of bodyweight). The effects of these drugs were then assessed on a variety of self-reports and on a performance measure, the digit-symbol substitution task (DSST). Buspirone produced dose-related increases in self-reported bad effects. On the DSST, buspirone produced increases in response rate and on the percent of trials finished correctly. Diazepam produced dose-related increases in strength and produced a very shallow increase in self-reported bad effect. On the DSST, diazepam decreased response rate and the percent of trials done correctly. This study indicates that these two anxiolytics have a different profile of effects and therefore may have different liabilities associated with their use.

EFFECTS OF NICOTINE UPON PUNISHED AND NONPUNISHED RESPONDING IN HUMANS. Robert H. Bennett and Don R. Cherek. Substance Abuse Research Center, The University of Texas Health Science Center, Houston, TX.

Male subjects are administered varying doses of nicotine through tobacco smoke using the smoke inhalation spirometry procedure which ensures constant puff volume and introduces the smoke deep into the lungs. The doses delivered through research cigarettes are 0.3, 1.2, and 2.7 mg of nicotine (F.T.C. yield) per cigarette plus a sham condition in which no smoke is delivered. Prior to and following smoke administration, subjects are exposed to a punishment schedule of random interval point presentations with a concurrent variable ratio schedule of point subtractions (first half of study) and a random interval schedule of point presentations (second half of study). Preliminary results indicate dose-related, stimulant-like effects of nicotine upon responding.

NICOTINE, STRESS, AND CORTICOSTEROID ACTIVITY. Ovide F. Pomerleau and Cynthia S. Pomerleau. University of Michigan School of Medicine, Ann Arbor, MI.

Recent studies in animals have shown that application of nicotine to the hypothalamus releases corticotropin releasing factor (CRF), which in turn releases ACTH and corticosterone. Adrenalectomized mice, which exhibit low corticosterone levels, are more sensitive behaviorally and physiologically to the effects of nicotine; administration of exogenous corticosteroids restores nicotine tolerance. We have explored this phenomenon with male human smokers in 2 studies; 1) Administration of dexamethasone (a synthetic corticosteroid) in a double-blind, placebo-controlled design not only produced the expected marked depression of baseline cortisol in 5 smokers, but also damped peak cortisol response to nicotine administration, suggesting diminished sensitivity to additional corticosteroid stimulation. Trends toward diminished heart rate reactivity (increased tolerance), increased desire to smoke, and nicotine intake in the dexamethasone condition were also observed. 2) Psychological stress (competitive mental arithmetic) and nicotine intake (smoking a usual cigarette) were presented in a complete factorial design involving 8 smokers. There were no significant differences in plasma nicotine boost between the stress and control conditions. Mental arithmetic produced a significant increase in plasma cortisol; a tendency towards a significant elevation was seen for smoking. The effects of smoking and mental arithmetic were additive, suggesting that cortisol stimulation by nicotine and by stress involve a common mechanism. While the conditions under which stress-induced smoking reliably occurs are not known, the increased nicotine intake often reported during stress may represent behavioral compensation in response to enhanced nicotine tolerance by stress-induced increases in corticosteroid activity rather than to anxiety reduction per se.

NEW FELLOWS ADDRESS

Chair: *Warren K. Bickel,* University of Vermont, Burlington, VT

PERINATAL DRUG ABUSE: RESEARCH AND CLINICAL ISSUES. Theo B. Sonderegger. University of Nebraska, Lincoln, NE.

Substance abuse in this country occurs with alarming frequency in all age groups including women of childbearing age. In 1985, for example, such illegal drugs of abuse as cocaine, heroin, and marijuana reportedly were used at least once by 30% and monthly or more frequently by 18% of the women aged 18 to 35 years of age. Chemical dependency units in every large city have large numbers of patients who continue to take one or more drugs during pregnancy although it is well known that drugs of all kinds can be detrimental to the unborn. Research in this area, of necessity, is a multidisciplinary effort. Psychologists play an exceedingly important role as behavior is the most sensitive indicator of changes in underlying neural systems. When the developing organism is exposed to a drug(s), both the changes that occur depend upon: the nature of the substance; amount and number of the substance(s); genetic make-up of the mother and the embryo or fetus; duration of drug exposure(s); and developmental stage at exposure time. These and other methodological issues will be discussed. Neither data collected from drug-exposed human infants nor those from infrahuman laboratory studies answer all compelling questions. Each approach has advantages and disadvantages. When one examines data obtained from both clinicians and laboratory researchers, however, some similarities emerge. As an example, the neuroendocrine system is often altered although changes may not be detected until later in the life span. In addition, other data will be reviewed. Finally, examination of these research findings also suggests that policy and educational/intervention changes are needed. Psychologists, as concerned citizens, need to be aware of these issues which will be presented briefly.

RECENT DEVELOPMENTS IN THE EFFECTS OF CNS STIMULANTS ON ADD CHILDREN. William Pelham. Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, Pittsburgh, PA.

Over the past two decades, the most common form of treatment for children with attention deficit disorder (ADD) has been medication with a CNS stimulant drug. Most ADD children are treated with a stimulant at some time in their elementary-age years, and a number of studies have shown that the stimulants are effective in reducing ADD symptomatology in the short-term. However, most studies have employed ratings on global measures of adjustment and subjective rating scales. Only within the past five years have studies begun to appear that employ objective methods to characterize and quantify stimulant effects in ADD. The purpose of this presentation is to describe a series of recent studies that has been conducted in my laboratory with the goal of elucidating the precise effects of stimulant drugs on a wide range of ecologically relevant dependent measures in ADD children, including measures of classroom functioning, peer interactions, social cognition, and information processing tasks. The studies have evaluated dose-response effects of methylphenidate in the zero to 0.6 mg/kg range and have focused on individual differences in dose-response as a function of the domain of assessment.

Results have revealed that group studies of methylphenidate effects in ADD children do not yield data that reflect accurately the drug effects on most and in some cases any of the individuals that comprise the group. Further, these individual differences vary across domain of assessment within children—for example, one child's dose-response function is not necessarily the same for aggression on the playground compared to seatwork completed in the classroom. These differences within children across dependent measures and across children within measure highlight the importance of developing reliable and valid indices of individuals' drug responses that can be used both for clinical and research purposes. We have begun to investigate the use of effect sizes, regression analyses, and analyses of variance—all computed for each individual rather than on group data—for describing individual differences in response to medication, and the utility of these various measures will be discussed.

INVITED ADDRESS

Chair: *Steven I. Dworkin*, Wake Forest University, Bowman Gray School of Medicine, Winston-Salem, NC

DRUG AND HIV SCREENS: THERAPEUTIC ASSETS, SOCIAL POLICY FAILURES. John G. Grabowski. University of Texas Health Sciences Center, Houston, TX.

The nexus of drug abuse and HIV infection presents major social, legal, and economic problems. Treatment for the former is inadequate and for the latter is nonexistent. Frustration with the inability to quickly control either problem has led to proposals for single purpose, often invasive, and at times truly "exceptional" (contrary to standard practice), interventions. Legislative change of the admissability and rules of evidence in drug cases, instating the death penalty, involving the military, or for discussion here, implementing drug screening on all employees and students, are examples of current or proposed actions. The data for pursuit of extensive drug (or HIV) screening in educational or employment situations are inadequate. Data from the military or prison settings are not applicable to civilian or law abiding populations. Data indicating numbers of companies currently testing are simply irrelevant to whether or not testing should be ongoing. Further, large scale testing programs to date do not support the need of testing in the workplace. For example, testing of 30,000 civilian federal employees produced 0.7% positives. This presentation will consider existing data, criteria for testing, and justifiable testing circumstances. The consequences of both proper and improper use of testing for medical, behavioral-medical, and social purposes will be reviewed. Further, the potential long-term implications of permitting pan-population testing will be considered.