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ABSTRACTS

NEW FELLOW'S INVITED ADDRESS

Chair: *Marilyn E. Carroll*, University of Minnesota School of Medicine, Minneapolis, MN

STIMULUS EQUIVALENCE AND DRUG DEPENDENCE: FINDINGS AND IMPLICATIONS. Warren K. Bickel. University of Vermont, Burlington, VT.

Attempts to modify drug-taking behavior in clinical settings are often not successful. The intractable nature of this disorder has led some to suggest the possibility that everyday stimuli may be embued with conditioned drug effects via pairing of those stimuli with the effects of the abused agent. Thus, resulting therapies based on classical conditioning approaches have attempted to extinguish conditioned responses to those stimuli. Unfortunately, these therapies have not been successful. Stimulus equivalence formation suggests an alternative mechanism by which stimuli may come to control drug-taking behavior. This paper will review a series of studies we have conducted to explore interactions of stimulus equivalence formation and drugs. Specifically, we have demonstrated that stimulus equivalence classes can include exteroceptive and interoceptive (drug) stimuli, and that exteroceptive stimuli, never directly trained with the behavior of drug taking, can come to set the occasion for drug-taking behavior via the formation of emergent stimulus relations. Further, in several studies, we have examined ways to modify the control exerted by members of a stimulus class. These findings will be integrated with the existing research on drug dependence to illustrate the potential relevance of stimulus equivalence formation in the process of drug dependence, as well as its implications for treatment.

SYMPOSIUM (Centennial Celebration)

Present at the Creation of Division 28.

Chair: *Herbert Barry, III*, University of Pittsburgh, PA.

The APA centennial coincides with the 26th anniversary of the founding of Division 28. The original name of the division, Psychopharmacology, has recently been modified by addition of a phrase. It is now the Division of Psychopharmacology and Substance Abuse.

This symposium was organized by Herbert Barry, III, the twelfth President of the Division, 1980-81. He is the Division 28 Liaison for the APA centennial celebration and coordinator of an oral history of Division 28.

Murray E. Jarvik, the first President, 1966-68, was trained both in experimental psychology and in medicine. In addition to his leadership role as one of the founders of the Division, he is a leader in research on nicotine, both in laboratory animals and in humans. Victor G. Laties, the second President, 1968-69, was an early and important contributor of operant conditioning techniques to the study of drug effects in laboratory animals. He is also a leader in the field of behavioral toxicology.

Bernard Weiss, the fifth President, 1971-72, has worked closely with Laties. Their highly productive careers constitute an example of synergism, greater accomplishment by the cooperation of two people than either one could do alone. Leonard Cook, the sixth President, 1972-73, is a pharmacologist who has directed behavioral research for pharmaceutical companies. He has tested psychotherapeutic drugs in various species of laboratory animals, including squirrel monkeys.

Joseph V. Brady, the eleventh President, 1979-80, who has a strong background in physiological psychology, is a highly productive user and eloquent advocate of operant conditioning techniques. Prior to the founding of Division 28, he persuaded several pharmaceutical companies to establish behavioral research laboratories and recruited psychologists as directors of these laboratories. Peter B. Dews, a Distinguished Affiliate of Division 28, is a pharmacologist who was an early leader in adapting psychological techniques and terms to pharmacological research.

The existence of Division 28 is due to the interdisciplinary cooperation of psychologists and pharmacologists. This symposium will include identification and discussion of other differences between psychopharmacologists. Some are also affiliated with Division 6, Physiological and Comparative Psychology, while others are affiliated with Division 25, Experimental Analysis of Behavior. Some are faculty members at universities, others are directors of research at pharmaceutical companies. The experimental subjects are laboratory animals for some, humans for others. The focus is on psychotherapeutic agents for some, on drugs of abuse for others. An example of synergism may be the greater advance in knowledge and therapy that is contributed by psychopharmacologists who include these diverse origins and techniques.

SYMPOSIUM (Science/Practice Weekend)

Pharmacological Adjuncts in Alcoholism Treatment.

Chair: *Maxine L. Stitzer*, The Johns Hopkins University School of Medicine, Baltimore, MD.

Discussant: *John P. Allen*, National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD.

RECEPTOR MEDIATION OF THE SUBJECTIVE EFFECTS OF ETHANOL. Kathleen A. Grant. Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC.

Data from a number of recent studies indicate that specific receptor systems are selectively sensitive to the actions of ethanol using in vitro preparations. In order to determine if these receptor systems also mediate the subjective effects of ethanol, a drug discrimination procedure was used. Rats and pigeons were trained to behave differentially following the administration of a constant dose of ethanol (either 1.0, 1.5, or 2.0 g/kg) or water. Following training, a number of specific neurotransmitter receptor agonists and antagonists were administered and evaluated for similar discriminative effects as etha-

nol or the ability to block an ethanol discrimination. The results from these ongoing series of studies indicate that the discriminative effects of ethanol are mixed, emanating from action at several neurotransmitter systems. In particular, agonists of the GABA/benzodiazepine ($GABA_A$) receptor complex, uncompetitive antagonists of the *N*-methyl-D-aspartate (NMDA) glutamate receptor complex, and agonists of the serotonin-one ($5\text{-}HT_1$) receptor subtype substitute for the discriminative stimulus effects of ethanol in a dose-dependent manner. In addition, antagonists of the serotonin receptor subtype designated $5\text{-}HT_3$ block the discriminative stimulus effects of ethanol. However, the sensitivities of these receptor systems to ethanol do not appear to be uniform. For example, rats trained to discriminate relatively low doses of ethanol generalize completely to agonists of the $5\text{-}HT_1$ receptor system, whereas rats trained to discriminate higher doses of ethanol show no generalization to these agonists. An opposite effect is seen with NMDA antagonists, where rats trained with high doses of ethanol show better generalization to these antagonists compared to rats trained with lower doses of ethanol. Thus, the relative contribution of each receptor system to the discriminative effects of ethanol is dependent upon the dose of ethanol the animal was required to discriminate. Taken as a whole, the data demonstrate that ethanol is a mixed stimulus, composed of discriminable effects at multiple, differentially sensitive receptor systems. This complex nature of the discriminative stimulus effects of ethanol leaves open the possibility of several avenues for pharmacologically blocking or altering the subjective effects of ethanol, including those subjective effects that reinforce the consumption of ethanol.

BUSPIRONE AS AN ADJUNCT TO RELAPSE PREVENTION IN ANXIOUS ALCOHOLICS. H. R. Kranzler, T. F. Babor, F. Del Boca and J. Brown. University of Connecticut School of Medicine, Storrs, CT.

Sixty-one anxious, alcohol-dependent (DSM-III-R) subjects were enrolled in a 12-week trial of buspirone or placebo, combined with weekly relapse prevention psychotherapy. Prior to entering the study, both groups drank on an average of 67% of days. Buspirone-treated subjects drank an average of 6.1 drinks per day, while placebo-treated subjects drank an average of 8.6 drinks per day ($p < .05$). Of the 31 buspirone-treated subjects, 26 (84%) completed the treatment phase, compared with 15 of 30 (50%) of the placebo-treated subjects ($p < .005$). At the end of the active treatment period both groups reported that they had drunk infrequently. Though the groups did not differ with respect to the average duration of abstinence from the time that treatment was initiated (6.4 weeks), the average time to first heavy drinking episode (i.e., 5 or more drinks in a day) was greater ($p = .05$) for buspirone-treated patients (9.5 weeks vs. 7.4 weeks). However, with 6-month followups having so far been completed on more than half of study subjects, greater group differences are becoming apparent: buspirone-treated subjects reported drinking on an average of 11% of days, consuming 2.3 drinks per drinking day. At followup, placebo-treated subjects reported drinking on 40% of days, consuming an average of 6.1 drinks per drinking day. There was a significant difference ($p < .005$) for number of drinking days, though number of drinks per drinking day was not different ($p = .29$). There was no between-group difference in Hamilton Anxiety Scale (Ham-A) scores at baseline or during treatment; by week 4 Ham-A scores went down significantly (from about 21 to about 8) and remained at that level for both groups. Ongoing data analysis will aim to identify the process by which the delayed treatment effect occurred.

NALTREXONE AND COPING SKILLS THERAPY FOR ALCOHOL DEPENDENCE. Stephanie S. O'Malley,* Adam Jaffe,* Grace Chang,† Richard S. Schottenfeld,* Roger Meyer‡ and Bruce Rounsaville.* *Yale University School of Medicine, New Haven, CT, †Harvard University, Cambridge, MA, and ‡University of Connecticut Alcohol Research Center, Farmington, CT.

Ninety-seven alcohol-dependent patients were treated for 12 weeks in a double-blind, placebo-controlled study evaluating naltrexone and two psychotherapies in the treatment of alcohol dependence. Patients were randomized to receive either naltrexone or placebo and either coping skills/relapse prevention therapy or a supportive therapy designed to support the patient's own efforts at abstinence without teaching specific coping skills. Naltrexone proved superior to placebo in measures of drinking and alcohol-related problems. Almost twice as many naltrexone-treated patients as compared to placebo-treated patients remained continuously abstinent during the study. In addition, patients on naltrexone consumed one-third the amount of alcohol and relapsed at half the rate of placebo-treated patients. Interactions between medication and the type of psychotherapy were also found. Time to first drink was longest for patients treated with naltrexone and supportive therapy. In contrast, patients who received naltrexone and coping skills therapy initiated drinking at a rate similar to placebo-treated patients. One hypothesis for this finding is that discussion of the abstinence violation effect in the coping skills/relapse prevention therapy may have undercut the patient's initial commitment to abstinence. For those patients who initiated drinking, however, patients who received naltrexone and coping skills therapy were the least likely to relapse. The results suggest that naltrexone is an effective pharmacological adjunct to the treatment of alcoholism. In order to maximize treatment outcome, the patient's commitment to abstinence should be encouraged. In addition, treatment focused on the development of new coping skills may further reduce the risk of relapse and enhance the quality of the individual's life. (Supported in part by NIAAA grant AA-P50-03-510.)

PHARMACOTHERAPY AND RELAPSE PREVENTION COUNSELLING WITH ALCOHOLICS. Helen M Annis. Addiction Research Foundation, Toronto, Canada.

Within cognitive-social learning theory, a critical distinction is drawn between treatment strategies aimed at "initiation" versus "maintenance" of behavior change. It is proposed that this distinction provides a theoretical framework for the use of pharmacological agents in the treatment of alcohol and drug abuse. Pharmacological agents can be powerful in initiating a change in consumption, but if patients externally attribute the cause of their improvement to the drug, maintenance of improvement following withdrawal of the drug is likely to be poor. Counselling procedures, on the other hand, that are designed to promote self-attribution for change in drinking/