

operant responding. Neuroleptic pretreatment (0.1, 0.2, 0.4 mg/kg of alpha-flupenthixol) produced only dose-dependent decreases in responding thereby interfering with the animals' ability to behaviorally maintain their internal core temperature. In an additional test paradigm requiring far less effort on the part of the subjects, alpha-flupenthixol did not alter the animals' preferred environmental temperature, nor did it disrupt the animals' behavioral thermoregulatory ability. These data suggest that at least part of the behavioral deficit observed during neuroleptic treatment is due to a disruption in the performance capabilities of the subjects.

**LOW-DOSE AMPHETAMINE EFFECTS: TIME RANGE PATTERN ANALYSIS SUPPORTS BEHAVIORAL THEORY.** Melvin Lyon. Psychological Laboratory, Copenhagen University, Copenhagen S., Denmark.

Testing predictions from the Lyon-Robbins theory of amphetamine effects, rats (N=10) received low doses of d-amphetamine, (0.02-1.0 mg/kg), in a counterbalanced NaCl—Amph.—NaCl sequence with 10-20 day intertrial intervals. Controls (N=6) received NaCl only. Behavior was videotaped, scored 'blind' into 16 categories and subjected to time range pattern analysis ( $p=0.0005$ ) using Magnusson's THEME method. All doses produced effects different from NaCl, even including increased resting and grooming. Dose-related increases occurred, both in percentage of pre-drug NaCl patterns subsequently seen under Amph., and in percentage transferring from Amph. to postdrug NaCl. The results strongly support theoretical predictions.

**ACTION OF PHENYLETHYLAMINE AND AMPHETAMINE ON AUDITORY STARTLE.** Charles L. Kutscher and Bret Ingerman. Syracuse University, NY.

Phenylethylamine (PEA), an analogue of amphetamine, is found in the brain of humans and rats. Like amphetamine, it causes release of brain norepinephrine and dopamine. PEA and amphetamine were injected into male and female rats over a wide dosage range with auditory startle tested for 50 trials beginning either 0 or 30 min after injection. The action of both amphetamine and PEA was a function of these procedural variables. In males PEA and amphetamine potentiated or inhibited startle depending upon dosage and delay. PEA action was biphasic over the dosage range; high dosages which produced stereotypy inhibited startle. In females only, potentiation was seen.

**NEUROBIOLOGICAL FACTORS INVOLVED IN THE BEHAVIORAL EFFECTS OF DRUGS.** Steven I. Dworkin and Nick E. Goeders. Departments of Psychiatry and Pharmacology, Louisiana State University Medical Center, School of Medicine in Shreveport, LA.

6-Hydroxydopamine (6-OHDA) lesions of the nucleus accumbens (NA) have been shown to decrease cocaine self-administration. The decrease in responding produced by the lesion has been suggested to demonstrate a decrease in the reinforcing efficacy of cocaine, thereby implicating the involvement of the neurons affected in the central mechanisms of reinforcement. However, drugs have multiple effects on behavior and a specific neurobiological manipulation may alter effects other than the reinforcing properties. Six male Fischer rats were trained on a multiple fixed interval 2-min, fixed-ratio 5 schedule of food presentation. Six additional subjects were trained to discriminate the effect of 10 mg/kg

cocaine from saline in a standard drug discrimination procedure. The effects of several doses of cocaine were determined before and after 6-OHDA lesions. These lesions altered several of the behavioral effects of cocaine.

**EFFECTS OF SOMAN ON SCHEDULE-CONTROLLED BEHAVIOR IN RATS.** Norman Hymowitz and Henry E. Brezenoff. Department of Psychiatry and Pharmacology, University of Medicine and Dentistry of New Jersey, New Jersey Medical School, Newark, NJ.

The behavior of rats was studied under a multiple fixed-interval 50-sec fixed ratio 25 (mult FI50-sec FR 25) schedule of food reinforcement. Pre-session administration of 30 and 40  $\mu\text{g}/\text{kg}$  soman (IP) completely suppressed response rates, while doses of 5, 10, and 20  $\mu\text{g}/\text{kg}$  suppressed responses under each schedule to a lesser degree. When the dose of soman was gradually increased, much higher levels of soman were required to suppress response rates.

**SUPPRESSION OF DRUG-REINFORCED BEHAVIOR BY PRESENTATION OF AN ALTERNATIVE REINFORCER.** Marilyn E. Carroll. University of Minnesota, MI

Six monkeys self-administered orally-delivered phencyclidine and saccharin under concurrent fixed ratio 16 schedules during daily three hour sessions. Three saccharin concentrations (0.003%, 0.03% and 0.3%, wt/vol) were tested in a nonsystematic order. For each saccharin concentration, the following series of phencyclidine concentrations was presented: 0.25, 0.5, 1, 0.25 (retest), 0.125, 0.0625, 0.0312, 0.25 (retest) and 0 (water with stimuli signalling phencyclidine). As the saccharin concentration increased, the phencyclidine concentration-response functions were lower and the peaks were shifted to the right. The two higher saccharin concentrations maintained behavior far in excess of phencyclidine, but saccharin deliveries decreased as phencyclidine concentration and intake (mg/kg) increased. The time course and patterns of phencyclidine-reinforced responding were also altered when saccharin was concurrently available. The results are discussed in terms of strategies to reduce drug-reinforced behavior, and measures of reinforcing efficacy.

**INTRAVENOUS SELF-ADMINISTRATION OF PENTOBARBITAL AND ETHANOL IN RATS.** Victor J. DeNoble, Paul C. Mele and Joseph H. Porter. Virginia Commonwealth University, VA.

Unlimited access to intravenous doses of ethanol (30, 60, 90, 180 and 360 mg/kg/infusion) failed to initiate and maintain lever pressing that resulted in its delivery. When pentobarbital was substituted (0.5 mg/kg/infusion) for ethanol, lever pressing increased. There were three indications of the positive reinforcing effects of pentobarbital: (1) a greater number of lever presses occurred when pentobarbital was response-contingent than when saline was available; (2) a greater number of responses were made on the pentobarbital lever than on a control "activity" lever, and (3) systematic changes in lever pressing were a function of pentobarbital dose. Following the pentobarbital self-administration regimen, changes in the ethanol dose effect function were studied.

**EFFECTS OF CESSATION OF ALCOHOL DURING PREGNANCY IN RATS.** I. I. Lenzer,\* C. L. Ryan and C. M. Hourihan. \*Saint Mary's University and Carleton University, Canada.