deprivation. Effects on alertness and cognitive performance were assessed for 12 hours following drug administration. Results from the Multiple Sleep Latency tests show that caffeine reversed sleep deprivation-induced decreases in alertness for 6 hours. Caffeine did not increase sleep latencies to presleep deprivation levels, however. Cognitive performance degraded by sleep deprivation was improved following drug. The highest dose tested improved accuracy on a sustained attention task and on a logical reasoning task, and speed on a choice reaction time task to presleep deprivation levels for 12 hours.

EFFECTS OF TRIAZOLAM AND LORAZEPAM ON HUMAN LEARNING AND PERFORMANCE. Craig R. Rush, Stephen T. Higgins, Warren K. Bickel and John R. Hughes. University of Vermont, Burlington, VT.

The present experiment assessed whether triazolam (0–0.75 mg) and lorazepam (0–6 mg) differentially affect human discriminated-operant behavior. Eight healthy male volunteers were tested during an 8-hour session using a counterbalanced, crossover design. Experimental tasks included the repeated acquisition and performance of behavioral sequences, Digit-Symbol-Substitution Test (DSST), Visual-Analog Rating Scales (VAS), and Addiction Research Center Inventory (ARCI). Both drugs disrupted responding under the repeated acquisition and DSST procedures in a dose- and time-dependent fashion. Similar dose- and time-dependent effects were evident with subject ratings of drug effects. The two compounds differed in terms of onset, duration of effect, and potency (7:1; TZ > LZ), but did not differ in magnitude of effect. These results suggest that the liability associated with the use and abuse of triazolam and lorazepam are comparable, as measured via discriminated-operant procedures and subject ratings of drug effects.

CONTINGENT TOLERANCE TO CHLORDIAZEPOXIDE (CDP) IN RATS: DIFFERENTIAL EFFECTS OF BENZODIAZEPINE (BZ) AND NON-BZ DRUGS. C. A. Sannerud, A. J. G. Alastra and P. L. Harger. The Johns Hopkins University Medical School, Baltimore, MD.

Environmental variables can influence the development of tolerance to the effects of BZ. The interaction between drug administration and the ability to perform the task can result in differential tolerance that is a function of chronic daily dose and duration of treatment. The present study evaluated the role of environmental variables in the development of tolerance to the sedative effects of CDP and the effect of chronic CDP on the sensitivity to acute administration of other BZ and non-BZ drugs. Sprague-Dawley rats were trained to respond under a multiple time-out 10 min, fixed ratio 30 schedule of food pellet delivery. Cumulative dose response curves for CDP, midazolam (MDZ), flumazenil (RO), pentobarbital (PB), caffeine, and *d*-amphetamine were determined prior to and during chronic CDP. Rats received 18 mg/kg CDP either before (PRE, n = 4) or after (POST, n = 5) exposure to the daily experimental session for 7 weeks. Tolerance testing was accomplished by generating dose-response curves for CDP at weekly intervals. Large group differences were seen in the rate and degree of tolerance development to CDP. Group PRE showed 2- to 5-fold shifts to the right in the weekly CDP dose-response curves, 3- to 10-fold tolerance to MDZ and increased sensitivity to RO. Group POST showed no tolerance to CDP or MDZ, and only a slight change in sensitivity to RO. Only Group PRE showed cross-tolerance to PB. Neither group showed a change in sensitivity to caffeine or *d*-amphetamine. (Supported by NIDA grant DA 01147.)

CONTEXTUAL MODULATION OF HUMAN STIMULANT SELF-ADMINISTRATION. Kenneth Silverman, Kimberly C. Kirby and Roland R. Griffiths. The Johns Hopkins University School of Medicine, Baltimore, MD.

This study assessed the influence of environmental context on *d*-amphetamine self-administration in seven recreational stimulant users. Initially, subjects were given color-coded capsules containing either placebo or *d*-amphetamine in random order across days. Environmental contexts were manipulated by scheduling one of two activities each day immediately following drug ingestion: A relaxation activity or a computer vigilance activity. In a subsequent choice phase, six of seven subjects reliably chose ($\geq$9 of 10 choices per subject) to take *d*-amphetamine when the vigilance task was scheduled and placebo when the relaxation task was scheduled. The study provides evidence for the contextual modulation of drug self-administration.

COGNITIVE MOTIVATIONS, SENSATION SEEKING, AND DRINKING PROBLEMS: A LONGITUDINAL STUDY. Alan W. Stacy, M. D. Newcomb and P. M. Bentler. University of California, Los Angeles, CA.

We evaluated the longitudinal effects of adolescent cognitive motivation for alcohol use and sensation seeking on adult drinking problems and driving while intoxicated (DWI). Results indicated that the cognitive motivation factor was a significant, independent, nine-year predictor of a factor of drinking problems. Over this same period, certain cognitive motivation and sensation seeking indicators independently predicted DWI, and the sensation seeking factor independently predicted cognitive motivation and alcohol use factors. The independent effects on problem drinking demonstrated that psychosocial vulnerability appeared across a range of consumption levels, consistent with previous notions that drinking problems are not fully mediated by consumption patterns alone.

PERSONALITY CHARACTERISTICS IN SUBSTANCE ABUSE AND RELATIONSHIP TO PHYSIOLOGICAL PARAMETERS IN HUMANS. J. M. Stapleton, B. C. K. Yung, M. L. Spurgeon, M. J. Morgan, R. L. Phillips, N. G. Cascella, J. H. Jaffe, D. F. Wong and E. D. London. NIDA Addiction Research Center, Johns Hopkins Medical Institution, Baltimore, MD.

Personality characteristics were measured and related to physiological parameters, including regional cerebral glucose metabolic rate (rCMRglc), derived from placebo sessions of ongoing positron emission tomography (PET) studies. Details of methods may be found in London et al. (Arch. Gen. Psychiatry 47:73–81; 47:567–574; 1990). Substance-abusing subjects scored higher than published norms on several personality measures, including the Assault Subscale of the Buss-Durkee Hostility Inventory (AS-BD), the Psychoticism scale of the Eysenck Personality Questionnaire, and the Novelty Seeking scale of the Tridimensional Personality Questionnaire. The AS-BD score was positively correlated with mean rCMRglc across all frontal regions of the brain [$r(20) = +.613$, $p<0.01$]. Scores on the Reward Dependence subscale of the Tridimensional Personality questionnaire were negatively correlated with rCMRglc in superior temporal gyrus [left: $r(12) = -.631$, $p<0.02$; right: $r(12) = -.701$,