observed at the lowest dose tested. Response slowing reflected the temporal domain (as opposed to the force domain) motor effects of low doses of haloperidol.

THE EFFECTS OF CODEINE ON AGGRESSION: A TIME COURSE STUDY. Ralph Spiga, Don R. Cherek and John D. Roache. University of Texas Health Sciences Center, Houston, TX.

The effects of codeine on aggressive responding were studied in a controlled laboratory condition. Aggressive responding was defined as the subject subtracting points from an ostensible person. Aggressive responding was provoked by a fictitious person when they subtracted points exchangeable for money from the subject. A nonaggressive response option was monetarily reinforced. Codeine at all doses diminished aggressive responding relative to placebo. While codeine had no effect on nonaggressive responding at lower doses (25 mg/70 kg and 50 mg/kg), at the highest dose codeine increased nonaggressive responding compared to placebo.

CROSS-TOLERANCE AND SENSITIVITY TO OPIOIDS IN MORPHINE-TREATED PIGEONS. Rebecca M. Craft, Mitchell J. Picker and Linda A. Dykstra. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Response-rate decreasing effects of several opioid agonists were determined in pigeons responding under a fixed-ratio 30 schedule of food presentation. Following determination of acute dose-effect curves, pigeons were injected once daily with 56 mg/kg morphine, resulting in a 1-log rightward shift in the morphine, *l*-methadone and ethylketocyclazocine dose-effect curves. In contrast, the cyclazocine and bremazocine curves were shifted to the left, whereas the U50,488 curve remained unchanged. Results suggest that in morphine-tolerant pigeons, morphine, *l*-methadone and ethylketocyclazocine share mu agonist properties, cyclazocine and bremazocine share mu antagonist properties, and U50,488 effects are unrelated to mu opioid receptor activity.

CROSS-TOLERANCE TO OPIOIDS IN MORPHINE-TREATED ANIMALS. Pamela Doty, Mitchell J. Picker and Linda A. Dykstra. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Cross-tolerance to various mu and kappa opioid agonists was evaluated in morphine-tolerant squirrel monkeys using cumulative dosing procedures. Lever-press responding was maintained under a multiple FR30 schedule of food presentation. In monkeys given 3.0 mg/kg of morphine twice daily, the dose-effect curve for the rate-decreasing effects of morphine shifted 1/2 to 3/4 log unit to the right. Dose-effect curves for *l*-methadone, ethylketazocine (EKC) and U50,488 were determined prior to and during the chronic regimen. Results indicated approximately a 1/2 log unit shift to the right for the *l*-methadone dose-effect curve and no shift for EKC or U50,488.

TOLERANCE TO A MORPHINE CUE: ROLE OF MORPHINE MAINTENANCE DOSE. Elizabeth S. Steigerwald. Wayne State University, Detroit, MI; Christine A. Sannerud. The Johns Hopkins University School of Medicine, Baltimore, MD; and William J. Lipinski, Mechele D. Doty and Alice M. Young. Wayne State University, Detroit, MI.

Experiments examined the ability of several chronic doses of morphine to confer tolerance to a morphine discriminative stimulus. Rats were trained to discriminate saline and 3.2 mg/kg morphine under RF schedules of food delivery. Morphine generalization gradients were determined before, during and after chronic drug treatment. For chronic treatment, separate groups of rats received saline or selected doses of morphine for 14 to 18 day periods while discrimination training was suspended. A final group received 36 mg/kg/day pentobarbital. Repeated administration of saline, 10 mg/kg morphine, or 36 mg/kg pentobarbital produced no tolerance. In contrast, 36 and 100 mg/kg morphine produced marked tolerance to the morphine cue, albeit accompanied by marked suppression of response rates. It appears that the magnitude of tolerance developed to a morphine cue is dependent on the maintenance dose employed for chronic treatment.

COMBINATION OF BUPRENORPHINE WITH NALOXONE IN HUMANS. Linda L. Weinhold, George E. Bigelow and Kenzie L. Preston. The Johns Hopkins University School of Medicine, Baltimore, MD.

(Abstract not available)

DISCRIMINATIVE PROPERTIES OF BREMAZOCINE AND FENTANYL IN PIGEONS. Mitchell J. Picker and Linda A. Dykstra. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Pigeons were trained to discriminate a dose of either bremazocine or fentanyl from water using a two-key drug discrimination procedure. During substitution tests, the kappa agonists bremazocine, U50,488 and tifluadom produced bremazocine-like but not fentanyl-like stimulus effects. The kappa agonists, ethylketocyclazocine, ketocyclazocine and nalorphine, and the mu agonists, fentanyl and morphine, produced fentanyl-like but not bremazocine-like stimulus effects. During tests of antagonism, the A50 doses of naloxone or Mr2266 in combination with the training dose of bremazocine were approximately equivalent, whereas in fentanyl-trained pigeons, the A50 dose of naloxone was approximately 1 log-unit smaller than the A50 dose of Mr2266.

ROLE OF DOPAMINE IN THE EFFECTS OF PENTAZOCINE AND TRIPELENNAMINE. Thomas J. Hudzik and Barbara L. Slifer. University of New Orleans-Lakeside, New Orleans, LA.

The present study was designed to identify the role of dopaminergic mechanisms in the mediation of the effects of pentazocine and tripelennamine. Utilizing milk intake as the dependent variable, dose-effect curves were constructed for these drugs in both the absence and presence of various dopaminergically active compounds. Pentazocine interacted in an additive manner with haloperidol and was antagonized by raclopride, while the effects of tripelennamine failed to be modified in a manner consistent with its hypothesized dopaminergic activity. These data lend further support to the notion that pentazocine may exert some of its effects via the dopaminergic system.

DO KAPPA EFFECTS EXPLAIN "T'S & BLUES"? Lynn A. Cones and Barbara L. Slifer. University of New Orleans-Lakeside, New Orleans, LA.