with limited access to the drug. Intracerebral injections of methylnaloxonium into the nucleus accumbens were more effective in blocking heroin self-administration than injections into the lateral ventricle or the ventral tegmental area. In addition, behavioral data indicate that spontaneous or precipitated withdrawal after chronic administration of psychostimulants and opiates leads to "anhedonic and dysphoric" states respectively. Following prolonged access to intravenous cocaine self-administration in rats, intracranial self-stimulation thresholds were increased reflecting a decrease in reward ("anhedonia") during withdrawal. In morphine-dependent rats, local intracerebral injections of methylnaloxonium into the nucleus accumbens were much more effective in disrupting responding for food, reflecting a "dysphoric" state, than injections into the lateral ventricle, periaqueductal gray, or medial thalamus. These results suggest that changes in the neural circuitry of the nucleus accumbens may be the neurobiological substrate for motivational changes that form the basis of an opponent process during chronic drug use.

INVITED ADDRESS
Chair: *Alice M. Young*, Wayne State University, Detroit, MI.

HOW TO INCREASE AND DECREASE THE STRENGTH OF MEMORY TRACES: THE ROLE OF OPIOIDS. Joe L. Martinez, Jr. University of California, Berkeley, CA.

In this presentation, how opioids affect memory will be considered. Interestingly, a fundamental observation in this area is that opioids make memories both stronger and weaker. Research suggests that opioids do not influence the memory trace directly, but instead influence modulatory systems that in turn regulate associative strength. Remarkably, the primary site of action of opioids appears to be outside the blood-brain barrier and may be in the periphery. It is possible that such a mechanism is general, and that many peripheral neuropeptides and hormones act to modulate memory in this fashion. It will be argued that memory involves two distinct processes. One process is the generation of the memory trace itself. Most scientists agree that memory traces exist between sets of interconnected neurons and that physical changes occur in individual neurons to maintain memory. The second involves associative strength that may be conveyed by the modulatory input.

INVITED ADDRESS
Chair: *James H. Woods*, University of Michigan Medical School, Ann Arbor, MI.

ORAL ALCOHOL SELF-ADMINISTRATION IN THE RAT: ENVIRONMENTAL-GENETIC INTERACTIONS. Herman H. Samson. Alcohol and Drug Abuse Institute, University of Washington, Seattle, WA.

The interaction between environmental factors and genetic variability are considered as key to the control of alcohol consumption. This paper will present current research in which genetically selected alcohol-perferring (P) and -nonpreferring (NP) rat lines have been studied in both acute and chronic alcohol self-administration paradigms. The effects of a variety of environmental procedures, including method of initiation to alcohol self-administration, concentrations of alcohol available, and response contingencies required for both alcohol and food presentation in the P and NP lines as well as heterogeneous nonselected rats will be discussed.

NEW FELLOWS ADDRESS I
Chair: *Stephen C. Fowler*, University of Mississippi, University, MS.

SUBSTANCE ABUSE PREVENTION: ADOLESCENT AND PARENTAL PROBLEM-SOLVING AND EXPLANATORY STATEMENTS. Brenna H. Bry. Rutgers—The State University.

Substance abuse prevention efforts typically target words to change relevant behavior on the part of adolescents and parents, whether in media campaigns, prevention workshops, or psychotherapy. Little systematic research, however, has examined the impact of verbal behavior in determining risk behavior. Early studies and clinical observations suggest that how adolescents and parents respond to and explain daily problems in their lives plays an important role in the development and treatment of adolescent substance abuse. This paper will discuss a series of recent studies by the author into defining and modifying family problem-solving and explanatory statements to reduce adolescent substance abuse.

CONDITIONED TOLERANCE AND DEPENDENCE TO THE OPERANT EFFECTS OF BENZODIAZEPINES. Mary Jeanne Kallman. University of Mississippi, University, MS.

A review of several investigations which explored the role of conditioned factors in tolerance and withdrawal to the benzodiazepines (BZs) will be presented. These studies have compared the effects of repetitive administration of different BZs, the dose of drug delivered chronically, and various operant schedules as important variables in the display of conditioned tolerance. Since the nontraditional assessment of force and duration of responses was used in conjunction with the traditional assessment of response rate, these experiments address changes in the topography of responding as a function of drug experience. When rats are exposed to BZs before the daily operant session they display greater drug tolerance than rats exposed to the drug after the daily session but these findings are dependent upon the level of behavioral disruption produced by the dose of BZ administered chronically. Under some conditions the severity of withdrawal is also enhanced by previous drug experience in the testing situation. (Supported by NIDA DA-05253.)

NEW FELLOWS ADDRESS II
Chair: *Nancy A. Ator*, The Johns Hopkins University School of Medicine, Baltimore, MD.

ETHANOL CONSUMPTION AS A FUNCTION OF SCHEDULE OF ACCESS. Henry Marcucella. Boston University.

A series of studies conducted within a foraging context examined the influence of access schedules on the amount and pattern of oral ethanol self-administration. Ethanol, a commodity which may be sought, handled and consumed like food and water, was consumed as a function of its own access schedule as well as the access schedules of the other available commodities, food and water. The access schedule of a commodity was manipulated in a closed economy by varying either the time that the commodity was available or the number of responses required to gain access to the commodity (procurement cost).

NEURON RESCUE AND PLASTICITY PROMOTION BY PHARMACOTHERAPY AFTER BRAIN DAMAGE: HELP-