subjects In one series of studies, monkeys acquired a different four-response chain each session in one component of a multiple schedule. In the other component (performance), the response chain was the same each session In general, acquisition was more sensitive to the dose-related disruptive effects of drugs (e g , *d*-amphetamine and cocaine) than was performance More recent research has shown that phencyclidine (PCP) disrupts the retention of an acquired response chain, as measured by percent "savings" in errors to criterion, at retention intervals up to several hours

ANALYSIS OF BEHAVIORAL EFFECTS OF DRUGS Jeffrey M Witkin Addiction Research Center, National Institute on Drug Abuse

Behavioral pharmacology has the potential for playing a major role at the forefront of neurobiology Its alliance with the experimental analysis of behavior endows behavioral pharmacology with the ability to address the neurobiological underpinnings of behavior and to provide a comprehensive understanding of the manner in which drugs affect behavior The foundation for this endeavor is a coherent evaluation of behavioral mechanisms of drugs' action, a goal attainable only by insightful experimentation and appreciation of behavior as an appropriate level of analysis Convergent information on the specificity of behavioral effects of drugs from a host of experimental approaches will eventuate in a refined understanding of drug action and its behavioral substrate

COCAINE TOLERANCE UNDER VARIABLE SCHEDULES OF REINFORCEMENT Marc N Branch University of Florida

Pigeons were trained to peck a key under three-component multiple schedules of food presentation in which components consisted of either random-interval schedules or random-ratio schedules The random-interval schedule parameters were 10 sec, 30 sec, and 125 sec, the random-ratio schedule parameters were 5, 25, and 125 Following determination of acute effects of cocaine hydrochloride (1 0–13.0 mg/kg), a dose that reduced pecking rates was administered before each daily session Tolerance developed to the rate-reducing effects, and the degree to which tolerance developed tended to depend on the schedule parameter under the ratio schedules whereas it tended to be independent of schedule parameter under the interval schedules

ACQUISITION AND PERFORMANCE OF RESPONSE CHAINS MODULATION BY ENVIRONMENTAL AND PHARMACOLOGICAL FACTORS Warren K Bickel and Stephen T Higgins University of Vermont

The study of response chains has generated a great deal of data which has contributed substantially to knowledge of the ways behavioral and pharmacological factors influence the acquisition and performance of response chains However, this research has not adequately addressed how response chains should be viewed or how the differential effects of variables on the acquisition vs. performance of response chains fit within our understanding of the ways environmental and pharmacological factors influence behavior Some have suggested that the acquisition and performance of response chains differ in the degree of stimulus control However, a critical analysis of research findings to date suggest that the acquisition and performance of response chains should be viewed as the formation and subsequent maintenance of response units. This reanalysis of the data were discussed with respect to future research and how it contributes to characterizing the features of response units

REAL ESTATE IN BEHAVIORAL ANALYSIS. REINFORCING "PROPERTIES" OF STIMULI John R Hughes, Stephen T Higgins and Warren Bickel Human Behavioral Pharmacology Laboratory, Departments of Psychiatry and Psychology, University of Vermont

According to our literature search, the term "reinforcing properties" is becoming more common in articles on drugs as reinforcers In this paper, we argue that the term is problematic because it suggests a stimulus has inherent and immutable characteristics that are responsible for its ability to serve as a reinforcer Yet, one of the basic findings of the experimental analysis of behavior is the function of a stimulus depends on history and present context We also discuss possible reasons for the increased use of the term reinforcing properties, e g , the increased popularity of theories that the reinforcing effects of drugs are due to their molecular structure As an alternate noun to the term reinforcing properties, we suggest the terms "reinforcing effects" and "reinforcing function" better describe the dynamic function of stimuli

DRUG AND TOXICANT EFFECTS ON DURATION DISCRIMINATION PERFORMANCE Stephen A Daniel Department of Psychology, Mercy College

The dose-effects of drugs and toxicants on behavior controlled by conditional stimuli of differing durations will be reviewed The effects of stimulant, sedative-hypnotic and hallucinogenic drugs and drug combinations, as well as neurotoxicants, such as acrylamide and lead on these discrete-trial procedures will be discussed. In addition, non-pharmacologic procedures will be examined, such as varying discrimination difficulty, methods and species comparisons and other manipulations to. (1) measure the effects of these procedures on dose-effect relationships and (2) help elucidate behavioral mechanisms of action. The advantages of using these procedures in behavioral pharmacology and toxicology will be explored

RELATIONSHIP BETWEEN REINFORCER MAGNITUDE AND RELATIVE REINFORCING EFFECTS STUDIES WITH PENTOBARBITAL AND FOOD R. A Meisch and G A Lemaire University of Minnesota

Two paradigms were used with rhesus monkeys to assess the relative reinforcing effects of different quantities of pentobarbital. Different quantities of pentobarbital were tested at each of several interval and fixed-ratio schedules. As the size of the intermittent schedule increased, fewer drug deliveries were obtained However, the percent decrease was greatest at the lowest drug quantity and became progressively less with increases in drug quantity Thus, relative reinforcing effects rose with increases in drug quantity (either drug concentration or drug volume) Similar studies of rats' food reinforced behavior yielded results that were consistent with these drug self-administration studies Relative reinforcing effects were directly related to reinforcer magnitude In a second paradigm different quantities of pentobarbital were made available under identical concurrently