decreased lever press rates from higher placebo rates independent of whether behavior was suppressed by punishment (point loss) or an interresponse time requirement. These results are not consistent with the antipunishment effects of barbiturates observed in nonhuman species where electric shock presentation is the punisher. Functional differences between positive and negative punishers may account for this discrepancy.

CHARACTERIZING NEUROBEHAVIORAL DEVELOPMENT IN MONKEYS USING MODIFIED BAYLEY AND BRAZELTON SCALES. Jane E. Ellis, C. Anne Patterson-Barnett and Larry D. Byrd. Yerkes Regional Primate Research Center, Emory University, Atlanta, GA.

The ability to assess the state of an infant's nervous system via measures of observable behavior has contributed significantly to studies of human development. Interest in the effects of in utero risks has increased the need for an effective and reliable means of characterizing neurobehavioral development in nonhuman primates, as well. In the present study, a test battery consisting of items modeled after those in the Brazelton Neonatal Behavioral Assessment Scale and the Bayley Infant Development Scale were used to assess postnatal development in infant rhesus monkeys (*Macaca mulatta*). Groups of neonates differing in prenatal experience served as subjects. Exposure to cocaine in utero was accomplished by implanting in the maternal animal an osmotic pump that released 0.3 mg/kg/h cocaine continuously. Other pregnant monkeys were exposed to decreased oxygenation (17%) during 20-min periods for several days prior to delivery. The cocaine-exposed infants showed a significantly longer retention of the rooting reflex, higher levels of distractibility during testing, and more frequent vocalizations. No statistically significant differences were found in physical growth measures for any group. The data derived from this study provide evidence that modified Brazelton and Bayley Scales can characterize and quantitate development in nonhuman primates. (Supported by USPHS Grants DA-06264, DA-01161 and RR-00165 to the Yerkes Center from the Division of Research Resources, NIH.)

PROTECTIVE AND RISK FACTORS FOR DRUG USE: A LONGITUDINAL ANALYSIS. Maria Felix-Ortiz. University of California; Michael D. Newcomb. University of Southern California, Los Angeles, CA.

We test new approaches that overcome the problem of attempting to identify single causes of drug use by considering a wide range of factors in indices of risk, protection, and their interaction. From data on a sample of teenagers, bivariate, multiple regression, and latent-variable structural equation analyses revealed how psychosocial vulnerability is associated with frequency and quantity of drug use (cigarettes, alcohol, cannabis, cocaine, and hard drugs) in adolescence and later drug use: Vulnerability indirectly increased frequency of cannabis and cocaine use four years later.

COCAINE QUICKENS THE HIGH-SPEED FORELIMB MOVEMENTS OF ENRICHED RATS. Stephen C. Fowler, Patrick H. Hopkins, J. Michael Chase, Mary J. Kallman and Candice Murphy-Farmer. University of Mississippi, University, MS.

In an effort to demonstrate cocaine's putative capacity to enhance psychomotor performance, rats reared and housed in enriched environments were compared in their response to cocaine with rats reared and housed in isolation. Animals were trained to strike a force transducer with the forelimb on either a high-force or low-force fixed ratio 24 schedule of sweetened milk reinforcement. Analysis of interresponse times for responses emitted during the ratio run were shortened by 10.0 mg/kg cocaine, with the effect being most consistent in the enriched rats responding on the high-force schedule. This effect does not appear to be rate dependent, and is analogous to enhancement of athletic performance by dopaminergic stimulants. (Supported by DA 05310.)

GENERALIZATION OF AN ECOLOGICALLY RELEVANT STIMULUS TO THE PENTYLENETETRAZOLE CUE. David V. Gauvin and Frank A Holloway. University of Oklahoma Health Sciences Center, Oklahoma City, OK.

Rats previously trained in a two-choice drug discrimination task using 15 mg/kg pentylenetetrazole and saline were exposed for 20 min to the presence of a domestic cat. No physical contact was possible between predator and prey. Rats were then placed into operant chambers and tested in a 2-min reinforced test session. Ten out of 12 rats responded, resulting in 91% pentylenetetrazole-appropriate responding. Similar to Blanchard et al. (JCPP 88:81–88; 1975), specific environmental variables were required to produce PTZ-appropriate responding. These data suggest that the interoceptive defensive reactions to environmental ecologically relevant stimuli were similar to the 15 mg/kg pentylenetetrazole training stimulus.

HISTORICAL AND ENVIRONMENTAL FACTORS IN THE DEVELOPMENT OF ETOH CONDITIONED PLACE PREFERENCE (CPP). David V. Gauvin and Frank A. Holloway. University of Oklahoma Health Sciences Center, Oklahoma City, OK.

The effects of drug/behavioral history (hx) on the development of ethanol (ETOH) CPP was examined in rats previously trained in either: 1) a drug discrimination (DD) task using 1.5 g/kg ETOH (IP) and saline, or 2) an oral self-administration (SA) task. The CPP Control and DD groups received 2 g/kg ETOH (IP). The SA group drank ETOH (E) or water (W) and were sequestered (Seq.) or nonsequestered (Nonseq.) during trials. The control group developed a conditioned *aversion;* the DD hx group showed no preference or aversion. Only the SA/EW-Seq. conditioning produced *preference* ($p<0.001$). The EW-Nonseq., WW-Seq., and EE-Seq. produced neither preference or aversion. These data suggest that drug exposure alone does not necessarily contribute to learning rewarding aspects of ETOH; ETOH-SA can produce CPP; and cues learned under DD and SA may not be identical.

AN INVESTIGATION OF METHADONE MAINTENANCE DETOXIFICATION FEAR COMPONENTS. Mary A. Gentile and Jesse B. Milby. University of Alabama, Birmingham, AL.

This study sought to enhance the DFSS-14 by exploring three additional underlying fear components. Samples from two populations of methadone maintenance clients ($N=226$) were used in the scale development analysis where 31 items and three factors (fear of relapse, fear of AIDS, and fear of withdrawal symptoms) emerged. A test validation sample ($N=159$) yielded the final scale of 27 items that best discriminated between interview diagnosed detoxification fear (91.8% correctly classified) and

nonfear (85.4% correctly classified) subjects. The psychometric properties of this scale along with information on its factor structure and clinical usefulness are discussed.

CHANGES IN DRUG ABUSERS' HIV-1 RISK BEHAVIOR. Lawrence Greenfield, Robert K. Brooner and George E. Bigelow. The Johns Hopkins University School of Medicine, Baltimore, MD.

Assessment of changes in HIV risk behavior over time was conducted using self-report (subjective) and urinalysis (objective) measures. IVDUs in treatment reported significantly fewer injections and needle shares, less cocaine and more sedative use than did untreated IVDUs ($p<0.00$). IVDUs reported reductions in numbers of injections, shares and cocaine use over time ($p<0.00$), but no reductions in drug use over time were found through urinalysis. Questions were raised about the validity of the self-reported reductions.

EFFECT OF NICOTINE ON COGNITIVE AND PSYCHOMOTOR PERFORMANCE IN NONSMOKERS. Stephen J. Heishman, Laura M. Richards and Jack E. Henningfield. NIDA Addiction Research Center, Baltimore, MD.

This study examined the effects of repeated nicotine administration in nonsmokers. Seven male volunteers, who reported never smoking less than five cigarettes, lived on an inpatient research unit and participated in 10 consecutive experimental days in which they were administered various doses of nicotine polacrilex gum (Nicorette®) four times each day. Before and after each dose, cognitive and psychomotor performance was assessed. On days 1 and 2, only placebo was given. On days 3–10, four doses were administered each day in this order: 0, 2, 4, and 8 mg. Accuracy on two cognitive tasks (digit recall and logical reasoning) and psychomotor performance on a circular lights task were significantly impaired by nicotine. Nicotine did not enhance performance on any task.

CHRONIC ADMINISTRATION OF $D_2$-SELECTIVE DOPAMINE ANTAGONISTS ENHANCES SENSITIVITY TO COCAINE. Leonard L. Howell and Larry D. Byrd. Yerkes Regional Primate Research Center, Emory University, Atlanta, GA.

The behavioral effects of cocaine (0.03–3.0 mg/kg IV) were determined in squirrel monkeys (*Saimiri sciureus*) trained to lever-press under a fixed-interval (FI) 300-s stimulus-termination schedule. A session consisted of 13 consecutive FI components, each followed by a 60-s timeout. Graded doses of cocaine were injected during selected timeout periods (cumulative dosing). Subsequently, two $D_2$-selective antagonists, spiperone and raclopride, were administered chronically for two-week periods. Spiperone was administered IM twice per week, and raclopride was infused continuously via osmotic minipump. Both antagonists markedly suppressed responding during the two-week periods. When the effects of cocaine were redetermined three days after chronic drug administration was terminated, there was a parallel leftward shift in the dose-effect curve, indicating enhanced sensitivity to cocaine. One week later, sensitivity to cocaine had changed and was similar to that obtained prior to chronic drug administration. Chronic treatment with spiperone did not alter sensitivity to nisoxetine, a norepinephrine uptake inhibitor, or quipazine, a serotonin agonist. The results indicate that the enhanced sensitivity to cocaine is linked to its dopaminergic activity. (Supported by USPHS Grants DA-01161, DA-06264, DA-05346 and RR-00165 to the Yerkes Research Center from the Division of Research Resources, NIH.)

REINFORCING EFFECTS OF CAFFEINE VIA COLA. William K. Hunt and Rose Orozco. Claremont McKenna College, Claremont, CA.

Five moderate cola drinkers (3 cans per day) were tested to see if caffeine in their colas could function as a reinforcer when ingested in a cola over a 6-week period. Caffeine in cola is reported to be 46 mg (0.13 mg per ml). Caffeine at that level in cola functioned as a reinforcer in 2 of the 5 subjects. Further withdrawal was noted in 4 of the 5 subjects. These results replicate earlier findings that low doses (<100 mg) can serve as a reinforcer. Also this study is the first to show that caffeine in sodas can function as a reinforcer. Reasons are also postulated why caffeine failed to be a reinforcer in more subjects.

ALCOHOL, INSTRUCTIONS AND AGGRESSIVE BEHAVIOR: ACUTE AND CUMULATIVE DOSE EFFECTS. T. H. Kelley, R. W. Foltin and M. W. Fischman. The Johns Hopkins University School of Medicine, Baltimore, MD.

The influence of social instructions on the relationship between both acute and cumulative alcohol dose administration and human aggressive behavior was investigated. Sixteen healthy adult males were divided into two groups and instructed that the study either contained or did not contain a social dimension (free-operant aggressive behavior instructions). Session contingencies were identical for all subjects. Four from each group received acute alcohol doses (0, 0.25, 0.50, 0.75 or 1.0 g/kg) prior to single daily sessions, and four received 0.25 g/kg doses once per hour prior to four daily sessions. Regardless of administration conditions, alcohol increased responding only in those subjects receiving social-dimension instructions.

ALCOHOL INTAKE AND ALCOHOL SENSITIVITY: U-SHAPED CURVE FOR ETHNIC GROUPS. Julia A. Lee. The Marin Institute for the Prevention of Alcohol and Other Drug Problems, San Rafael, CA.

An earlier study found an inverse relationship between self-reported alcohol sensitivity and alcohol intake for five ethnic groups. In this study, similar analyses were carried out for a wider range of ethnic/religious groups. Group alcohol sensitivity ranked from lowest to highest as follows: Black, Jewish, White Protestant, Irish Catholic, Other Asian, Japanese, Chinese. Group alcohol intake as a function of alcohol sensitivity formed an inverted U-shaped curve, which peaked for the Irish Catholic group. Group alcohol sensitivity could be a measure of alcohol's pharmacological potency, which may have influenced the evolution of ethnic group norms and customs controlling alcohol intake.

ALCOHOL EXPECTANCIES, IMAGINED AND IN VIVO SITUATIONS: RELATIONSHIP TO DRINKING PATTERNS. Brian Levine and Mark S. Goldman. University of South Florida.

An extensive series of studies has demonstrated the utility of the construct of expectancies for the understanding and prediction of alcohol use and alcoholism. Variation in expectancies has