOMOTOR STIMULANT EFFECTS OF d-AMPHETAMINE, MDMA AND PCP. M. Haney and Klaus A. Miczek. Tufts University, Medford, MA.

In a protocol that concurrently assessed drug effects on conditioned performance and aggressive behavior, d-amphetamine, and to a lesser degree MDMA and PCP increased FI responding. AMPH but not PCP or MDMA enhanced fighting in a subset of mice. MDMA's suppressive effects on conditioned performance and fighting are amplified following $5HT_2$ receptor antagonism. D1 antagonists blocked the enhancing but not the suppressive effects of AMPH on schedule-controlled and aggressive behavior. Multiple fighting experiences also attenuated the stimulatory properties of amphetamines and PCP. Behavioral experiences that modify DA and 5HT systems alter sensitivity to psychomotor stimulants.

DEPRESSION AND ADJUSTMENT PROBLEMS IN COCAINE AND OPIOID ADDICTS. Robert M. Malow, Jeffrey A. West, Jose Pena and Criss W. Lott. VA Medical Center and Tulane University Medical Center, New Orleans, LA.

Affective and adjustment symptoms among compulsive cocaine users have not been thoroughly evaluated, and it is unclear how this subgroup might differ clinically from drug users currently abusing opioids. This study compared subgroups of cocaine and opioid users on global measures of subjective distress, specifically anxiety and depression, and on various self-reported psychopathology symptoms. In contrast to compulsive cocaine users, opioid addicts were characterized by significantly greater problems with depression and adjustment. Results are consistent with earlier research indicating less psychopathology among cocaine abusers than opioid addicts.

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

Rats were required to lever press in a simulated foraging environment for access to either water and food or water, ethanol and food. The procurement cost of food was manipulated by increasing the number of responses required to produce access to food. The food procuring behavior of the ethanol animals collapsed at much lower food access ratios than that of the animals with only water available. Once the animal shifted to ethanol it would work for food only at low procurement ratios. Below food access ratios of 2500, manipulating the food access ratio had only slight effects on ethanol consumption.

THE EFFECT OF ALCOHOL ON IMPULSIVE AND NONIMPULSIVE INDIVIDUALS. Carolyn L. Morse and Vincent J. Adesso. The University of Wisconsin-Milwaukee, Milwaukee, WI.

Impulsive and nonimpulsive young, male, heavy drinkers received alcohol or a placebo beverage, and their performance on tests of behavioral impulsivity was measured. On detail-oriented tasks such as the Matching Familiar Figures Test (MFFT) and Projective Drawing, the alcohol/impulsives behave more impulsively than alcohol/nonimpulsives or placebo/impulsives. However, in a time estimation task, the placebo/impulsives underestimated intervals while both alcohol groups responded similarly, overestimating the intervals. The results are consistent with a multifaceted conceptualization of impulsivity, some aspects of which are detrimentally affected by alcohol and others which may be "normalized" by alcohol ingestion.

RESPONSE TO REWARD AND PUNISHMENT AND THE INHERITED RISK FOR ALCOHOLISM. Jordan B. Peterson, Peter Giancola and P. O. Pihl. McGill University, Montreal, Quebec.

Eleven nonalcoholic sons of male alcoholics (SOMAs) from families with extensive male-limited multigenerational family histories of alcoholism and 11 controls matched for age, sex, education level and drinking history were exposed to rest, reward and punishment while sober and while alcohol-intoxicated. Analysis of their cardiovascular and muscular response indicated 1) that the baseline resting heart-rate of the SOMAs was significantly elevated by alcohol consumption and 2) that the SOMAs were characterized by heightened susceptibility to the stress-dampening effects of alcohol on muscular response to punishment. This pattern of response supports the notion that alcohol may be reinforcing to SOMAs because of its interference with the activity in the limbic threat-response system.

ACUTE ETHANOL INTOXICATION, GENDER DIFFERENCES, AND PROSE PROCESSING. Jennifer Haut, Bill E.