$p<0.01$]. These data suggest that substance abuse is associated with personality characteristics that may have specific identifiable neural substrates.

PCP-INDUCED ABNORMAL SOCIAL BEHAVIOR: POSSIBLE RELATION TO SCHIZOPHRENIC PHARMACOLOGY. R. E. Steinpreis, K. J. Mahan, D. J. Reser and J. D. Salamone. The University of Connecticut, Storrs, CT.

Amphetamine has been criticized as a drug model of schizophrenia because of its inability to produce the negative as well as the positive symptoms of schizophrenia. Phencyclidine (PCP) induces a psychosis that includes both the positive and negative symptoms and is virtually indistinguishable from schizophrenia. While the motor effects of these drugs in rats have been well established, the effects on social interaction could provide a more useful tool in the understanding of psychotic behavior. An "intruder" paradigm was used in which a rat was injected with drug (0.5 mg/kg amphetamine, 1.0 mg/kg amphetamine, 4.0 mg/kg PCP or saline), placed in a stable colony of three other rats, and observed for 30 minutes. Both PCP and amphetamine reduced the frequencies of various social behaviors. A second study employed microdialysis methods to measure PCP-induced increases in extracellular dopamine (DA) and its metabolites in the nucleus accumbens. These results indicate that some of the pharmacological and behavioral properties of PCP in rats may be related to the mechanisms involved in schizophrenic symptoms.

DRUG-FREE OUTPATIENT TREATMENT: CHANGING CLIENT CHARACTERISTICS AND OUTCOME. Dace S. Svikis and Mary E. McCaul. The Johns Hopkins University School of Medicine, Baltimore, MD.

This paper compares demographic and psychosocial characteristics of clients admitted into drug-free outpatient treatment ($N = 173$) as a function of their primary DSM-III drug diagnosis (alcohol, heroin, cocaine). Heroin and cocaine clients were more likely to be black and single. More alcohol clients had experienced stable full-time employment, whereas heroin clients reported more illegal involvement and income. More heroin and cocaine clients received detoxification prior to current treatment, whereas more alcohol clients were treated in a medical or psychiatric unit or incarcerated. More alcohol clients indicated that the current admission was suggested by the judicial system. Finally, alcohol clients were more likely to report recent psychiatric symptomatology and a prior history of psychiatric hospitalization.

CHANGES IN THE STIMULUS EFFECTS OF COCAINE WITH TRAINING DOSE. P. Terry, J. M. Witkin and J. L. Katz. NIDA Addiction Research Center, Baltimore, MD.

Six rats were trained in 2-lever experimental chambers to press one lever following cocaine injection (3.0 mg/kg, IP), and the other lever following saline injection. D1 receptor-subtype agonists substituted for cocaine with greater efficacy than was the case at higher cocaine training doses, whereas D2 agonists were less efficacious. All three D1 agonists tested substituted more completely for cocaine than did any of the three D2 agonists. The results suggest a preferential activity of relatively low doses of cocaine for the D1 dopamine receptor subtype.

BEHAVIORAL REBOUND HYPERSENSITIVITY OF DOPAMINERGIC FUNCTION AFTER ACUTE COCAINE. E. Tirelli and J. M. Witkin. NIDA Addiction Research Center, Baltimore, MD.

To investigate functional changes in dopamine systems upon withdrawal from acute injection of cocaine, mice were injected acutely with 30 mg/kg cocaine 1496, 256 or 16 min before being tested for responsivity to apomorphine (D1/D2 agonist). When tested at a time when cocaine disappeared from the brain (256 min), effects of apomorphine on gnawing while climbing were enhanced. These effects were less marked than the potentiation produced by cocaine injected 16 min before test. Cocaine injected 1496 min before test was ineffective. These changes were absent 24 hours after test. Our data suggest that this behavioral procedure may provide a model of acute cocaine dependence.

THE REINFORCING AND SUBJECTIVE EFFECTS OF BUSPIRONE AND LORAZEPAM. Joseph R. Troisi, II, Thomas Critchfield and Roland R. Griffiths. The Johns Hopkins University School of Medicine, Baltimore, MD.

The reinforcing and subjective effects of oral buspirone (BUS) (60 mg/70 kg) and lorazepam (LZ) (4 mg/70 kg) were evaluated in nine adult male recreational drug abusers. A double-blind choice procedure was used which involved forced exposure to LZ and BUS (on separate sessions) followed by a single choice session. The strengths of LZ and BUS were rated as equal. LZ was rated as being better liked and having more good effects and fewer bad effects than BUS. There was a modest disliking for BUS. On the choice day, 8 or the 9 subjects chose LZ over BUS. These data suggest that LZ has greater reinforcing effects and produces more liking than BUS.

OPIOID SUPPRESSION OF MALE AND FEMALE ULTRASOUNDS DURING SOCIAL DEFEAT. J. A. Vivian, M. Haney and K. A. Miczek. Tufts University, Medford, MA.

Ultrasounds (US) in rats occur in socially significant situations such as agonistic and sexual behavior and may serve to communicate affect. Male and female Long-Evans rats were administered morphine and US were studied during: 1) three brief exposures to attacks and threats by a resident opponent and, 2) three prolonged exposures to the threat of attack by a resident opponent. The attack and threat situation consisted of brief agonistic interactions until the intruder rat displayed submissive postures (crouch, supine) for five s; subsequently, the intruder was exposed for 25 min to threats by the opponent while protected from physical contact by a wire mesh. Male and female intruders received ca. 10 bites in 60 s, prompting a high rate of US. During the protected encounter morphine (1–10 mg/kg SC) dose-dependently decreased the rate and duration of US, paralleling its analgesic effects and increases in submissive behavior. These effects were antagonized by naltrexone (0.1 mg/kg IP; 3–5-fold rightward shift), which by itself modestly increased the rate and duration of US. In separate groups of defeat experienced or socially inexperienced male rats, morphine (1–30 mg/kg IP) produced only a slight attenuation of the startle reflex. The suppression of US and pain sensitivity, but not the startle reflex, may reflect specific opioid actions on affective components of social stress reactions.

COMPARISON OF OPIOID AGONISTS IN ANALGESIA AND DRUG DISCRIMINATION ASSAYS. Ellen A. Walker and Al-

ice M. Young. Wayne State University, Detroit, MI.

Two behavioral procedures were used to study the relative efficacy of selected opioid agonists. In a warm-water nociceptive assay, morphine, buprenorphine, and GPA 1657 produced a maximum effect, whereas nalbuphine produced between 0–25% maximum effect. Pretreatments of buprenorphine decreased the doses of morphine required for 100% effect. In contrast, nalbuphine and naltrexone antagonized the analgesic effects of GPA 1657, morphine, and buprenorphine, suggesting that nalbuphine is a low efficacy agonist relative to the other agonists tested. In a two-lever drug discrimination assay, two groups of rats were trained to discriminate 3.2 or 5.6 mg/kg morphine from saline. GPA 1657 and buprenorphine evoked morphine-appropriate responding in both groups, whereas nalbuphine evoked generalization only in rats trained with 3.2 mg/kg morphine. Pretreatments of GPA 1657 and buprenorphine decreased the doses of morphine required for generalization in both groups. Pretreatments of nalbuphine potentiated the effects of morphine in rats trained with 3.2 mg/kg morphine but antagonized the effects of morphine in rats trained with 5.6 mg/kg morphine, suggesting that nalbuphine is a low efficacy agonist relative to morphine. Drug interaction studies performed across assay systems can be informative in regard to relative efficacy of agonists. (Supported by DA03796 and K02-DA00132.)