interval schedules with the lowest rates of responding maintained by higher and presumably more reinforcing doses of the drug. As a result, many investigators have attempted to use other measures for assessing the relative strength of different reinforcers to control behavior. The major independent variables in these studies have been magnitude (dose) of reinforcement and relative availability of other reinforcers and the goal has been to determine how changes in these variables affect a presumed measure of response strength. The present symposium is designed to review these studies and evaluate the utility of the concept of reinforcing efficacy. Meisch and Lemaire will present findings from a series of studies altering response cost and concurrent access to other drug doses in order to assess the relative reinforcing strength of different doses of pentobarbital. Johanson and Nader will discuss the results of choice experiments which have evaluated the effectiveness of response cost, punishment, and alternative reinforcers to reduce cocaine choice. Vuchinich and Tucker will discuss the effectiveness of alcohol to maintain behavior as a function of the availability of other reinforcers and their relative constraints. The implications of their findings for the treatment of alcoholism will also be considered. Finally, Katz will discuss the merits of methods that have been used to assess strength, the usefulness of the concept of reinforcing efficacy, and the implication of this analysis for the prediction of abuse potential.

RELATIVE REINFORCING EFFECT OF DIFFERENT AMOUNTS OF PENTOBARBITAL. Richard A. Meisch and Gregory A. Lemaire. University of Texas Health Science Center, Houston, TX.
(Abstract not available)

REDUCING COCAINE CHOICE IN MONKEYS. Chris-Ellyn Johanson and Michael Nader. Uniformed Services University of the Health Sciences, Bethesda, MD.
(Abstract not available)

REINFORCEMENT CONTEXT AND HUMAN ALCOHOL ABUSE. Rudy E. Vuchinich and Jalie A. Tucker. Wayne State University, Detroit, MI.
(Abstract not available)

CAN WE SCALE REINFORCING EFFICACY OF DRUGS AND DOES IT TELL US ANYTHING ABOUT ABUSE LIABILITY? Jonathan Katz. National Institute on Drug Abuse Addiction Research Center, Baltimore, MD.
(Abstract not available)

PRESIDENTIAL ADDRESS
Chair: *George E. Bigelow,* The Johns Hopkins University/Key Medical Center, Baltimore, MD

OPIOID ANALGESICS: INFERRING RECEPTOR-MEDIATED ACTIVITY FROM BEHAVIORAL DATA. Linda A. Dykstra. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Differences between the profiles of activity exhibited by opioids suggest that the effects of these compounds are mediated through one or more opioid receptor systems. For example, research within our laboratory has shown that opioids produce analgesia through at least two different opioid receptor types, in particular the mu and kappa opioid receptors. We have used a number of pharmacological techniques to relate the analgesic effects of opioid compounds to presumed activity at different opioid receptor types. These have included studies in which the dose of antagonist required to reverse the analgesic effects of mu versus kappa opioids has been quantified as well as studies in which animals have been made tolerant to a mu agonist and cross tolerance to kappa agonist has been determined.

INFORMAL PAPER SESSION—HOSPITALITY SUITE

SATURDAY A.M.

INVITED ADDRESS
Chair: *Chris-Ellyn Johanson,* Uniformed Services University of the Health Sciences, Bethesda, MD

DOPAMINE RECEPTORS AND BEHAVIOR. William Woolverton. University of Chicago, Chicago, IL.
(Abstract not available)

SYMPOSIUM
Role of Behavioral Pharmacology in Drug Development
Co-Chair: *Linda A. Dykstra,* University of North Carolina at Chapel Hill, Chapel Hill, NC
Co-Chair: *J. David Leander,* Lilly Research Labs, Eli Lilly and Company, Indianapolis, IN
Discussant: *Dennis Zimmerman,* Lilly Research Labs, Eli Lilly and Company, Indianapolis, IN
Discussant: *Robert L. Balster,* Medical College of Virginia, Richmond, VA

INTRODUCTION. Linda A. Dykstra. University of North Carolina at Chapel Hill, Chapel Hill, NC.

The number and use of behaviorally active drugs has increased tremendously during the past 35–40 years. As a result, interest in the scientific investigation of these drugs has also increased. Presently, the investigation of behaviorally active drugs draws on a number of disciplines, including pharmacology, psychiatry, biochemistry, physiology and, of course, psychology. Information gained from these investigations has had a very important impact on the development of new compounds to be used in the treatment of various behavior disorders. As a result, a number of fruitful collaborations have developed between behavioral scientists and members of the pharmaceutical industry. The proposed symposium will focus on the role of behavioral pharmacology in drug development, with special emphasis on the behavioral technology which has helped to advance this interaction. The symposium will begin with a historical account of this collaboration which will be followed by 3 presentations, each from psychologists now employed in the pharmaceutical industry. Each of these presenters will discuss an individual drug class (antianxiety agents, cognitive enhancers and NMDA antagonists), with emphasis on the models that have been used in the development of new compounds within that class.

IMPACT OF BEHAVIORAL PHARMACOLOGY IN THE PHARMACEUTICAL INDUSTRY. Francis C. Colpaert. Neurobiology Division, FONDAX, Groupe de Recherche Servier, 7, rue Ampère, 92800 Puteaux, France.

Behavioral pharmacology is one of the several approaches and corresponding methodologies that are being used in the pharmaceutical industry to discover new C.N.S. drugs through preclinical research. Most of the important pharmacological principles (e.g.,