

models of system organisation as well as bifurcation that leads to system disorganisation and reorganisation). In this presentation, we illustrate each of these levels of analysis, drawing on results from Wave 1 of the longitudinal study.

STRESSFUL LIFE EVENTS AND FAMILY FACTORS AS PREDICTORS OF HEAVY OR ABUSIVE DRINKING AMONG ADOLESCENTS. M. Lynne Cooper and Robert Pierce. State University of New York at Buffalo, Buffalo, NY.

Despite substantial interest in the effects of parental alcoholism on children and adolescents, research to date has been far from conclusive. Whereas some studies have shown higher levels of alcohol and drug use among adolescents, others have found no differences (for reviews see Sher, 1987; West and Prinz, 1987). Both variability in the nature of parent and adolescent samples and failure to consider the potentially confounding effects of stressful or chaotic family environments have undoubtedly contributed to these discrepant results.

The present study therefore examined the independent and interactive effects of parental alcohol problems, family composition (intact vs. all others), and stressful life events on alcohol use and abuse in a sample of 816 adolescents, ages 13 to 17. Self-reports of life events and alcohol outcomes were obtained from the adolescents in face-to-face interviews; data on family composition and parental alcohol problems were obtained in telephone interviews with primary caregivers (83% of whom were biological mothers).

A series of hierarchical multiple regression analyses predicting the number of drinking problems in the past six months, frequency of heavy drinking, and frequency of drinking to cope with or regulate negative affect (escape drinking) were estimated; all analyses controlled for age, race, and gender of the adolescent and parental education level.

Results revealed consistent effects for stressful life events; indices summarising the number of negative life events that occurred to self, to family, and to friends within the past year independently predicted all indicators of heavy or abusive drinking, collectively accounting for between 4% and 10% of the variance (p 's < .001). Moreover, examination of independent beta weights showed that each index independently contributed to the prediction of heavy or abusive drinking. Family composition also predicted frequency of heavy drinking and escape drinking, with adolescents from intact homes reporting lower levels on both measures. In contrast, parental alcohol problems (regardless of the scoring mechanism) did not significantly predict adolescent drinking. However, biological fathers' drinking problems significantly interacted with negative self-events to predict adolescent drinking problems; the form of the interaction showed that the relationship between events and problems was substantially stronger among adolescents whose fathers experienced a drinking problem in the last three years than it was among those whose fathers were nonsymptomatic. Results will be discussed in terms of the importance of environmental factors in accounting for alcohol use in early to mid-adolescents.

PERSONALITY-ENVIRONMENT MISMATCH, ALCOHOL USE BEHAVIORS AND CONSEQUENCES: A PROSPECTIVE STUDY OF ADOLESCENCE. M. Bates and E. W. Labouvie. Rutgers University, Piscataway, NJ.

An interactionist approach to studying the development of use behaviors and associated consequences suggests that knowledge of the relation between persons and environment may provide more information about the roles of personality risk and environmental variables that affect or moderate risk than either of these elements viewed separately. Our conception of heightened vulnerability to intensive use or use consequences is thus based upon the notion of goodness-of-fit or "match" between personality needs and the individual's perception of opportunities for meeting these needs within his/her environment. We focus on the chronic persistence of mismatch across adolescence to capture sustained movement within a high-risk developmental pathway which may portend continuity of intensive use or use consequences into early adulthood. Given the heightened vulnerability of adolescents with a family history positive for alcoholism, we also test the direct and interactive effects of this additional risk factor. Data from the Rutgers Health and Human Development Project, a prospective study of the development of alcohol and other drug behaviors in an age- and sex-stratified sample of New Jersey adolescents are used. A 92% retention rate was obtained across three test occasions spaced at three-year intervals between 1979 and 1987. This study includes those subjects ($N = 870$) who were 12 or 15 years of age at the first testing; the age range spanned is from 12 to 21 years. The method of orthogonal polynomials is applied at the intraindividual level and subjects' alcohol use is defined in terms of level, linear, and quadratic trends in use intensity and use consequences. These three parameters represent time-aggregated intensity level, developmental stability versus change in level, and accelerations versus plateaus or decelerations in change over time. This work extends our previous study of the match between personality needs and perceived social support systems of adolescents to include other potentially high-risk mismatches such as those in the areas of achievement, cognitive structure, play, and autonomy. (This work supported by NIDA grant DA/AA 03395 and the Alcoholic Beverages Medical Research Foundation.)

PROBLEM BEHAVIOR THEORY: APPLICATION TO SUBSTANCE USE IN A LONGITUDINAL STUDY. Nancy H. DeCourville. Brock University, St. Catharines Ontario, Canada.

According to problem behavior theory (Jessor and Jessor, 1977), behaviors such as illicit drug use, early sexual involvement, and heavy drinking constitute a syndrome of problem behaviors whose performance is related to an individual's proneness to deviance. Proneness to deviance is, in turn, indicated by a particular profile of scores on measures of the three systems of variables comprising the model: personality, perceived environment, and behavior. Results reported by Jessor and his colleagues indicate that the model provided a reasonable account of problem behaviors in both adolescence and young adulthood (Jessor, Donovan, and Costa, 1991). Further, Jessor, Donovan, and Costa found that as respondents in their sample made the transition from adolescence to adulthood, there was a corresponding movement on the three systems of problem behavior in the direction of greater conventionality (e.g., decreased involvement in general deviant behavior).

The present work tested problem behavior theory in the domain of substance use. Confirmatory factor analyses and analyses of covariance structures were used to examine the

relationships between patterns of substance use (in adolescence and young adulthood) and measures used to assess the personality and perceived environment systems of problem behavior theory. Data were obtained from a sample of 765 respondents (298 males, 467 females) who completed questionnaires at the 1974, 1980, and 1986 waves of a longitudinal study designed to examine the social psychology of nonmedical drug use. Analyses were carried out separately for males and females. Results indicate that the patterns of substance use established in 1974, when respondents were aged 15-18, remained stable through young adulthood (i.e., when respondents were 27-30 years of age). In addition, adolescent measures of problem behavior theory provided a reasonable account of substance use in both adolescence and young adulthood. On the other hand, measures of personality and perceived environment were not as successful in accounting for substance use in either 1980 or 1986. Implications for problem behavior theory are evident from results presented in the longitudinal structural model.

DRUG USE, AGENCY AND COMMUNALITY: CAUSES AND CONSEQUENCES AMONG ADULTS. Michael D. Newcomb and Lisa E. Jack. University of Southern California, Los Angeles, CA.

Causes and consequences of drug use in the third decade of life may be quite different and distinct from those during adolescence. Although stereotypic and perhaps in transition, generally young adult men must prepare for being wage earners and family providers (an instrumental or agentic orientation towards life), whereas young adult women prepare themselves for family responsibilities and childrearing (a relational or communal orientation to life). Based on these gender difference expectations for young adult development, four predictions are made regarding how drug use may be influenced by or generated from the degree to which accomplishment of these life tasks occur. For men, if they are not achieving their goal of agentic success, they may increase their drug use to self-medicate the pain of their failure. Similarly women who have difficulty accomplishing their communal role may increase their drug use to relieve and assuage their frustrations. On the other hand, drug use may interfere with the attainment of these goals for men and women. Specifically, earlier drug use may impede the development of agentic skills for men and communal skills for women.

These hypotheses are tested in prospective data with repeated multiple assessment of drug use, agency, and communality. Data were from community samples of men and women assessed four years apart, first in young adulthood (average age 21) and then in adulthood (average age 25). Latent-variable models were used to test for both standard (construct-to-construct) and specific effects (those not strictly limited to between constructs; involving residual variances).

Results for the women revealed that early success and communality reduced polydrug use four years later, whereas only one small effect was found for the reversed associations. However, two significant effects were found that earlier polydrug use reduced satisfaction with future and work (two indicators of agency). For the men, three specific effects were found whereby indicators of earlier agency reduced later types of drug use, whereas four specific effects were found for earlier types of drug use reducing later measures of agency. Although there were no effects from early communality to later drug use for men, there were five specific effects relating types of

earlier drug use to reduced types of communality four years later.

In conclusion, all four hypotheses received at least some support, some more strongly than others. In addition, several unanticipated findings emerged. For instance, early drug use severely affected later indicators of communality for men, but less so for women. On the other hand, early drug use reduced two types of agency for women. These results reflect findings predicted for the opposite gender.

PAPER SESSION

Behavioral Pharmacology: Laboratory Studies.

Chair: *Chris-Ellyn Johanson*, NIDA Addiction Research Center, Baltimore, MD.

CONTINGENT TOLERANCE TO MIDAZOLAM-INDUCED ELEVATION OF OPERANT RESPONSE FORCE. Stephen C. Fowler, Scott E. Bowen, John Stanford and Mary J. Kallman. University of Mississippi, University, MS.

Rats learned an operant force-band task in which responses having peak forces falling within specified lower and upper limits were reinforced with water. Acute doses of midazolam (0.3 to 30.0 mg/kg, orally) increased peak force of response in a dose-related manner and concomitantly reduced the proportion of reinforced responses. For 30 days, half of the rats received 10.0 mg/kg midazolam before operant sessions, and the other rats were treated after sessions with the same dose. Redetermination of dose-effect functions for peak force of response indicated that the chronic pre-session dosing produced greater tolerance than the post-session drug (i.e., contingent tolerance was observed). The midazolam-related increase in peak force of response was discussed in terms of the benzodiazepines' putative disinhibiting effects on behavior. Contingent tolerance phenomena were viewed within the context of the reinforcement loss hypothesis as modified to include a role for effort-to-reward ratio in addition to time rate of reinforcement. (Supported by DA05253.)

VALIDATION OF THE MULTIPLE-CHOICE PROCEDURE AS AN EFFICIENT APPROACH FOR ASSESSING DRUG REINFORCEMENT IN HUMANS. Roland R. Griffiths and Craig R. Rush. The Johns Hopkins University, Baltimore, MD.

This study was conducted to further validate a novel multiple-choice procedure which has been proposed as an efficient procedure for assessing drug reinforcement in humans (*Behav. Pharm.*, in press). Regular cigarette smokers participated in up to 40 trials per day. Each trial consisted of completing a multiple-choice form involving a series of choices between receiving money or cigarettes; one choice was randomly reinforced. One experiment examined the effect of extinction in five subjects. Another experiment examined magnitude of reinforcer manipulation in four subjects. The maximum monetary value at which subjects chose the "item" over money decreased under the extinction condition and showed magnitude-related increases in the second experiment.

DISCRIMINATIVE STIMULUS EFFECTS OF *d*-AMPHETAMINE, CAFFEINE, AND MAZINDOL IN HUMANS. Stephen J. Heishman,* Richard C. Taylor,* Melissa