

Book Reviews

Variables Affecting Drug Use

Longitudinal Research on Drug Use. Empirical Findings and Methodological Issues. Papers from a conference, San Juan, P.R., April 1976. DENISE B. KANDEL, Ed. Hemisphere, Washington, D.C., and Halsted (Wiley), New York, 1978. x, 314 pp. \$22.50.

For decades, knowledge of drug users was based mainly on studies of those who were found in prisons or hospitals, and it turned out that many beliefs based on those studies were wrong. This was shown by Lee Robins's study of drug use among Vietnam veterans and by surveys of the general population started by the Marihuana Commission in 1971 and continued by the National Institute on Drug Abuse (NIDA). But these surveys, though they provided data on drug use over time, did so retrospectively, and causal order was never satisfactorily established—reports on early events or feelings could have been colored by later events. So true longitudinal studies were needed. Such studies were started as early as the surveys, but naturally were later in being completed. Now we have some of their results, and the reports presented in the compilation under review show that some of the early hopes for such studies were justified—but that the studies pose problems too.

Examples of hopes fulfilled are the clear demonstration by Johnston, O'Malley, and Eveland that most of the difference in delinquency among non-users and various drug-using groups existed before drug use began and Kandel's identification of the stages through which youthful drug use progresses, previously described in these pages (*Science* 190, 912 [1975]).

A major problem is best pointed up in the study by Josephson and Rosen of the differences between those persons who complete questionnaires or are interviewed in all waves of a panel study and those who are captured by the first wave but are lost in later ones. In the typical research design, the investigator uses probability methods to choose a sample

of some population worth generalizing to. Some members of the sample refuse to cooperate or can't be located, even in the first wave. Of those seen in the first wave, only a percentage are seen in the later ones. It is usually only those who furnish data in all waves on whom data analysis is based, but if a large percentage of the original random sample is lost the generalizability of the conclusions becomes questionable.

Several of the authors would seem to agree with the solution Jessor and Jessor have adopted to this problem. They would not generalize to the population because their core sample (students who completed each of four annual questionnaires) constituted only 38 percent of the original sample, but they saw the core sample as "nonetheless, satisfactory for the testing of hypotheses about variation in behavior and development." But the statistics used for these tests are means and product-moment and multiple correlation coefficients, all of which can clearly differ in part of a sample from their values in the full sample.

Generalization is also affected in other ways. "Drug use" carries its usual connotation, of extensive use of powerful drugs, in only one paper, Robins's examination of her data on Vietnam veterans to tease out the effects of setting and predisposition on whether use of drugs was begun before, during, or after Vietnam service. She looks at initiation into use of marihuana, amphetamines, barbiturates, and narcotics with her usual imagination and rigor, showing that Vietnam had negligible net effect on use of amphetamines and barbiturates but large effects on use of the other two drugs.

The only other paper that deals with part of what is usually perceived as the "drug problem" is one by Roizen, Cahalan, and Shanks on "spontaneous remissions" among problem drinkers. Using a general population sample, these authors show that there is a substantial amount of spontaneous remission of drinking problems, as assessed by a variety of criteria for remission, problem, and seriousness of problem, even when the ac-

tual amount of drinking remains stable or increases. Their findings bring into question the clinical picture focused on "alcoholics" instead of on "drinking problems" with the latter viewed as lasting.

All the other studies are essentially studies of marihuana use. Use of other drugs was found, but infrequently enough that categories like "no drug use," "marihuana only," and "other drugs," or merely "nonusers" and "users," serve Jessor and Jessor, Kandel *et al.*, Mellinger *et al.*, and Smith and Fogg, while those employed by Johnston *et al.* were only slightly more extensive.

This reflects the nature of the samples used. When one thinks of drug use as a social problem, those pictured as users are likely to be minority group members, living in slum areas of large cities, drop-outs from school or frequent truants, in their late teens. But here the samples were:

Jessor and Jessor: middle-class Anglo-American students in grades 7 through 12 of six schools in a small Rocky Mountain city; also a sample of similar college freshmen.

Johnston, O'Malley, and Eveland: national random sample of boys selected in 1966 from 10th grade in 87 high schools across the United States.

Josephson and Rosen: 18,000 students from 18 junior and senior high school systems, purposely selected to reflect racial, regional, and community size differences in the United States.

Kandel, Kessler, and Margulies: students from 18 New York State high schools, grades 9 through 12.

Mellinger, Somers, Bazell, and Manheimer: freshmen at the University of California, Berkeley; 82 percent white, 12 percent Asian; middle-income parents; superior high school records.

Robins: random sample of army enlisted males who returned to the United States from Vietnam in September 1971, and another random sample of those who tested positive for morphine just before departure.

Roizen, Cahalan, and Shanks: probability sample of white males, aged 21 through 59, in San Francisco.

Smith and Fogg: students in grades 4 through 12 of six suburban school systems in the Boston area; white, middle-income parents.

Of these, only Robins's sample was both complete for the last wave and representative of a segment of the general population at risk of serious drug use. The studies by Jessor and Jessor, Mellinger *et al.*, and Smith and Fogg were on samples in which use of drugs like heroin was improbable, and age decreased the

likelihood of use of any drug beyond marihuana. Roizen's study was of alcoholics. The remaining three studies began with large and presumably representative samples of defined and important populations, but of the original samples the final waves included only 73 percent (Johnston *et al.*), 66 percent (Kandel *et al.*), or 44 percent (Josephson and Rosen). Josephson and Rosen demonstrate, and it seems likely to be true for the other studies, that it was precisely the drug users, poorer students, and truants who were lost. Data on the percentages lost from different schools and on the ethnic and social class mix of the schools also indicate that it is lower-class, minority-group members who are most likely to be lost.

The above, of course, is not a criticism of the studies cited but points to the need to extend these studies to the missing segments of the general population before final conclusions are drawn.

Smith and Fogg report on only a small part of the masses of data they have been accumulating, and this reviewer would agree with Clausen's judgment that their study will probably prove the most valuable of those reported on here, because of the wealth of psychological variables, measured long before the onset of drug use and with measurement repeated often enough to show the effects of drug use on them as well as their effect on drug use. This may be one of the first studies with data adequate to specify the feedback relationships that undoubtedly exist.

Smith and Fogg here use their data to predict who will use marihuana. Their method is to examine differences among nonusers, early users, and late users. The last are defined as those who first used the drug in the 10th through 12th grades. It may well turn out that Smith and Fogg have actually studied the determinants of age at first use of marihuana, a variable that is strongly associated with many others and of more theoretical interest than the mere fact of use. Even the oldest students in their sample are still quite young, and many of the current nonusers may become users later. An extension of the research to follow at least a subsample beyond the 12th grade would be well advised.

In addition to the eight papers with substantive focus, there are five devoted to methodological issues. Kandel herself opens with an overview of all the papers, seeking convergences, summarizing major findings, and touching on problems. One of those problems is that few investigators have used identical measures,

for example for extent of drug use. The contributors to this volume have already formed the core of several NIDA committees and prepared useful monographs—Elinson and Nurco's *Operational Definitions in Socio-Behavioral Drug Use Research* and Johnston, Nurco, and Robins's *Conducting Followup Research on Drug Treatment Programs*—to suggest standardized measures for use in later studies.

Clausen focuses on the studies of drug use in the high school and provides an excellent review and critique of the papers by Kandel *et al.*, Jessor and Jessor, Smith and Fogg, and Josephson and Rosen, with some practical and useful suggestions. Riley and Waring discuss the problem of separating age and cohort effects, relevant to all the studies though not given much attention in these reports. Also included is a historical review of panel analysis begun by Paul Lazarsfeld and completed after his death by Neil Henry. Finally, Bentler has a concluding chapter on theory, methodology, and data. This begins with a general, abstract discussion of the relations between theory and research and moves into a review of statistical techniques that mentions every technique this reviewer has ever heard of. The purpose is unclear. The discussion is so brief and so condensed that only an expert in each technique can fully follow what Bentler has to say.

Two years is not an unusually long time between a conference and the publication of its proceedings, but the delay in this case was unfortunate. The paper by Jessor and Jessor has been overtaken by the publication of their book, *Problem Behavior and Psychosocial Development*. A variant of the paper by Johnston *et al.* has been published as a chapter in *Adolescence to Adulthood* by Bachman, O'Malley, and Johnston, and no fewer than five of the papers in this volume have been presented, in roughly similar form, in the NIDA monograph *Predicting Adolescent Drug Abuse*. Still, much of the substantive content is new, and the critiques and discussions of methodology are both fresh and valuable. This is not a book for the general reader, whose interest is likely to be in the more visible and more costly kinds of drug use. It will be of interest to anyone whose work involves drug abuse as a practical problem and essential to researchers in drug abuse, alcoholism, and other types of deviant behavior.

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Primate Behavior

Ecological and Sociological Studies of Gelada Baboons. MASAO KAWAI, Ed. Kodansha, Tokyo, and Karger, Basel, 1978. xxiv, 344 pp., illus. Paper, \$96.50. Contributions to Primatology, vol. 16.

This monograph presents the results of seven months' research on gelada baboons (*Theropithecus gelada*) in the Simien National Park, north central Ethiopia. Four scientists, Iwamoto, Kawai, Mori, and Ohsawa, contribute in varying degrees to sections on population dynamics, social behavior, and ecology. The monograph will be of interest to those engaged in teaching or research on nonhuman primates, and it will inevitably be compared with similarly organized monographs by Kummer on hamadryas baboons (*Social Organization of Hamadryas Baboons*, 1968) and by Dunbar and Dunbar on gelada baboons in a slightly different habitat (*Social Dynamics of Gelada Baboons*, 1975). Surprisingly, the authors of the present volume make no reference to the Dunbars' monograph, even though the two volumes are part of the same series and reference is made to journal articles published after the Dunbars' monograph.

The gelada baboon is not, strictly speaking, a baboon, but apparently the last surviving member of the once-successful genus *Theropithecus* (C. J. Jolly, *Bull. Br. Mus. (Nat. Hist.) Geol.* 22, 1 [1966]). Geladas are of particular interest to ethologists because of their multilevel social structure, and data on geladas are often cited in theoretical discussions of the evolution of mammalian social systems.

The basic social unit of the gelada is the one-male unit, or harem, which typically contains one fully adult male, three to four females, and their offspring. According to Ohsawa and Mori, these units, together with all-male groups of approximately 15 individuals, congregate into "herds," and such herds, while generally occupying separate ranges, occasionally join to form a "multiherd." Within herds each one-male unit remains spatially distinct from all others (p. 85); however, there is also a tendency for certain units to be found in spatial association with certain others. Unit leaders maintain spatial separation between units by "rallying" their females whenever the females approach "too close" to another unit or all-male group. Mori (p. 95) describes rallying as "not so aggressive, but . . . based on a complex affiliative behavior with vocalization including solicitation, reassurance, sooth-