diagnostic subtypes that reflect predominantly genetic or predominantly environmental forms of alcoholism.

NEW FELLOW'S INVITED ADDRESS
Chair: *Stephen Fowler*, University of Mississippi, University, MS.

BRAIN REWARD MECHANISMS AND THE NEUROBIOLOGY OF CRAVING. Eliot L. Gardner. Albert Einstein College of Medicine, New York, NY.

Self-administered electrical brain-stimulation reward is one of the most powerful reinforces known, rivalled only by the most intensely habit-forming drugs (e.g., cocaine). In humans, such stimulation produces intense pleasure or euphoria. The brain systems subserving this reward apparently consist of synaptically interconnected neurons associated with the medial forebrain bundle (MFB). "First-stage" neurons run caudally within the MFB and synapse in the ventral tegmental area on "second-stage" dopaminergic neurons running rostrally within the MFB which are preferentially activated by habit-forming drugs and which synapse in the nucleus accumbens on "third-stage" endogenous opioid peptide neurons. Many other types of neurons synapse onto this reward circuit to regulate hedonic tone. Also, this reward circuit is strongly implicated in the pleasures produced by natural rewards (e.g., food, sex). It is widely assumed that craving is mediated by these same circuits. Some theories posit that craving results from neurotransmitter depletion within the reward circuitry. Other theories posit that "opponent-process" neural systems exist within the reward circuitry, mediating both positive and negative hedonic processes. In this view, craving results from functional dominance of neural systems mediating negative hedonic tone over those mediating positive hedonic tone. Neurophysiological, neurochemical, neuropharmacological, and neurobehavioral data will be presented which favor this latter view of the neurobiology of craving, and clinical implications for the treatment of aberrant craving states (e.g., opiate addiction, cocaine addiction) at the human level will be discussed.

NEW FELLOW'S INVITED ADDRESS
Chair: *Maxine L. Stitzer*, The Johns Hopkins School of Medicine, Baltimore, MD.

APPLYING BEHAVIORAL PRINCIPLES TO THE TREATMENT OF COCAINE DEPENDENCE. Stephen T. Higgins. University of Vermont, Burlington, VT.

Cocaine dependence continues to be a widespread and serious public health problem in the US. Unfortunately, no consensus exists about how to treat cocaine dependence. Various pharmacological and psychological therapies have been investigated with mixed results. This presentation reviews findings from a programmatic series of studies conducted during the past four years to assess the efficacy of an outpatient behavioral treatment for cocaine dependence. The treatment is based on the concepts and principles of behavior analysis and behavioral pharmacology, and integrates contingency-management procedures with the community reinforcement approach. Results obtained to date indicate this treatment is very acceptable to patients, effectively retains them in treatment, engenders clinically significant levels of cocaine abstinence, and is effective in treating other forms of substance abuse common in this population. Overall, we believe the treatment represents an important step towards the development of empirically based and effective treatments for cocaine dependence.

NEW FELLOW'S INVITED ADDRESS
Chair: *Alice M. Young*, Wayne State University, Detroit, MI.

PREVENTING AIDS: DRUG TREATMENT AND NEEDLE EXCHANGE PROGRAMS. James L. Sorenson. University of California, San Francisco, CA.

The spread of acquired immunodeficiency syndrome (AIDS) among injection drug users has redirected the focus of many drug abuse treatment programs. A greater emphasis has emerged on harm minimization rather than abstinence from drugs of abuse. The epidemic has also spawned a new AIDS prevention approach, the needle exchange. This address presents new evidence about the effectiveness and limitations of these approaches as well as ways that they interact in practice.

Several recent federal reports summarize the efficacy of drug abuse treatment in preventing AIDS. Well-conducted research has established that programs can reduce needle use, prevent new HIV infection, and be a platform for mounting other interventions (e.g., tuberculosis screening and treatment). The intensity of treatment programs, however, limits their accessibility to the addict population.

Needle exchanges are a new approach to AIDS prevention. Research on this modality is also new. In the 1980s exchanges grew in popularity with the idea that they would discourage needle-sharing and provide a link to street-based drug users who were not in drug treatment. Exchanges have also met with opposition with the idea that they may condone injection drug use. Research has been promising but controversial.

A recent study has been examining USA needle exchange programs through site visits and collection of records. An intensive examination of 12 programs included questions about the degree to which exchanges and treatment programs interact. This presentation will examine questions about the collaboration versus competition of these modalities and the degree to which needle exchanges serve as a bridge to drug abuse treatment.

NEW FELLOW'S INVITED ADDRESS
Chair: *Chris Ellyn Johanson*, NIDA Addiction Research Center, Baltimore, MD.

NOVEL ANALYSIS AND TREATMENT STRATEGIES FOR NICOTINE AND OTHER DRUG DEPENDENCIES. Jed E. Rose. VA Medical Center, Durham, NC.

Several novel approaches have been developed in our research program for analyzing nicotine dependence and reducing the harmful effects of cigarette smoking. These methods may also have potential applications to other drugs of abuse. One major pharmacologic approach has been transdermal drug replacement, using a nicotine skin patch for smoking cessation treatment. Transdermal administration has key advantages which may be applicable to other abused drugs, including opiates and psychostimulants. Recently, we have found that combined administration of an agonist (nicotine)

and antagonist (mecamylamine) greatly facilitates abstinence following smoking cessation treatment. This counterintuitive approach may likewise have potential utility in the analysis and treatment of other drug dependencies. Agonist-antagonist combinations may provide great flexibility in dissociating the tonic level of activation of a receptor system from phasic responsiveness to drug reinforcement. We have also developed methods for replacing the conditioned reinforcing cues which have been shown to be important modulators of craving for cigarettes. These cues are mediated by a variety of receptors, some of which have a pharmacologic specificity similar to that of central nervous system nicotinic receptors. Effective drug dependence treatments may require comprehensive strategies that not only replace and/or block desired drug effects, but also take into account peripheral conditioned reinforcing cues.

SYMPOSIUM

Contemporary Psychological Perspectives on American Drug Policy.

Chairs: *Richard J. DeGrandpre* and *Warren K. Bickel*, University of Vermont, Burlington, VT.

Discussant: *Ethan A. Nadelmann*, Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, NJ.

PSYCHOLOGICAL SCIENCE SPEAKS TO POLICY: DRUG AVAILABILITY AND COMPETING REINFORCERS. Warren K. Bickel, Richard J. DeGrandpre and Stephen T. Higgins. University of Vermont, Burlington, VT.

Psychological science suggests that drug abuse and dependence—in all its manifestations—may be varied instances of a few fundamental principles. These principles suggest that drug taking for those individuals who are at risk is a function of two factors: drug availability and the availability of competing reinforcers. In this paper, a conceptualization of those at risk will be presented, followed by data from the basic animal laboratory through the outpatient clinic to the epidemiology of drug abuse that suggests that etiology, maintenance, treatment, and relapse to drug dependence can be largely understood by these two factors. These data, then, provide a basis for developing an empirical, integrated approach to drug policy where the environmental determinants of drug taking are explicitly acknowledged and altered.

PHARMACOPHOBIC PSYCHOPHARMACOLOGY. Arthur Leccese. Kenyon College, Gambier, OH.

It will be argued that governmental policies of differential prohibition have prompted a specific pharmacophobia, the irrational fear of pleasure-inducing psychoactive drugs. The diverse literature regarding the effects of racism, sexism, and homophobia upon research and medicine will be used to illuminate the consequences of psychology's failure to combat pharmacophobia. Specific examples from the scientific press will support the assertion that pharmacophobia has, indeed, exerted a negative effect upon psychological research, theorizing, and clinical practice. Particular emphasis will be placed on published literature involving determinations of the efficacy of pharmacological treatments for ADHD, various eating disorders, and, most significantly, "drug abuse." Finally, there will be an examination of the benefits that may accrue from revised drug policies that include a humanistic antiprohibitionism that strives to minimize the use of violence and coercion.

AA AND THE TOOTH FAIRY. Stanton Peele, Morristown, NJ.

Recently, Stephen T. Higgins and colleagues at the University of Vermont reported on a randomized comparative study of a community-oriented behavioral approach and "standard drug and alcohol abuse counseling from a 12-step orientation" for cocaine dependence:

> The standard counseling program relied heavily on group meetings and educational materials about drug dependence to *get participants to accept their addiction as a treatable but incurable disease.* The study reports that 11 out of the 13 cocaine-dependent patients enrolled in the behavioral *outpatient* program completed a full 12 weeks of treatment. Seven of the patients did not use cocaine for eight or more consecutive weeks. . . . *By comparison, none of the 12 patients who got standard drug abuse counseling completed the 12-week program, and none achieved eight weeks of continuous abstinence.*

Rather than explaining AA's success, we need instead to understand why AA does not work. The reason for AA's lack of success is that it simply does not provide the necessary ingredients to successfully combat addiction, which include:

(1) motivation based on personal values,
(2) skills with which to lead a life free of addiction,
(3) a lifestyle that generates sufficient rewards and support to replace addiction,
(4) a commitment to issues larger than one's own addiction, and
(5) a sense of responsibility matched by belief in one's own efficacy.

Why, then, are AA and 12-step programs completely dominant in the public and private treatment landscape? Indeed, today the majority of referrals to AA and private treatment are coerced by the government (through the courts and requirements to receive social welfare resources) and EAPS. A system—even a reimbursed or free system—which claims to offer people life-saving help cannot attract clients with which to sustain itself in the absence of coercion.

Clearly, we need to:

(1) broaden our range of therapeutic approaches,
(2) accept and build on (rather than attacking) people's natural recuperative powers, and
(3) de-emphasize coercive treatment which blinds us to the deficiencies in the system from the client's perspective.

A CANADIAN PERSPECTIVE ON DRUG POLICY. Bruce K. Alexander. Simon Fraser University, Burnaby, BC, Canada.

Harmful addictions and drug-related deviance are problems that bedevil the modern world. As aspects of human behaviour, these problems fall naturally within the domain of psychological investigation and practice. Yet discussions of addiction and drug problems have a flamboyant, emotionalized character that scarcely resembles dispassionate professionalism. From a Canadian perspective, it would appear that addiction and drug problems have been swept up in the great currents of American social rhetoric since the early 19th century temperance movement. It would seem that these rhetori-