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Introduction

Medicine and the social sciences have been challenged to respond to "drug abuse," to assess the nature and extent of problems, causes, and outcomes, and to design and evaluate treatment and prevention. Well-designed, thoughtful, and empirical research has been the exception, but the field has rapidly expanded. The impetus has been a political and public demand for immediately applicable information. This is not intrinsically possible with research, and, in fact, deliberateness is not characteristic of public policy or research response in such emotionally explosive areas.

The topic presents a problem of focus. The abuse of drugs is not solely a medical issue.

Entailed is an array of philosophical, social, behavioral, economic, and psychological issues implicit in the manufacture, discovery, distribution, and consumption of medicinals. Social, educational, legal, regulatory, medical, legislative, and research-supporting agencies are potentially involved. As a model for all of psychiatry (involving interactions of individual and social, as well as bodily factors) the topic is heuristically interesting, but psychiatric expertise alone is insufficient. This elusive and complex topic concerns the consumption of items, the use of which depends on cultural values, economic

factors, small and large group phenomena, drug effects, and intrapsychic (and probably intercerebral) determinants, as well as recurrent dimensions of human behavior, such as the search for both novelty and constancy, and the tasks of self-regulation and mastery of various states of pleasure and pain.

The fact is that drug use impinges on the nonrational, and thus various belief systems and ideologies influence the research process as well as the user. First of all, from infancy forward, there is a fundamental ambivalence toward incorporated substances. Either a substance is taboo and related to danger, poison, and morbidity or it is welcomed as "chicken soup," enhancing growth and potencies, relieving aches and warding off uncontrollable morbidity. Tutored by the mother, the child learns these fundamental attitudes, which reflect the subculture's beliefs. Fads for, and phobias against, food and chemicals are a visible consequence of this inevitable heritage.

A second intrinsic source of nonrational attitudes about drugs stems from the issues of autonomy and of control over bodily and mental states. No society is comfortable either with man's capacity to overindulge in pleasure, to pursue private purposes and meanings, or the ease with which he can substitute dream and denial for confrontation and challenge. This social anxiety is expressed either as "rules" about the time and place for pleasure or as taboos against or social outlets for excessive absorption in the self. But a gradient of social anxiety about retreat and pleasure-seeking beyond

prescribed limits is discernible.

The fact that drugs simultaneously affect private experience and public behavior also produces concern about the control and predictability of expected behavior and response —of just what a person is capable of when intoxicated or medicated. Most societies sense the power of drug consumption to magically obliterate pain, to ignore social consequences, to change the world in a single gulp, and to privately revise its meaning and demands. They equally fear the potential for "enslavement" and surrendered autonomy to a foreign (albeit, chemical) agent. Thus, whether drug-taking individuals will respond reliably and within reasonable limits to the social signals and cues by which individuals normally influence and regulate themselves and each other is an intrinsic source of social anxiety about the problem. Similarly, denial of the power of drugs to regulate thoughts and tensions and failure to anticipate the future consequence of the moment's imperative are characteristic responses to the fear of enslavement and to the wish for the power of magical mastery.

Drug use can either express or threaten established beliefs. The recent illicit use of drugs in Western societies has occurred without a concomitant growth in social regulatory norms to shape and contain it. There has been a striking breakdown in the social definition of occasion, sponsorship, and ritual in drug use. Group processes generally help man to share his limits with

others, to yield total autonomy, and to reduce the strain of internal struggles thereby. The group defines not only what substances are ingestible and why but the way events are to be interpreted and managed during the drugged state and after. During intoxication, the bridge to reality lies in the customs of the group as internalized by the individual and interpreted by the occasion. One is generally tutored in what to expect with drug consumption and how to interpret his feelings. When events cannot be explicitly monitored and tracked (as with stuffs that disappear "inside") attitudes and customs will generally interpret the invisible and regulate anxieties. Belief, ritual, and religion, then, are intrinsic means by which man attempts to regulate and contain powerful feelings of omnipotence, and drug consumption is integrally involved in this.

Around the epidemic of drug use of the 1960s, social practices that seemed foreign and threatening to a valued heritage emerged among the youth. In the climate of concern over the values and the uses of products of nature and technology, there has been, at the same time, confusion as to what is required for appropriate and reliable administration of drugs. Medicine, as the social system for reliable, rational governance of the giving and getting of drugs, is less valued than it was once, and in transition. The sanctioned giver of medicines is no longer trusted nor—as with public agencies—charged to perform infallibly. There is a stern demand that the "crutch" of medication be avoided and withheld; there is also a strident clamor that each individual has

the right to experience whatever he wishes —and sometimes whenever, often with the codicil: as long as it is private and does not harm others, even though a "civil right" to drug-induced experiences more often than not affects others, is rarely private, and requires a purchase in a market.

Medicine and psychiatry are involved whether drug abuse is a "disease" or not. This is a pseudo-argument which artificially splits mind and body. The medical model is sometimes viewed as a "medicine's model," rather than one recognizing the unity of man with disordered behavior. Obviously there are molecular, psychosocial, and conditioning mechanisms involved in drug use. Such arguments are generally relevant to the question of who has the power to intervene; of who is accountable. What the physician generally attempts to do is enhance the patient's ability to regulate himself and his bodily processes. The medical model in this service is a rational, predictable, and accountable approach to certain aspects of drug-related problems, intentionally utilizing (or utilized by) other social resources at all levels of research and treatment.

The drug problem is, then, many problems. The "drug culture" has threatened social custom, and been appropriated as a cause celebre by many emerging groups. Musto shows that frequently in history an unpopular subpopulation is attacked on the basis of its habits of food or drug consumption. Such consumption practices can be badges of identity.

Confusion, then, exists as to what drug use symbolizes and how and with what movements it is identified, and how decisions about drugs will affect ideals as well as daily practices. A ready assumption of moralistic, pseudo-moralistic, or proselytizing attitudes ("the world is hypocritical" and "you too," as a response to criticism of drug habits) is common: the debates preceding and during the American prohibition experiment in which rural virtues were pitted against perennial urban corruption document this. Accordingly, groups overlook, isolate, avoid, or—to counter doubt — overenthusiastically embrace or excoriate drug use. Research is thus faced with consequences of the nonrational, and with multiple definitions of a "drug problem."

The sixties presented an epidemic of drug "interest" far more distracting than the actual patterns of use and misuse. Drugs are now a fact of contemporary life and another option for risk taking about which to formulate attitudes and decisions. The psychiatric response has been a mixture of reassurance, attempts at understanding, and proselytizing for a youthful sector of the population with a new set of heroes, villains, and spokesmen—a sector with an unprecedented influence of technology, media, and fads, yet itself subject to an unparalleled, and exponential, expansion of information (and, occasionally, of knowledge). Suspended judgment and reflection within the psychiatric, medical, research, legislative, and legal sectors have been lacking. Sermons, called "The Literature on Drugs," and

forced “drug education,” have been one unhappy result. Thus, the problem in assessing research in drug abuse is one of focus and perspective, of explicit goals, and the level and quality of inquiry required for the specific and multiple questions.

Research into the pharmacology and neurochemistry of the various illicit drugs (hallucinogens, stimulants, sedatives, and derivatives of marijuana) has burgeoned. This extensive literature is beyond the scope of this chapter which, rather, focuses on the social-psychological research on the use and abuse of nonnarcotic drugs (excluding alcohol and tobacco) from a historical, social, and epidemiological perspective. Drug abuse, then, is a social and personal phenomenon that has a history in the culture. Drug use poses numerous problems for the psychiatrist in diagnosis, treatment, and education of the individual patient. He is expected to appreciate the causes and outcomes of such behavior. Research generally promises an extension of knowledge about the mind and body. What is known (and yet to be learned) about the motives and forces that initiate drug intake, sustain it, and lead to controlled or uncontrolled use, to stopping, and to relapse? This chapter will focus on such questions.

Historical and ethnological study indicate nothing novel in the use of chemicals to achieve social and ritual effects. Epidemics of drug interest and panic have occurred before, and societies have sought to regulate attitudes on

the consumption of new or familiar substances, such as tobacco, or new forms of alcohol, such as gin. Historical and anthropological research, analyzing recurrent factors leading to the adoption, condemnation, acculturation, and regulation of particular substances within a specific segment of the population at a particular time, would be of value. It is probable that cultural change and social stress are relevant prior variables or, at least, drug use taps such forces and factors, as well as generating consequences. Both transcultural and historical study, as well as the microhistory of recent contemporary events, contain data of general interest to the social and political sciences, to applied social research in communications (attempts at education, as well as studies of acculturation), and to the still crude arts of evaluation research in studies of designed or naturalistic social change.

T. G. Coffey's account of the gin epidemic of eighteenth-century Britain is a useful semi-analytic account. A rural to urban migration, the politics of urban renewal following the great London fire of 1666, rural domination of Parliament, poverty and disorganization, the introduction of Dutch gin into England by soldiers returning from wars, led, between 1720 and 1750, to the despair evident in Hogarth's *Gin Street,* to high mortality from alcohol-related disease, to rampantly excessive infant mortality, and to general chaos in the streets. Prohibition of gin failed, and the eventual decline of consumption seemed directly related to: high gin taxes; new political powers gained by urban dwellers; legislation regulating the traffic of grain and the use of credit

in sales to and from distillers; legislation forbidding alcohol consumption on the street and confining it to selected and dispersed taverns; the appearance of coffee shops for recreation; and—crucially—John Wesley's Methodism, directed to the poor and their customs, and evangelically enlisting them in alternatives to alcohol intoxication. While coffee and, later, tea ("witches' brew"), were also blamed for the moral deterioration of the poor, social reformers such as Henry Fielding and William Hogarth, who battled against both gin and beer, did not oppose these lighter beverages. Wesley even countenanced beer—the consumption of which markedly increased in the latter half of the seventeenth century. The marked decrease in gin consumption, achieved by the late eighteenth century, was thus related in part to legal, economic, and trafficking regulations, urban power, and alternatives, including a religious cause. There is no evidence that this occurred by special design, but rather by trial and error as other concerns, as well as those focused on alcohol, were dealt with. The recurrent questions requiring study are whether there are subtle factors in the excessive use of intoxicants that engender responses that lead to a self-limiting nature of epidemics over time: groups or generations, for example, reacting to the visible behavioral consequences of excess or exploiting talents (such as entrepreneurial and competitive competence) that may fill a vacuum and be visibly rewarding thereby.

Terry and Pellens's account of the opium problem in the United States

up to 1928 is a landmark study. The number of addicts per capita in the late nineteenth and early twentieth centuries was greater than at present. The post-Civil War "soldier sickness" and, later, the morphine sickness of women, addicted through the prevalence of morphine in tonics and patent medicines, while alarming to a few vocal medical observers, did not provoke the community opprobrium reserved for contemporary narcotics users. The authors cite as causative the unrestricted use and popularity of opium for a variety of medical problems; educational laxness and ignorance about addictive processes among physicians and the laity; ". . . the influence of such writings as De Quincey and others of his day"; the hypodermic; the increased opium smoking spreading. (through Chinese laborers) from the West to the East Coast; the patent-medicine industry; introduction of heroin; . . all were natural factors leading to the increasingly widespread use of opium in all social groups." Since patent-medicine remedies for morphine sickness contained opium and alcohol, and since such medicaments were used in the proliferating private sanatoriums, the phenomena of substitute addictions was prevalent. Heroin (the Bayer Company's trade name for diacetylmorphine) was apparently so used and gradually adopted by the drug underground, since its crystalline nature allowed it to be more easily transported and adulterated. A truly focused history of this drug and the dynamics of its flow from middle- to lower-class use by the 1920s is still wanted.

Musto, assembling and studying an impressive array of original documents, points not only to the American focus on foreign opiate traffic, as the U.S. consolidated its Far Eastern influence in investments through treaties, but also to the alliance of religious and medical thought. Announcements by eminent authorities of cures (usually based on theories about autointoxication and immune mechanisms) mandated treatment by various strong purges of the internal poisons. The Harrison Act of 1914, aimed less at American addicts than at trade and international concerns, nevertheless seemed to its authors not only to contain moral virtue but to be humane, since "cure" was readily available. The mushrooming morphine-maintenance clinics after the First World War were surrounded by growing controversy and doubt about such confident medical theories. Sporadic scandals concerning loosely monitored clinics generated, within a ten- or twelve-month period, court interpretations and public opinion that not only brought treatment to a halt but, by 1924, led physicians to abandon any attempts to deal with addiction. Research on the problem of policy—indeed on the volatility of policy changes—are required. The feasibility of goal setting and implementation by social agencies to effect measures directed at economic, social, and consumption habits that fundamentally are based on appetite, basic drives for pleasure, and for physical and psychic analgesia is the question. It presents political and social scientists with a still-challenging text for analysis.

Patrick Hughes' research on the heroin epidemic among Chicago Negro youths following World War II (before which opium smoking among Chinese was prevalent in the city) shows that the epidemic reached its peak in 1949 and declined during the early 1950s. He documents the use of marijuana (for which penalties were far higher than for heroin) in the jazz scene by curious and vigorous young experimenters. Later cocaine was introduced, and the initial bold adventurers were replaced by more delinquent groups whose later addiction to heroin finally emerged for treatment in the methadone clinics of 1968. The careers generated by the illegal manufacture and distribution of the drug are described along with the social roles of the heroin "copping area." Strikingly, the legislative and judicial as well as the short-lived therapeutic and mass-media response to the epidemic occurred after the peak incidence of new cases. While the media distorted the "dope fiend"—borrowing from the behavior of cocainized addicts—it did precipitate police and legislative attention. The enforcement effort appears to have prevented further spread (but with it the price of heroin increased, the quality decreased) discouraging new cases but "taxing" the addicted, whose criminalized status became entrenched. Thus the contagious phase of this epidemic went unnoticed, and the epidemic was already in decline when the community, noting the prevalence of heroin addiction, was finally mobilized to respond. The drastic periodic revisions of penalty structures seemed more an affective than effective response. These problems are part of the general

legal and penological questions involving the use of institutions and a variety of devices (from minimal mandatory sentencing to diversion of the deviant into rehabilitation—however that is defined) by which society attempts to deal with deviance.

After World War II, the Japanese experienced an epidemic of amphetamine abuse. 224,73 4qle war defeat led to widespread disaffection with traditional roles, customs, and social controls centering on the family. Disillusionment and a raft of Japanese teen-agers discovering American ways contributed to the problem. Western style "coffee houses" and illicit entertainment centers became places for distribution of the drug, marketed as "Phikopon" ("Awake-Amine") or more familiarly "pone." The prewar family gangs were the first "collaborators" with the victorious Americans, purchasing large quantities of American and Japanese amphetamines (used by soldiers of both sides during the war and a standard part of survival kits) which were both plentiful and cheap. Postwar Japanese manufacturers probably diverted large supplies through these channels. Soldiers and students, followed shortly by night workers, prostitutes, and delinquents in the entertainment areas, used it orally and intravenously. Although there was drunkenness, opiates and marijuana were rarely used, but amphetamine was perhaps, as Heyman explains, particularly suited to the Japanese—always an achievement-oriented society. At the height of the epidemic there was a popular saying: "Japan suffers from three evils—pone, pachinko [a gambling

craze] and Premier Yoshita." Delinquency, particularly crimes of violence, increased sharply concurrently with the amphetamine epidemic, but subsequent studies and events "showed that although delinquency and drugs were linked, delinquency rates followed an independent course, even after the amphetamine epidemic was over." Amphetamine psychosis became prevalent, and by 1954, when controls were placed on the drug, there were estimated to be more than 200,000 amphetamine addicts in Japan. Perhaps because Japan is a more authoritarian society, still emphasizing family reverence, "they were able to stem this epidemic (and an incipient heroin problem during the early 1960s) by mobilizing a broadly based social response centered on effective use of the criminal law and an education effort based in large measure on nation pride." The broad discretionary powers of the Japanese police, prosecuting attorneys, and judges resulted in many compulsory hospitalizations. Legislation aimed at the sources of supply, the ability of police to work in the community, the expanding economy, increased employment, and social attitudes and cultural support inimical to drug abuse, all played a significant role in eliminating the problem. Sweden reported an epidemic of phenmetrazine that, though not so vast, attracted much attention, and Griffith described the history of amphetamine use in this country.

What so shocked the U.S. in the early 1960s was the noisy adoption of drugs other than alcohol for use and experimentation—specifically, and first, LSD—by the affluent white-college youth. Neither Havelock Ellis' description

in 1889 of mescaline, nor the accounts of Baudelaire, Rimbaud, Moreau de Tours, Coleridge, De Quincey, and Poe in the nineteenth century, generated any truly widespread contagion of use, although *Lancet* warned editorially of problems that might occur if "this spreads to the streets." William James, K. Beringer and H. Kluver gave probing accounts of what Lewin called the "phantastica," but the imaginative attention of intellectuals in general was caught by Huxley in *The Doors of Perception and Heaven and Hell,162* published in the early 1950s. Psychiatric research into the effects of drugs—including LSD and the possible therapeutic use of it, of amytal, and Methedrine—was of sporadic interest between 1930 and 1960. The mid-thirties had provoked a flurry of concern about marijuana, leading to several reports culminating in the comprehensive La Guardia Report of 1944 with its extensive psychopharmacological studies of the drug. Synthetics related to marijuana, e.g., Synhexyl, were studied and dubiety concerning the unspecified social and psychiatric consequences of extensive use was amply expressed. In the late 1950s, several subcultures around the psychotherapeutic use of LSD sprang up on the East and West Coasts, and psychiatrists and various psychiatric camp followers reported a variety of attempts at cures, including simultaneous medication of patient and physician during sessions. There were serious studies as well. These minor activities, coupled with some interest from the "beat underground," fueled a low-keyed but responsive interest among various sub-communities, and the attempt to

try some of these remarkable drugs became stylish. With the vigorous and publicized activities in 1961 of T. Leary and R. Alpert at Harvard, a new and more socially consequential thrust was given to drug interest, and, coupled with the so-called psychedelic mystique and the cause of rebellion, the widespread epidemic of drug interest was launched.

Most veteran observers of the era are aware of the proselytizing, and the prescription for preferred behavior as the media led the imagination into a bold new future. Marijuana, endemic in bohemian subcultures and the ghetto, followed LSD and mescaline (in the form of peyote buttons). By 1965-66 there was sufficient concern about drug misuse for congressional investigations and action. Impressionistically, between 1966 and 1968, the rapid increase in the use of LSD on campuses began to level off, in part because of intrinsic boredom and in part with the discovery of "fractured chromosomes." The same mystiques and current of involvement in "turning off, in, up or down" on drugs spread to marijuana. This became a more likely and safe "cause" to expose the hypocrisy of laws and social institutions. There was a growth of hippie subcultures, of the drug and love movement heralded by the songs and styles of the 1960s, and the growing assertion that one's own experience was a sufficient guide for safety and sagacity. The purported "harmlessness" of marijuana generalized to "drugs." The era of pot and pills escalated after 1967, to be followed by (an as yet not well-analyzed) trial and use of heroin on campuses, in suburbs and ghettos, and among social classes

hitherto immune. This pattern appeared transnationally. It moved from coastal campuses and large urban centers to inland campuses and smaller cities and towns, and from college age groups to the junior high schools, supported by the underground press and a variety of styles of dress and recreation that, at the least, did not provide "attitudinal barriers" against it.

In San Francisco, an actively proselytizing group of young people, sparked by the Leary influence and including a nucleus of the 1950s beat generation from the North Beach area, began to use LSD ritually as a "sacrament," proselytized for the hip life style, clustered in the Haight-Ashbury neighborhood in the early 1960s, and called themselves the New Community. Their attitudes and beliefs spread by word of mouth and by the underground press (primarily the Haight-Ashbury *Oracle*) to other areas of the nation, culminating in a pilgrimage of youth in the summer of 1967 ("Summer of Love") to the Haight. At its peak, the population—composed of runaway youth, college students, devout and weekend hippies, promoters, exploiters, and the curious —may have reached 20,000 persons within a twenty-square-block area. Many stayed only days or weeks, but carried back with them experiences, attitudes, and myths of the hippie scene as well as the drugs in use. Pills (primarily LSD) were sold on the street under all sorts of names and disguises, and by May, 1967, rumors spread about "the superior properties of [a newly synthesized hallucinogen called] STP, said to be inexpensive and not yet illegal. . . . On June 21, 1967, at a celebration of the

Summer Solstice held in Golden Gate Park, a familiar local figure distributed about 5000 STP tablets without charge [and] an additional smaller number were sold on the street," resulting in an estimated sixty cases of adverse reactions variously treated by the free clinic, local hospitals, and emergency centers. A similar episode occurred four months later. By the end of that summer, small but significant fractions of the population had begun to use intravenous amphetamines, the "death of hip" was celebrated by the community members, and large numbers of youth left the Haight-Ashbury for communes and other enclaves, in part because the more violent speed users and "acid heads" had begun to clash. The most severely drug-dependent youth and those least productive stayed on. Microepidemics of barbiturate use occurred and later heroin appeared, and the Haight-Ashbury quickly declined in popularity.

While observers are aware that LSD was "discovered" countless times by the media, that the mythologizing of youth and the coupling of their interest to psychedelic values was highly promoted in leading news journals, and while it was clear that leading philosophers, psychiatrists, and students of the romantic agony were quiet (if not diverted by the notion that perhaps drugs indeed were heralding a unique era) the microhistory of this spread of drug interest, trial, and misuse is still lacking, still challenging for sociopsychological study.

The initial research response was natural to the campus, where both investigators and users were clustered, including an expected concern of a panicked generation of parents and administrators. A number of studies of the scope, the extent, and the patterns of drug use began; psychiatric and other casualties were reported from those institutions in contact with these "fallouts" from the epidemic; and with the springing up of new "outreach" agencies, the motives, needs, and physical and psychological problems of various involved young users were reported.

Fear of arrest and hospitalization, a lack of effective medical treatment and knowledge about the new drugs and their adverse effects, and fear of the drastic treatments often employed encouraged subcultures to begin treating their own "bad trips," even where there were hippie-acceptable agencies. This meant that drug victims were probably more prevalent than reported. Exactly how the communication of treatment norms, rationales, and mythology affected the avoidance of the medical agencies, the process of professional treatment of the users, and occasional adverse outcomes is unexplored.

The explosion of marijuana studies and technological developments for the production of tetrahydrocannabinol (THC); the description of scenes, myths, and subcultures leading to surveys of extent and scope and to studies determining the effects of the drugs on physiology, mentation, and behavior; the desperate, though to date futile, search for medical uses of the

cannabinoids, as if to justify marijuana's recognition, all created pressures and fallouts.

The confidentiality of research and the fearless public reporting of findings when they were unpleasant to policy are some of the yet unreported struggles in research sectors during the 1960s.

A comprehensive cultural history of the drug movement would be a valuable contribution to the understanding of the epidemic propensity of fads. Whenever a piece of contemporary behavior is widely conveyed—or reacted to—it rapidly becomes significant, imitated, and consequential in terms of public style and habit. In a consumer-oriented economy, sharply responsive to novel fads (and with the distinct purchasing power of the young) there is an instantaneous communication network of TV, radio, books, and the underground press. Youth are highly mobile, obtaining drugs from one part of the country and demonstrating their use and distributing them in other parts. There is an increased reliance on psychoactive chemicals and an ambivalent mood about technology's ability to discover and market medicinals to influence the mind. But a social-psychological formulation of this epidemic—the output of information, the barriers and facilitators between the output and the receiver, and an analysis of how the receiver heard the message—is still lacking.

Trend Studies and Epidemiological Models

Brief History of the Research

The voluminous research literature since 1960 on nonnarcotic drug abuse is primarily devoted to the assessment of the extent of use, defining patterns and subpopulations of users, attempts at understanding causes (including a few "process" studies—the social processes involved in the acquisition and consumption of drugs and the management of their effects) consequences and outcomes. Very few studies define treatment regimens or assess their efficacy.

Background knowledge about drugs and drug use—psychopharmacologic profiles of primary drug effects and controlled studies on personality and performance related to drugs (the roots of psychopharmacology)—were largely done in the 1950s and before, culminating in Wilder's texts. The vantage point of the social sciences was highly developed by Chein, Lindesmith, and Becker. Physicians reported adverse effects (e.g., toxic psychoses) of psychotropic and other drugs, and the use of LSD in treatment was explored. Finally, there were the reports of various commissions— Indian Hemp Drugs Commission, La Guardia Report, and the landmark studies of the U.S. Public Health Service—reflecting the focus of biopsychosocial interest in drug use.

After the epidemic of the early 1960s, after the marijuana debates of 1967 and later, trend research into the "drug-abuse problem" began in earnest. The demand was to assess the scope of the "threat"—to quickly determine the extent of drug use and abuse and, hopefully, to cope with it as instantly. This community assessment research—almost entirely published after 1967—defined trends, described patterns, and communicated news of who had and was presently using illicit drugs. There was little inquiry into who had not used, who had stopped, and who had relapsed and why. The ability to assess epidemic trends from this early data was disappointing, since most surveys focused on who had *ever* used drugs rather than assessing the more important epidemiological factors of incidence, prevalence, frequency, and rate and mechanisms of spread—statistics that best predict emerging trends and direction of current use. These early studies relied on self-report and utilized diverse samples (largely adventitious) and various methods and statistics that made comparison difficult. Definitions of abuse were idiosyncratic; the reliability and validity of reports were, for the most part, unassessed, partly owing to the intrinsic difficulty of getting independent checks in this field. Factors that might serve as leads to prevention, regulation, therapeutic measures, and possible causes were only rarely investigated, and there was much repetition.

Definitional Problems and Patterns of Use

A predictable lack of precision in terminology has accompanied the proliferation of viewpoints on drug abuse. To remove illicit drug use from the moralistic arena, "abuse," replaced "addiction" in the early 1960s, but this term also came to imply societal disapproval. The public was found either to relate the term, drug abuse, to nonmedical use, to the medical consequences of such misuse, or simply to have no idea of what it meant. A researcher's decision that a person is abusing a drug is somewhat arbitrary and depends upon the weight he gives to the consequences and outcomes of a subject's use (e.g., Bell's use of amphetamine psychosis to indicate abuse), the frequency, duration, intensity, and amount of drug used on each occasion, and the political and social orientation of the investigator or his subject (e.g., where social cost is considered). The precise distinction of the meanings of such terms as "addiction," "habit forming" or "narcotic hunger," is not necessarily explicit—nor always conscious to the investigator. At least, the connotations of each new term may bear the burden of cultural attitudes and overtones that are never quite explicit. For some investigators, addiction, dependence, or abuse, aside from its pejorative connotation, implies inability to cease drug use either because of withdrawal effects or out of a loss of control that the subject experiences. The first marijuana commission defined drug abuse as "the use of psychoactive drugs in a way likely to induce mental dysfunction and disordered behavior." By the second report, the term was discarded altogether: "The Commission believes that the term drug abuse must be

deleted from official pronouncements and public policy dialogue. The term has no functional utility and has become no more than an arbitrary code word for that drug use which is presently considered wrong. Continued use . .. with its emotional overtones, will serve only to perpetuate confused public attitudes about drug using behavior." Another definition of abuse, i.e., the use of a drug to the extent that it interferes with one's health, social, personal, or economic functioning, when applied to survey research rests upon decisions regarding the frequency and intensity of the drug used relative to anticipated consequences and outcomes of such use—decisions borne out of extensive personal experience with abusers. Such relationships vary from individual to individual, and an experience of an adverse effect implies nothing about an individual's patterns of use or dependency on the drug. Some studies have attempted to distinguish use from abuse on the basis of whether drugs are used under medical "supervision." The personal use of ethical or proprietary drugs, though hardly supervised, is generally time-limited and conservative.

It is perhaps better to discuss drug use in terms of relative risks, and it is sometimes more enlightening, yet somewhat imprecise, to distinguish various *patterns* of use such as experimentation, circumstantial-situational use, social, ritual, and recreational use, use for self-medication, intensified use, and compulsive or habitual or habitually episodic use, although at times, in any individual, the distinction between various patterns of use may be blurred. Drugs are used to counteract the effects of other drugs, and often,

once a pattern of continued use is established, to ameliorate abstinence effects.

The abuse of drugs is easy to distinguish when a user is in trouble, but far more difficult when discussing large numbers of persons or the less incapacitating patterns. The pattern of use of a drug is determined by the interplay of a number of factors—political, legal, cultural, and economic influences, small and large group phenomena, personal goals, psychic structure and dynamics, family and interpersonal peer-group dynamics, primary and secondary reinforcement effects of the drug, ritual and social setting, as well as the effects of the drug on individual and group processes, and intrinsic factors such as abuse potential, tolerance, withdrawal effects, and adverse reactions. All these interact to determine when ,-a person begins to use a drug, which drug he uses, and when he terminates use or evolves to a different pattern. Various models, derived from epidemiologic data, personal experience with users, and, occasionally, free access to the drug in a clinical setting, have appeared to describe patterns of use.

Finally, the word drug was often equated with illicit drug, and researchers, as well as the public, had difficulty confronting the general category that would include alcohol and cigarettes. Upon studying the use of these drugs, important findings emerged.

To be brief, we still do not know who is a "case," i.e., how—abstractly—to define an abuser (who need not be drug dependent) nor how to distinguish with one term the degree of harm of various dependencies. Practically, it is a matter of explicit operational definition: frequency, intensity, and duration of use, the dosage used or the need to increase it, age at introduction to use, number of drugs used, variety of drugs and their abuse liability, route of administration, the frequency of adverse reactions, the presence of an abstinence syndrome or tolerance, user's subjective or objective motivations for use, the occasion and sponsorship of use, social cost, or the effects and experience sought. Can criteria be developed that would predict with a fair degree of accuracy the outcome of a present level of use in terms of eventual morbidity and mortality? These questions, for the most part unanswered, nevertheless are employed in one way or another when a definition has been explicit.

Reliability, Validity, and Sampling Methods

The assessment of reliability and validity, and the sophistication of the sampling methods used, further complicate the design and evaluation of trend research. Problems of *response error* and the *reliability* and *validity* of the data gathered is an almost insurmountable problem when any research on deviant behavior is attempted. The fact that the use of drugs can be an illegal activity, decreases the validity and reliability of the self-report of drug

use, particularly if the subject feels that the

information that he supplies may eventually affect his ability to obtain more drugs. The reliability and validity of the self-report of drug use and social history is largely unknown. Ball discusses the reliability and validity of interview data obtained from narcotics addicts. Bell reviews the literature on the reliability of the anamnestic interview in matters of the patient's history, and Haggard and associates discuss the reliability of the interview in detail. Stimson and Ogborne discuss the validity of interview data obtained from narcotics addicts. The problem of response error in survey studies raises two alternatives, i.e., anonymous versus identifiable questionnaires. Berg discusses this dilemma in detail. The reliability of survey versus interview techniques for studying drug use is unresearched. Hawks has suggested that the reliability of the self-report needs to be tested with respect to the amount, type, and frequency of drugs used, since it is unknown what effect the drugs themselves may have upon the data gathered. It is conceivable that if a subject is intoxicated with a particular drug, he might be more apt to honestly detail his past and present drug use, particularly if the researcher seems to him to be sympathetic to his drug use; he might also brag about and exaggerate his drug use; on the other hand, he might become suspicious and tend to minimize his use. Hughes and associates cite evidence that the reports of drug use more than one year before the survey is conducted may be inadequate and unreliable. Hughes and associates, Stimson and Ogborne, de

Alarcon, Hawks, and Blum and associates have presented the clearest data with respect to the validity and reliability of their research.

Many studies give an inadequate description of their *sampling methods.* The majority have been of student, military, or hospitalized populations and have utilized "samples of opportunity," or word-of-mouth chains of referral. Such research designs make extrapolations to the universe from which the sample is obtained unfounded. Random sampling, of course, avoids this difficulty, but it increases the numbers of subjects needed, since in many populations drug abuse is a rare phenomenon. Furthermore, some users sampled may simply be too "stoned" to fill out a questionnaire. Thus, it is important to assess the reasons for refusal. Most samples have been of student populations and only a few studies have assessed drug use among adults. Many studies in schools do not include absentees or school dropouts, which may lead to a serious underestimation of drug use.

A neglected and unexplored area is age-specific vulnerabilities to drug use. For example, those between sixteen and twenty-six who are no longer students—at that volatile time of life when roles are altering, identity becoming stabilized, peer relationships changing, where the youth has finished testing himself in the sheltered educational system and is embarking upon self-testing in the adult world, confronted by pressure, conflict and tension over how he is going to "make it," where there is still promise but

much risk, and when, for some, it must be a relief to be a failure. These individuals are probably at a high risk to resort to drug use, as well as other "deviant activity."

The Trend Research

Epidemic drug use within a subpopulation changes considerably over time, and most trend studies have failed to specify when in the epidemic they have sampled. Regional and subcultural differences have rarely been stipulated and assessed. Many studies have attempted to find demographic, personal, and family variables that correlate with various patterns of use (see page 566, Research into the Causes). For the most part, demographic data in these trend studies indicate that drug use among youth as well as adults is influenced by age and education, occasionally by sex, and by regional and racial variation. Marijuana is most frequently the first *illicit* drug used and, next to alcohol, the most popular. Illicit drug experience among the general population tends to be greater among whites than nonwhites, among preteens than those over thirty; among those residing in metropolitan rather than in rural areas; among those in the Northeast and West than in the South and North Central areas. Experience with proprietary and ethical drugs is greater among women than men, whites than nonwhites, among persons reporting more formal education, among those in metropolitan areas, and among those residing in the West. Some studies have found a decrease in

alcohol consumption correlated with greater marijuana use and others have found no change. A few studies have been able to detect evidence for changing trends of use (see page 565). Many studies find a positive relationship between frequency and intensity of drug use and polydrug use, but find that *most* marijuana users do not progress to polydrug use or more dangerous drugs. Many studies describe various patterns of use, and find certain drug combinations to be preferred, e.g., marijuana and hallucinogens among students. A few studies find that a lower age of introduction to illicit drug use correlates with increased chances for future extensive involvement with drugs.

Robins and Murphy were the first to retrospectively study, by interview, drug use within a normal population (urban Negro males) unselected with respect to drug use. Among other issues, they attempted to discover the prevalence of drug use, which drugs were used and at what age their use began, what proportion of drug users became addicted, how age of first drug use related to the eventual extent of use, the rate of recovery from addiction, and what proportion received treatment. Although prevalence findings are dated, this study is a model of that design and answered many questions that later studies merely replicated, often less reliably. Blum and associates randomly sampled a middle-class sector of students drawn from five universities in an attempt to determine prevalence and frequency of drug use and to characterize those who use drugs from those who do not. Walters

found that within a prestige college population the effects of illicit drug use on academic performance were minimal, and only alcohol use was consistently correlated with lower grades. Other college student populations have been studied by McGlothlin and Cohen, Blum, Schaps and Sanders, Pearlman, Robbins et al., Mizner et al., and Goldstein and Gleason. The second NCMDA report has collected a bibliography of two hundred studies on students. Rouse and Ewing and Glass studied coeds; high school populations were studied by Lombillo and Hain, Kandel, and Hughes et al. Hospitalized patients were studied by Cohen, Bowers, Blumburg et al., Fischman, and Shearn and Fitzgibbons. Urban adults by Parry, Gottschalk, Mellinger, and Manheimer; high school dropouts by Berg; hippies by Shick et al. and Solomon; political groups by Zaks; medical students by Lipp et al., and soldiers by Greden and Morgan, Black et al., and Callan; a free-clinic population by Judd and Mandell; a black ghetto population by Lipscomb; samples of research subjects have been studied by McGlothlin, Blum, and Welpton; and marijuana use among physicians has been studied by Lipp and Benson. Zaks and associates indicated a tendency for the younger users to widen their drug use to many different drugs and for the older groups to constrict their use to one drug, usually marijuana, instead of many.

Robbins and associates have begun to study an especially large sample of students. Only Berg and the second NCMDA report have attempted a compilation of many trend studies, and both discussed the difficulty of

comparing such diverse statistics. Drug use has been surveyed as part of a larger study not concerned with drug use in an attempt to get around the bias of researchers and the problem of reliability and validity of the self-report. There have been no prospective studies published, although some are in preparation. McGlothlin discussed national estimates of the marijuana market in terms of cost and expenditure, supply, and demand. Smart has reviewed the trend studies on illicit drug use in Canada, and has discussed the log-normal distribution curve for drug use where there are many infrequent users, fewer moderate users, and even fewer heavy users.

Epidemiological Studies

The various trend-survey studies use many diverse measures to obtain data about the trends of drug use, which makes comparison difficult. Practically all studies report who has *ever used* a drug—i.e., the nonmedical use of the drug at least once. This measure includes both past and present use, and the use of drugs in all possible patterns, and it is the measure that is least useful to predict emerging trends. Hughes and associates, Hawks, de Alarcon, Bejerot, and Bewley have all suggested an epidemiological method of standardization by employing incidence, prevalence, frequency, and exposure data derived from the contagious disease epidemiological model. These authors have compiled data about the trends of drug use among various population sectors over time, investigated the mode and rate of speed of

heroin use within a community, and discussed the importance of the "initiator," "reinforcing agent," and "pathological prescribers" in communicability of drug use. They explain that *frequency* data (the number of times the person has used the drug illicitly) is helpful in defining patterns of use and ascertaining the numbers of persons who are dependent users—based upon an investigator's definition of dependence. *Prevalence* data indicates current regular use. One measures the active cases of drug use in a given year (or another time period) and this includes new cases as well as active cases. Few surveys include this data. Psychiatric hospital admissions or outpatient indices are of little value in estimating prevalence, since most users try to deal with the complications of drug abuse by themselves, avoiding admission. Psychiatrists may also underreport drug use or utilize other diagnostic labels. Hughes explains that much of the drug use indicated by prevalence rates is due to a small group of multiple drug users. *Incidence* data measures the rate of new cases in a given year. Hughes explains that this measure may give the first clue to the spread of the disorder and also to the decline of drug use. Very few studies report incidence data: they are difficult data to obtain, and interview effort and organization in case finding is required. The use of incidence data to justify the efficacy of treatment programs can be unwarranted when the decline in drug use is due to a saturation of the target area with the drug. Prevalence data avoids this difficulty. Berg discusses which studies employ each of these measures. Only

Hughes reports *remission rates* for polydrug users, although they are commonly employed in heroin research. He finds that remission rates are highest for amphetamines and lowest for marijuana. He cautions that investigators may attribute a favorable remission rate to program effectiveness, when, instead, it may be due to spontaneous remission because of the user's experience with various consequences of drug use, such as adverse reactions. *Relapse rates,* though valuable, have not been studied among polydrug using groups. *Exposure data* (how often a person uses a drug when it is immediately available) would include a concept of "host resistance" to drug use, which might be particularly valuable in understanding ways of preventing the spread of drug use, if the influencing factors could be defined. Hughes finds that one-half of his sample exposed to marijuana in high school do not use the drug. Such data indicate that exposure rates may not be as powerfully predictive of future prevalence and incidence as had been thought before. Exposure is more frequent among users than nonusers; Schaps and Sanders have explained some of the factors involved and note that moderate users are least likely to be in treatment programs. Most studies have suggested that drug epidemics, as well as drug use by individuals, may be self-limiting. What drug and social factors and processes determine this limit within communities and among individuals are still largely unknown.

Current Trends in Drug Use

From currently available epidemiological and trend research, the marijuana commission has sought to describe trends of current illicit drug use among adult and student populations. Newly marketed drugs do, at first, cause increased demand if only for experimentation with most drug users, and once demand in a target area is saturated and experimenters satisfy themselves about the effect and experience, incidence of use declines and demand decreases. The commission reports, "In sum [among adults and youth as a whole], the prospect of readily available marijuana elicits no substantial expectation of initiated or increased consumption among the general population." Among secondary-school students the incidence of drug use has increased, and percentage increases in the number of students who have tried the illicit drugs have begun to approach, equal or surpass percentage increases in the incidence of alcohol use. At the college level, the proportion of students who reported ever using alcohol in 1972 declined somewhat, while the proportion who had ever used the other drug types, particularly the hallucinogens and marijuana, continues to increase. High-school students tend to have used hallucinogens more recently than college students, indicating the trend for the use of these drugs to be self-limiting. We are beginning to reach a saturation point in the incidence (ever use) of marijuana use among the college population, and the proportion of those experimenting with and continuing to use marijuana will stabilize and possibly decline within the foreseeable future. Experimentation with

inhalants, such as glue and solvents, occurs primarily among junior high-school students. It has remained relatively stable since maximum popularity in 1969, and the use of these substances, once initiated, is quickly extinguished.

Occasional fads of stimulant and depressant use, alone or in combination, occurs sporadically. The use of heroin and other opiates among secondary-school and college students is comparatively low; the largest majority of these persons terminate use of opiates after experimenting with them once or a few times. Only a small proportion go on to become frequent users or reach dependent status. The data on patterns of student drug use attests to the consistent occurrence of these patterns regardless of the location of the survey, the type of student body queried, their age, or the period of time since beginning drug use. Although the population at risk has increased, the relative proportions of frequent and regular drug users drawn from this pool have remained fairly constant.

Future drug use among those who have never used illicit drugs appears unlikely (except for the use of alcohol) and the future plans of those who have tried various drugs at least once are more uncertain and less predictable. The Marijuana Commission reports that most students had already made a decision either to continue using a drug or to discontinue using it; the question of the stability of such decisions is, of course, at issue. With the

exception of alcohol, the majority of student drug users generally adopt and maintain patterns of low frequency, and low to moderate intensity, regardless of the duration of use. Furthermore, considerable attrition takes place as the students move from high school to college. Most of the high-intensity users represent the weekend-party marijuana, hallucinogen, hypnotic, or amphetamine user who generally confines taking these drugs to social occasions. Student drug use, though now beginning earlier than in the past, ordinarily remains a short-lived phenomenon, regardless of age or time since onset—except for marijuana and alcohol. Those who maintain relatively heavy and regular drug-usage patterns, particularly with the physical-dependence producing drugs, throughout high school and college stand a much greater chance of extending their drug use into adulthood. The use of any and all illicit or controlled drugs, particularly marijuana, is generally preceded by and highly correlated with the use of alcohol or tobacco. The majority of students generally confine the use of either controlled or illicit drugs to one drug type, although there is a relationship between greater frequency and intensity of drug use and the number of drugs used either concurrently or consecutively.

Conclusions

Epidemiological research, when properly designed and conducted, can yield much useful data about all of the various aspects of drug abuse. Hawks

explained that epidemiological research can be useful in describing the history of an epidemic, in providing a community diagnosis of the extent of a problem, patterns, and trends, in researching clues to causes, in ascertaining the individual's chances in terms of morbidity and mortality, in defining the efficacy of treatment programs, and in identifying various consequences and outcomes in terms of specific syndromes encountered. He naturally recommends that hypotheses should be constructed before the data is gathered, since the hypotheses determine the variables selected and "the data collected for wholly empirical ends will only be lent, post hoc, to theoretical rationale."

Ideally, prospective studies of high-risk groups should be designed, and an agency rather than an individual should attempt such research, since long-term studies go beyond the time or ability of individual researchers. Trend data when properly constructed can be useful in identifying new epidemics, new patterns of use, and newly emerging illicit drugs. It can also aid program planners to assess the extent of drug use within their community and, if so designed, the efficacy of intervention programs. The question is, generally, how timely and accurate such studies are. In general, trend studies do little more than illuminate some of the more important factors for further research.

Research into the Causes

Introduction

Freud mentioned intoxication, together with ecstasy, neurosis, psychosis, humor, and self-absorption, as major ways of dealing with stress, danger, and suffering. Intoxication served both the tasks of obtaining pleasure and avoiding pain. Lasting internal, autonomous regulation might provide some protection from suffering—but at the expense of omnipotence and the press for total or immediate satisfaction. Religion, rebellion, chronic intoxication, neurotic illness, and perversion are viewed as bringing some consolation for unsatisfied pleasure.

The bulk of analytic writing rests on a few cases of analytic or psychotherapeutic encounters describing the drug user's personality in a variety of terms. Research based on larger numbers and more extensive experiences has mainly been the trend study. A small though important body of epidemiological research has sought to define who is at risk in terms of demographic and personal variables, and has studied the communicability of patterns of drug consumption. Both trend- and case-study approaches describe the user's rationale for starting or continuing use. Both attempt to define precipitating causes, and both point to what can broadly be said to be varying degrees of psychiatric difficulty among subpopulations of users. Intrapsychic and family determinants, social causes and reinforcement effects of the drug, the setting and the peer group have been cited to explain drug

use. Many investigators touch upon the themes of risk taking and the search for recreation, or the need for both novelty and controls, as inherent in this behavior. Those factors which complicate definitions of the extent of "the problem" also apply to the research into causes.

The subtlety with which various factors can interrelate, and the minor changes in scrutiny and design that can bring one factor or another into focus, is demonstrated by Salzman and associates. They studied hallucinogenic drug continuers and discontinuers. They found that the continuers were both more willing to make high-risk decisions that could impair health or life and also had a greater number of drug experiences than the discontinuers. On the other hand, if the number of drug experiences were held constant, the previous findings were altered and the risk-taking differences disappeared. Then, the continuers scored higher on measure of depression, anxiety, and psychiatric impairment. Thus, research must be flexible enough to notice unexpected findings.

The important fact is that most trend research is primarily of heuristic value in delineating the important variables and understanding which variables among specific groups are critical in the individual's "decision" to use drugs. Beyond asserting that minorities, the youth, and disturbed populations generally emerge in historical, transcultural, or current trend studies as relatively more vulnerable, it may not be a possible goal to specify

by category who are members of the group at risk either to begin or to continue drug use, nor in whom the outcome will be constructive or hopelessly injurious. We do not yet fully understand the interrelationship of the broader human elements of the search for novelty, recreation, avoidance, and risk taking that underlie this behavior, as well as many others, nor the age-specific, developmental, neurochemical, or genetic predispositions that favor or oppose the exploitation of drug effects for a variety of purposes. That some persons drug use seems to be self-limiting, and that for others the severity or intensity continues unchecked or recurrently interferes with organized social function remains unexplained.

Hawks cites causative variables such as maternal deprivation, delinquency, parental separation and bereavement, truancy, social failure, work instability, character deficits, risk taking and precocity. He notes that many are effects as much as causes. Indeed, this is the crux of the problem. Few studies are (or can be) designed to clearly distinguish whether the characteristics found are antecedents, consequences, or independently developed concomitants of drug abuse. Without prospective studies, it is often impossible to decide which are the effects of the drug taking or the membership in a drug-taking clique, and which are the causes for the occasion of drug use itself. Crucially, the weighing of factors and the very delineation of sequences of causal and contributory events mitigates against precision, even though various general constellations of social and

psychological factors may be identified with fair confidence. Finally, as with all such discussions of behavior, one must be wary of ascribing motives and specify what is being explained and why. If curiosity is found as a motive, this does not rule out contributory pathological motives underlying it. If such individual pathology is not present, it is likely that continued drug-taking behavior can be more easily dealt with by both the individual and others—including the researcher!

Risk Taking, Recreation, the Search for Novelty and Control

In the present decade of heightened awareness and availability of drugs, many feel that not using LSD or marijuana is like having the electric light and not turning it on. An egalitarian and egocentric access to every available experience, rather than participation in socially prescribed mythical, heroic, or demonic presentations of the human potential, is part of contemporary style. If omnipotence or revealed truth is imprisoned within a pill, why not release it? Such thoughts readily become action, and, with the first act, it seems easier the next time, providing all goes well.

Novelty, risks, and recreation comprise a complicated, relatively unexplored psychology. The active or passive manipulation of a tension and of bodily sensation and action are involved. To control—or command—a change of state is a powerful human motive, tapping private, persevering,

primitive, and peremptory wishes. The power of subjectively denying risks, consequences, and reality is not only essential in achieving many altered states and moments of pleasure but—in perspective—is awesome. The alcoholic's enthusiastic anticipation of the next intoxication is, for example, in marked contrast to the dysphoric affect experienced during the later stages of the drug state. Observing drug abuse from the "outside," observer empathy is sometimes difficult, yet the drug-dependent patient gains something in achieving immediate and private change and in being able to act to reproduce it.

To specify both the anticipated and actual reinforcement in the drug state is difficult, and specific drugs may differentially enhance certain rewards (see page 581, Drug-specificity Hypotheses). It is clear that the consumer has some sort of hope for comfort or change that is somehow within his power to achieve; he cannot often correctly perceive what it is that he is gaining, nor regard the costs, even though they may be acknowledged. While speculation has been rife about the various motives enhanced by specific classes of drugs, there is little data on why some do become extensively involved in drug use and others do not, although the roles of magical thought, illusion, and denial are appreciated.

The power and potential of the self-administration of drugs to manage uncertainty is probably critical. The principle of familiarity and constancy is,

particularly at the phase of dependency, impressive. The extent to which not only challenge but change can be warded off by ritual is at issue. In infancy, intrinsic barriers against the unwanted are achieved both by biological "screening," intrinsic adaptive features, and by empathic actions and intentions of the mother. The need, of course, both for barriers against stimuli and reassurances is enduring. In this vein psychoanalytic thought has implicated drugs as transitional objects that perform such functions—ones the individual has not yet internalized. The drug state can become an integrating focus, subserving such parental ego functions. Many addicts simply do not feel like themselves without the familiar state produced by the drug. They learn, through the drug experience, ways to cope with stresses and to relate to others. They need only see, think, or encounter these conditioned signals to once again remember their power, their small assured mastery, while functioning in the drugged state. This self-provided "provider"— this deviation from sounder separation and individuation processes—represents the megalomanic and omnipotent power of narcissism, and a symbiotic and egocentric view of relations that many therapists of. alcoholics, for example, have noted as an issue in treatment.

A person's capacity to interpose a screen and delay between himself and the world, or between himself and his impulses, and to have an assured experience, combine in any event to provide a powerful motive. Whatever our imaginative assumptions about the infant's expectation of omnipotent control

of mind and body, observation of maturation indicates he gains control and finds pleasure through control. Similarly, states of feeling can to an extent be self-initiated and controlled. Actions such as masturbation can be employed for mastery, relief, or increased self-esteem. There is a fine line, however, between control and manipulation resulting in mastery, increased self-esteem, decreased vulnerability, and a sense of self and the addiction to the act itself, where the internalization of the ability to regulate states of internal need and tension may be thwarted. This is why drug abuse is particularly disturbing in early adolescence, when bodily change occurs beyond will and control, and authentic mastery may be thwarted and dependency on drugs result. When does the use of drugs, masturbation, fantasy, and thought as trial action to make up for ego defects and to master feeling states serve to temporarily relieve stress and to promote growth, and when does it block growth and mastery? The use of masturbation and fantasy to transiently gain control of emerging sexuality, tenuously regulated self-esteem and aggressive drives until the youth can confidently delay gratification, tolerate aggression and sexual pressure, and develop adequate defenses is generally appreciated. The crucial question for research is when do the effects of drugs block development and when do they facilitate it, i.e., when is the drug for the occasional of testing oneself and recreational intoxication and when is it for dedicated escape?

Many authors have spoken of drug use as a search for novelty, and a

correlation between drug use and increase in varied sexual activity may be an expression of this. Some authors, e.g., Miller, have stated that "drugs turn banal thoughts into miraculous ones," and have spoken of the mythology that "boredom is beyond the possibility of being high." The search for novelty is a universal aspect of mammalian behavior, and yet why some humans resort to drugs and others do not (indeed why animals do not—unless exposed) remains incompletely understood. Some users become bored with drug experiences, some turn to other drugs or other routes of administration, while others will decrease their use or stop altogether. Which persons and/or what reason they choose one or another alternative invites research. Why and for how long do some continue their drug use after boredom sets in? Do people repeat the drug experience to master it or merely to perfect it? That is, do certain states of partial dyscontrol present a challenge to increase the risks time and again with the hope of getting away with it at little or no cost? It would be constructive to learn how people perceive satiety and safety and how to train them (as culture-bound ceremonies somehow do) to do so. This is akin to a similar problem in obesity. Drugs and their alternatives as recreational devices are imperfectly understood, and the uses of leisure and creative potential are issues long of concern and of increasing relevance in affluent Western societies.

In summary, the extent to which man can control mind and body is limited in spite of an infinite capacity to dream to the contrary. Man's ability

to recurrently substitute escapism, dream, and fantasy for confrontation with challenge is—banal as it may be to reiterate— astounding. Fantasy may serve a temporary purpose and the outcome may or may not be creative. By implication, research into self-regulatory behavior is important in the understanding of drug use and abuse.

Group Behavior as a Cause

The role of environment and interpersonal factors as contributory to the initiation and perpetuation of drug use has been emphasized; such factors are often a focus in the family or group therapy of alcoholics, for example. No studies have investigated the opposite: what cultural values, environmental variables, and interpersonal interactions serve to negatively reinforce or discourage drug use. What are the attitudinal "barriers" to interest in drug consumption? Such research might lead, if not to effective preventive measures, at least to an understanding of whether, and to what extent, they are important. Research into social causes, peer-group phenomena (including the role of the initiator and "reinforcing agents") the economics of supply and demand, and the group phenomenon of intoxication are relevant component questions. In general, drug use involves others, affecting expectations of performance and reliable response. This reciprocal expectancy means that personal motivations, patterns of use, drug of choice, the drug experience, and its management are, to varying degrees, altered by group processes.

Cultural norms and group ideals are obvious factors affecting both drug distributors and consumers, but they are also potent determinants of what emanates from research circles. The literature on drugs stems from various belief systems—from rationalistic to mystic—and implicit is a conflict of cultural priorities—material gratification, technical power, spiritual belief, or "inter-integration, harmony, and honesty." Drug abuse is thus variously defined as a disease, a cultural menace, an illegal act, a personal freedom, a personal or cultural necessity, or an act of Godlike enlightenment. Explicitness about such attitudes and review of them can lead to better designed and more precise research.

The value the individual attaches to the experience has its cognitive, behavioral, and symbolic aspects. The way he manages the effects of the drugs (controls the intoxication, for example) generates consequences. Both beliefs about and the behavior in the drug experience are related to the value placed upon the experience: those factors are also partly conditioned by cultural interpretation. If drugs were totally a private experience, there would not be any problem called drug abuse. But we have to acknowledge and give weight to the social context, as well as unconscious and personal determinants to account for drug abuse in an individual.

Social Causes

Attempts to understand the phenomenon of youthful drug use in the 1960s as part of a wider cultural change have been plentiful, and this is a continuing literature. There has been perhaps an excess of sociological mythologizing of youth, and announcements of new sources of consciousness and ahistorical and apsychological essays have appeared in abundance. Certainly the recent epidemic of drug interest and use has arisen along with other changes in our culture that are elusive and sometimes difficult to describe: the impact of television; the Vietnam War; the very mass of youth flooding our unprepared institutions. A fine balance between empirical and ideological analysis is rare. The question, of course, is the independence or interdependence of cultural changes and the drug epidemic, and the values, ideologies, and behavior of a population variously construed as "youth."

The problems of sample and researcher bias are particularly applicable to this area. Lustman described such problems: "In this literature, students in general and radical students in particular are at one and the same time described as sick or sane; alienated or involved; arrogant or humble; immoral or religious; amoral or endowed with a super-morality which goes beyond the conventional morality; obscene or pure; selfish or generous; violent or gentle; cynical or idealistic." In all such research, one fault stands out from many—the assumption that the participants in the sample actually *know* their motivations and are objective. As Lustman remarked, ". . . this seems a scientific regression to a purely conscious psychology. ... It is an astonishingly

idiosyncratic group of pseudoscientific papers which seems to have been markedly affected by the very political rhetoric and passion it seeks to describe and explain. ... As a result, we have been left with a wide assortment of speculations: theories based on what students *say;* theories based on what students *feel;* theories based on what students *mean,* regardless of what they say or feel; and on and on."

Indeed, most of this "research" is little more than educated speculation and impassioned rhetoric by investigators who wittingly or unwittingly share the same convictions, and only rarely are the methods of investigation and the research samples presented and discussed, and rarely is it acknowledged that the apparently novel radical practices of youth have historical precedents.

The youth particularly have attributed (rationalized?) their drug-taking behavior to their discontent with parental values as expressed in the culture. They assert that the old traditions are irrelevant to the modern age. Thus, the concept of a "counterculture"—a subculture of adolescents and young adults that does not emulate the dominant culture as (supposedly) did the youth in previous generations—has emerged. In the spirit of Paul Goodman's *Growing Up Absurd* and David Riesman's *The Lonely Crowd,* Theodore Roszak emerged after earlier prophets such as Timothy Leary as the leading interpreter and champion of the "psychedelic revolution" with his book *The Making of a*

Counter-Culture.276

He depicts the counterculture as a youthful opposition to the technocratic society—i.e., "The social form in which an industrial society reaches the peak of its organizational integration," and he considers drug use an epiphenomenon of the youthful rebellion. Drugs, he says, are used for "temporary emotional liberation and perceptional diversion" and acknowledges the public's ambivalence—"a strange mixture of permissiveness and resistance." He feels youth have accurately emulated their parents ideals and parents have blamed drugs for their own irresponsibility. He proposes that drug use will be accepted and integrated into society as a means of social control, if its use becomes divorced from its association with dissent.

Since the early 1960s there has been a continuing discussion of the cultural roots of the drug epidemic and the relationship of drugs to cultural change. Carey, among many others, felt that the use of LSD and marijuana among the "new bohemians" was an expression of protest, grievance, and a "general vague dissatisfaction with the quality of our lives." The youthful population had no other channels through which to express their dissatisfaction, which stemmed from "a sense of powerlessness in the face of inflexible political structures." America's advanced industrialization, increase in urban population, and speed of internal migration, all contributed to the

movement. Messer believed that youth perceived an end of an era—i.e., parents have lost their commitment to their own life style and have expressed their dissatisfaction with it. What the youth have done, he believes, is to create a different myth for their own generation, born out of historical and personal necessity in the face of their elders disillusionment —a myth about which Gutmann recently wrote: *"Somewhere within me, already formed, there is a domain of wholeness, of vital energy, of organic wisdom, of all possibilities and potential.* This perfection does not have to be created; it is there, already formed and waiting for the liberating action that will disperse the boundaries that a corrupt society has set between the mundane self and its reservoir of internal perfection." For him it is an outgrowth of the consumer society—"the consumption of life styles, rather than . . . material goods *per se."130* Many have suggested that the new interest in religion and cosmology betrays such a search for a new ethos and new ideals.

Zinberg proposed that youth look at things with a different cognitive style, stemming from their exposure to McLuhanesque "soft" media, and he explained drug use as a natural outcome of their search for passive entertainment. Blum described the demonology of drug use and how committed users advertise their escape from the fold. Bettelheirn described the campus unrest and drug use as the desperate search for meaning among "youth who consider themselves obsolete and are, at the least, peripheral to the economy." He, among others, considered their opposition to cultural

norms as acting-out behavior of an oedipal conflict, a position which other authors, such as Keniston and Lustman, opposed as simplistic.

Keniston, in a discussion of drug use and student values, argued that, "In an age of debunking, conventional morality tends to suffice: individuals are pushed to higher levels of work development or to moral regression." He felt that most youth adhered to the highest "post-conventional" morality, although acknowledging that some were morally regressed. But he felt that with most the difficulty lay in an imbalance in other sectors of development: "compassion, sympathy, capacity for love, and empathy."

Adelson faulted Keniston's *Young Radicals,* explaining that in his "determination both to share and validate the radical world view" and his utilizing the "strategy of externalization" he shows "a persistent obtuseness to . . . negative qualities [of the youth]." The "joining of high moral purpose with violence" is common in history and "the moral passions are even more willful and imperious and impatient than the self-serving passions." He acknowledges that we like to think of our young "as possessing exemplary moral vision; it speaks so well of them and equally well of ourselves."

Gutmann discussed the personal and social consequences of the new myth in Eriksonian stages of ego development (identity, intimacy, and generativity): a flight from identity, intimacy without loss, and only a fantasy

of generativity. Youth, he says, have reached a premature senility: “they see metaphors and threats of death everywhere.”

Many authors have speculated that the reception of the message about drug use and altered states of consciousness, the way it was interpreted, and its meaning to them was due to intrinsic aspects of youth—their confidence and gullibility, the tasks of adolescence, the burden and pain of autonomy, and the wish to escape adulthood or defer it. Zinberg hypothesized that drug use may be another way of working through a developmental task, and Wenkart has explained drug use and youthful rebellion in terms of E. Durkheim’s concept of anomie. Yet other studies—and empirically quite impressive ones—on normal adolescence have noted that the presumptive upheaval of adolescence is far from universally expressed in behavior. Goode and Gusfield among others have discussed the marijuana controversy as a political rather than a scientific debate. Just as Gutmann noted that the “figure of the prophetic victim” tends to be politicized. It is, for Goode and Gusfield, an attempt to establish who is in control of power, ideology and morality. Gusfield has explained that public affirmation of a norm expressed the worth and power of a particular subculture vis-a-vis some other one, and that certain forms of deviance, e.g., drug abuse, threaten social norms more than others do. “Where consensus about the norm is lacking, movements for legal restrictions are most likely.”

Miller described how, in the search for freedom and authenticity, youth turned to drugs, the encounter, romantic ethnicity, mystic philosophy, expressive politics, nomadism, and sexual freedom. He eloquently described one aspect of the problem of modern youth as the dilemma between conflicting ideals— between "hanging loose" and loving, between freedom and commitment.

Freedman discussed the "new authoritarianism,"

> . . . where authenticity derived from expertise is viewed with distrust, rejected without scrutiny, and verified data are labeled as a moralistic manipulation to serve the establishment. . . . Our youth appear to value leaders who *believe* in change; yet they simplistically believe that their own limited personal experience constitutes sufficient data not only to guide their personal behavior, but to reform society, if only by destruction of what prevails. . . . This gullibility leads not only to daringly useful "problem-posing," but to foolish risk-taking.
>
> . . . Perhaps the useful message is that there are many human complexities with which our technological age has not seriously bothered to grapple. This would require an intensive study of man and his behavioral potential in densely populated and technologically advanced societies for which man's adaptive techniques have never before been tested, [pp. 15-16]

The Role of the Peer Group

Knowledge about how drugs affect group interaction and how group interaction affects the drug experience, outcomes and drugconsuming behavior must not only be incorporated into the design, interpretation, and

methodology of continuing drug research, but it is important in and of itself. That the effects of drugs can be contagious and that, in moderate dosage, drug effect is influenced by differences among specific individuals, specific situations, and specific tasks was predicted by Nowlis and Nowlis.

Set and setting—terms popularized by Timothy Leary—become code words for how the user's expectations and the setting in which he takes the drug, as well as the cultural norms implicit in the group, affect the experience of being high, the interpretation of that experience, and the various outcomes that are possible.

Jones, in three papers, speaks particularly to the problems this raises for psychopharmacologic research methodologies. He speaks of the unreliability of the human assay, the differences of drug effects in the novice and experienced user, and the influence of expectation, setting, and previous drug experience. Some have explored the effects of LSD on group interaction, and others have explored the group processes involved when alcoholics under controlled conditions become inebriated.

Informal social systems can define the way events are to be interpreted and managed during the drug state. When one is intoxicated, the bridge to reality lies in the customs of the group as internalized by the individuals and interpreted by the occasion. Groups can also provide enormous relief from

coping, tracking, and decision-making problems—if these problems can be shared. It is the sharing of painful autonomy, through the relaxation of the internal tension of decision making and a certain loss of self, that is characteristic of many shared group experiences.

The social hierarchy within the groups— careers and roles—are also potent determinants of patterns of use, drug of choice, etc. A desire to belong to the group, and for status and power, makes users of some, dealers of others. Drugs can serve as symbols of solidarity as well as initiation, risk, and catastrophe. Youth seem to be more socialized by their peers than the former agencies of socialization —parents, teachers, families, government, and religion. Less willing to accept advice from elders and established agencies, youth continue to believe the shared myths of the "stoned group."

A sociological description of various drug-using groups emerged in studies by Carey, Finestone, Sutter, Goode, Keniston, Davis, Becker, Smith, Schaps and Sanders, Polsky, and Preble. Carey described in detail the college drug scene, examined the organization of the drug-using colony in terms of involvement, attitudes, relationships, and living arrangements as well as the various roles of manufacturer, distributor, (middle- and top-level dealing) recreational user, and "head." Schaps and Sanders studied various levels of involvement and found that within a college drug-using community, moderate users were the most secretive, and the light and heavy users the

least so. They found that moderate users were wary of the "head" who might risk exposure and also wary of the novice who didn't understand the need for secrecy. Keniston described the difference between campus "heads and seekers," and Davis between the "heads and freaks." Becker described the assumption of a career in deviance, the cultural context influencing such behavior, and the future of such deviance. Smith, documenting an episode of recent history, described how the wish for status influenced the patterns of use in the world of the Haight-Ashbury "speed freak," and the various roles involved in the illicit manufacture and distribution of amphetamine. Blum described the dealer in detail. Hughes and associates described the social structure of the heroin-copping community; Carey described the hierarchy of social roles within the college drug scene and the Bay Area speed scene; and Zinberg, the social context of drug use in Vietnam.

There has been some research into the determinants of joining and relinquishing membership within a group where drug use is one of the norms. For example, a person who stops using drugs may still maintain membership in the drug-using social group as long as he has signified in an initial affirmation "through public drug taking initiation and continues to espouse the group's point of view."

Hughes and associates, de Alarcon and Hawks, have discussed the various stages of the spread of heroin abuse within a community on the

model of a contagious disease. They have discussed the role of an initiator and reinforcer as important to understanding the assumption of drug use by an individual. Hartmann, Hawks, Blum, and Kandel, among others, discuss the role of siblings in initiating and reinforcing drug use. Drug users are first introduced to a drug by their friends, less often by siblings, and only rarely by persons not acquainted with the user. Drugs are usually obtained from friends or acquaintances who deal in relatively small quantities, and the roles of dealer and purchaser may reverse themselves when another member of the peer group obtains a relatively larger supply of a drug than his peers. McGloghlin discusses the marijuana marketplace on a national scale— annual consumption, source, importation, distribution, and retail expenditures. He discusses enforcement from the standpoint of arrests and seizures, and predicts current trends for the future use of marijuana.

It has been widely asserted during this epidemic that all people, adults included, consume a wide variety of psychoactive medications and that their use has been ever increasing since the introduction of the major tranquilizers in the 1950s. Various authors have supported and refuted the thesis that there is as much abuse of proprietary and ethical drugs among adults as there is with illicit drugs among youth and that drug-using youth come from (and are somehow caused by) drug-using parents. “According to this view, drug use on the part of the young develops in response to parental [psychoactive] drug use.” Much of the presumed association between such adolescent and

parental behavior, however, has so far been "based exclusively on the youth's perception of their parents drug use." Kandel has studied the problem with independent data from the adolescent, his parents, and the adolescent's best school friend that clearly indicate that peer influence on adolescent drug use is much stronger than parental influence. "There is a synergistic influence of parents and peers, so that the highest rates of [marijuana use] appear in situations in which both parents and peers use drugs." Such studies, of course, do not answer whether drug use or drug-using friends come first. For such answers longitudinal data are necessary.

The effects of group norms, roles and status, the shared expectations and responsibility for the drug experience, as well as the effects of drug use on the mores and values of the group, combine with the economics of supply, distribution, and demand as well as cultural change to influence patterns of use, research viewpoints, and public response. It appears that a more complete understanding of these processes awaits further research of social-psychological and cultural anthropologists.

Adult Drug Use

The recent drug-abuse epidemic has arisen along with suggestions for changes in the role of government, advertising, and the medical community to protect the drug consumer from risk. There have been demands for free

access to drugs and drug information, and the present system of controls and regulations has been called into question. The field of medicine is a reliable institution for researching and dispensing medicinals, but there is a need for social and anthropological research into the functioning of these systems. There has been a demand for evidence about prescribing practices and the consumption of proprietary and ethical drugs, and the results of various studies are just beginning to emerge. A number of recent studies have concentrated on the use of medication by adults, and prescribing practices by physicians. Parry and associates find that psychotherapeutic drugs are most often prescribed by general practitioners and internists. They believe that "there is no real evidence that the American people are 'over medicated' with respect to psychotherapeutic drugs, and, in fact, there is considerable evidence that they take them rather sparingly and under physician's orders . . . many of the users take them with . . . puritanical reservations. . . Women take such drugs almost twice as frequently as men; drug use is higher in the West; most users felt they were helped by these drugs; and adult drug use depends upon social class and age.

> The findings suggest that the popular stereotype (of a pill-popping middle class housewife) has little foundation in fact. It is not among the typical middle class housewives that steady long term use of minor tranquilizers and sedatives is most common, but rather among the poor and least educated housewife.

Mellinger and associates explained that among young people marijuana

seems to be an increasingly popular alternative to both alcohol and psychotherapeutic drugs obtained from a physician. Gottschalk and coworkers found that youth tend to most frequently take stimulants, while adults seem to receive sedatives and analgesics from their physicians. Mellinger and associates commented on the finding that young people tend to bypass the physician more often than adults to obtain drugs, and youth tend to downgrade the importance and relevance of medical judgments about the safety and specific indications of drugs.

There is public ambivalence about the role of the physician as a reliable dispenser of drugs. Although the role of the "pathologic prescriber" is well known, the prevalence of this phenomenon is unresearched.' How different sectors of the society treat the trend to trivialize drugs as a mere convenience or device is at issue. There have emerged cries to let people medicate themselves to train paraprofessionals to dispense medication and become drug counselors and on the other hand, to invoke limited licensure among physicians. Muller has described the forces in the marketplace of drugs and how the doctor, drug company, physician, pharmacist, and the hospital all make decisions based on factors and alternatives peculiar to their vested interests.

Certainly the individual's use of and access to trained professionals must be investigated, as well as approaches to a better reciprocal exchange of

information between professional and laity in the appropriate uses of medication. Yet the gap cannot be bridged completely. Professionals must make certain judgments borne out of experience, and they must count on the fact that both customs and social functions, including religion and recreational drugs, help people to solve, redefine, or contain some of their dilemmas and impulses. We could not, as a profession, adjudicate every anxiety to which people are prone. Individuals must learn to diagnose their own conditions, learn to tolerate and interpret pain and anxiety and define the reasons through extra-medical resources. Intelligent or wise self-medication has a social role. The extent to which psychotherapeutic drugs are abused is a question, and although such abuse appears in literature on occasion, for the most part Americans tend to be conservative in their use of psychoactive drugs.

There is still little data about what social changes induce people to use drugs, cease their use, change drugs or prescribers, or move from legal to illicit sources, and the economics of this: the forces in the marketplace and the problems of supply, demand, and control invite research.

Rationales and Precipitants for Drug Use

Personal rationales for drug use have been investigated in an attempt to discover why people use illicit drugs. Most users have already begun drug use

with alcohol or tobacco before trying illicit drugs, although this sequence may be changing. No studies have inquired into the user's rationale for beginning alcohol or tobacco. Curiosity, experimentation, and challenge, the search for pleasure or meaning, self-discovery, heightened awareness, more meaningful communication with others and intimacy, violation of parental or societal standards, seeking answers to philosophical or personal problems, proof of maturity, intellectual depth and flexibility, enhancement of sexual pleasure and artistic creativity, and the production of mystical experiences, as well as the desire to go along with the peer group have all been listed by users as rationales to start or continue their illicit drug use. Amphetamine use is generally associated with more specific rationales: to facilitate study, to control weight, or to ease tension.

Mizner found that the rationales given for starting, as opposed to continuing drug use, are different. Schaps and Sanders explained that students had difficulty giving reasons for starting, but no difficulties giving rationales for continuing. As a subject's level of drug use increased, there was a greater use of rationales other than pleasure, since their sample of college students felt that these "more constructive rationales" were for them the more compelling reasons—given, the authors felt, out of a need to justify the violation of the larger group's reference standards. They also speculated that students may offer more compelling arguments, since they are more articulate and sophisticated, not necessarily more logical, than other groups.

Curiosity as a rationale for beginning to use drugs is more often listed by older users than by younger ones. For younger users, the desire to go along with the group and the use of drugs for pure pleasure are rationales most frequently found. Fads of a particular drug type or pattern of use within a community may also influence motivation. Mizner found that in trying to determine reasons for discontinuing the drug use, there is the greatest difficulty—62 percent of his sample checked reasons other than those listed. Motivations to discontinue drug use, although for the most part unresearched, include experience of adverse reactions, hospitalization, the user's awareness of his drug dependence, or the fact that the drug experience did not live up to expectations; include economic considerations, such as increase in cost or decrease in supply, increase in the pressure from law-enforcement agencies, or perhaps his guilt or shame over drug use. Motivations to relapse among polydrug users have not been studied.

A much more important question, rarely addressed, is whether the rationales given are the same as objective motivations or precipitating causes, and will such questions asked of users give us valid data as to why people start or continue? Is not such trend research as we have described investigating justification and not motivations?

In an effort to objectively assess motivations for use, various authors have investigated precipitants and environmental stress surrounding the

onset of use or abuse. Stubbs has investigated environmental stress during the formative years of young drug abusers. Whitlock has investigated precipitants in barbiturate dependence. Glickman and Blumenfield have noted that their sample of fifteen patients, who were seen in a psychiatric emergency area, had begun LSD ingestion at a time of a sense of inadequacy in dealing with a life crisis where "either greater pressure was placed on the patient to assume a more demanding and responsible adult role, or a previously existing prop to the patient's self-image as a mature and adequate adult was lost." Bell explained that many users commence the abuse of a drug after many months or years of moderate use. He feels that a precipitant—defined as a new circumstance, associated in time with the onset of addiction, that has some deeper psychological significance for the patient—is required to explain the change in susceptibility of the individual addict through time. He discovered precipitants in thirty-four of forty cases of amphetamine abuse, closely linked in time to the onset of addiction, that, in twelve cases, resulted in a "change in the patient's environment, allowing ready access to amphetamines for the first time." He found the precipitants to be commonplace, yet stressful, life events of two general types: rejection or separation from a loved or admired object, and the transition to a more demanding adult role. Both seemed to resonate with important factors in the patient's psychological genetics and dynamics.

Although the determination of "precipitants" for investigating drug use

or abuse are useful in understanding and treating (see page 590) this problem, such events are not always traceable—group legitimatization of drug-taking behavior can work and outweigh many individual determinants and can make determination of individual factors operationally sometimes impossible to define. This problem is not intrinsically different from sorting out the necessary or sufficient precipitating life events operative in any other psychiatric disorder. The user's verbalized rationales for starting and continuing drug use have been adequately researched; more objective interview studies are now needed to determine possible precipitants surrounding the onset of intensified use.

The question of who is at high risk to abuse drugs has received scant attention. Who is at risk to *begin* illicit drug use is unresearched and might provide useful data about targeting of preventive measures. Such data could provide a more efficient way of investigating the more subtle psychological and social factors involved in drug-abuse propensity. There are a number of retrospective studies of risk. Robins and Murphy studied a normal population of urban Negro boys and found that the earlier drug use begins, the greater was the risk of going on to use heroin or amphetamines, the greater was the variety of drugs eventually used, and the greater was the risk of addiction or regular use; poor high-school attendance and dropping out before graduation were related to moving from marijuana to a more serious drug; delinquency predicted a high risk of heroin use or heroin addiction subsequently;

socioeconomic status and elementary-school performance did not predict drug use, but the combination of an absent father, delinquency, and dropping out of high school characterized a group of Negro boys who had a high risk of heroin addiction. More recent studies have often replicated these findings. Blum and associates have concentrated on student responses on a "willingness" scale; earlier age of onset of illicit drug use (as well as alcohol and tobacco) correlates with high risk. Many studies suggest that the occurrence of psychiatric difficulty, especially the diagnosis of antisocial personality disorder denotes a potential risk for drug abuse. The question with such studies is whether the measures derived are reliable and valid over time and among different socioeconomic groups and subgroups of users.

Psychiatric Impairments

Implications of psychiatrically significant impairments associated with drug use are pertinent—whether from psychological measures, self-assessment, or observer data obtained from interviews—particularly in seriously dependent, individual drug users; from retrospective studies of populations at risk; or from unfiltered accounts of drug use in India and the Middle East. Yet whether the psychiatric difficulty, apart from toxic psychoses, predates the drug use or is subsequent is ultimately unanswerable except with prospective studies. Inquiry into neuropharmacological factors and organic damage is also relevant. Retrospective studies and post hoc case

reports can do little more than provide shrewd speculation and leads about sequence, although certain findings such as truancy, sexual deviation, low grades in school, family difficulties, psychiatric help, school phobias, bed wetting, suicidal attempts, and the like among drug users prior to their first use of drugs tend to support a notion of preexisting pathology, at least in a fair number of dedicated users.

The reliability and validity of the surveys, questionnaires, or interviews used are, of course, an issue. Drug users may have a need to deny psychiatric difficulties. On the other hand, some people, especially contemporary students, are quick to admit confusion, anger, anxieties, and problems, and "given a list of neurotic symptoms, may check them all." Furthermore, students tend to define discomfort in sociological terms rather than by specific subjective symptoms. As illicit drug use becomes more socially acceptable and the prevalence of drug use increases, the determination of "pathology" purely on the fact of illicit drug use becomes less valid. Studies that contrast marijuana users to nonusers, especially in student populations, and attempt to assess differences in psychiatric difficulty, have rarely been able to detect significant differences for this very reason.

High scores on measures of depression, anxiety, and neuroticism, self-descriptions of moodiness and unhappiness, visits to a psychiatrist, unusual sexual or aggressive activity, and problems with school or police authorities,

have all been found among drug users and thought to indicate psychiatric difficulty. A recent study by Halikas et al., interviewing a sample referred to them by word-of-mouth chains that consisted of one hundred regular marijuana users and fifty non-using friends, found a strikingly high incidence of "definite" or "probable" psychopathology in *both* groups, and the incidence of psychiatric hospitalization and psychotherapy was about equal. They were able to determine that in most cases diagnosed psychiatric illness began before first marijuana use. Sociopathy did distinguish the two groups, appearing significantly more among the users.

Particularly in the early phases of the recent epidemic, illicit drug use was "antisocial" in the sense that it was not normative behavior for the culture at large. But personality diagnosis based on behavior during an epidemic is not reliable. In some, drug use is clearly linked to a primary character problem of sociopathy, yet in others their antisocial acts seem to be confined to the realm of procuring and administering the drug, and this has been labeled "secondary deviance." Others lose control during the drug intoxication, and as a result of the drug effects and/or group pressure, commit acts that are generally ego-alien and will display affects and impulses otherwise relatively controlled. The diagnosis of sociopathy is still highly debated; criteria for diagnosis must be accurately specified.

Sociologists have consistently pointed out that labeling a person as

deviant or criminal has important social and psychological ramifications for his own self-image and in the perpetuation of such behavior. Even so, there is some evidence that among sociopathic individuals, and samples of incarcerated heroin addicts, the threat of further punishment, incarceration, and supervised parole seems to be a decisive factor in remission and improvement. Among Robins sample, the first encounter with drugs was usually reported to have occurred in prison. Research into such phenomena as the hyperkinetic disorders among children show that some children may be quite disadvantaged in their ability to exercise self-control and are at risk of various "deviant" outcomes, including, perhaps, drug use. Some have sought to define biobehavioral correlates of sociopathy as did Silverman, who suggests that . . cues which were ordinarily salient for other individuals are not sufficiently salient to capture the attention of psychopaths," and has suggested that drug use, particularly with stimulants and hallucinogens, serves to increase arousal.

Closer scrutiny of the alcoholic has enabled a separation between a primary disorder of alcoholism and alcoholism secondary to an underlying psychiatric illness that predated the onset of alcoholism. Many secondary alcoholic females show a primary affective disorder, developed independently or prior to the abuse of alcohol, and such studies indicate that alcoholism and antisocial behavior are highly correlated, more commonly in men than women. Similar findings upon closer scrutiny of other forms of

serious drug abuse would be anticipated.

It seems clear that drugs may be used by some individuals as self-medication, where the regular or habitual user is treating himself: phobias, anxiety, depression, disorganization, and even schizophrenia. Some manage to be productive with such self-medication; for them, the only issue is the price.

Drug-abuse Personality

There is a continuing search for aspects of the drug abuser's personality that uniquely determine his preference for drugs as coping mechanisms. Why users have resorted to drugs and why nonusers with similar psychopathology have found other means to satisfy their needs is, at bottom, still unknown. It appears fruitless to expect to find a unique personality type who abuses drugs. On the other hand, in-depth elucidation of drug abusers' personalities may eventually highlight personality aspects and environmental variables that place a person in a high-risk category for drug use. Careful observation during the psychotherapy of suitable individuals may potentially prove useful for illuminating the most important treatment techniques, rationales, and decisions.

In his recent review of the pertinent psychoanalytic literature, Yorke has observed that particularly the early writers have concentrated on the

impulse side of the problem; for example, ". . . not the toxic agent, but the impulse to use it, makes an addict of a given individual." Wurmser, Kohut, Wikler and Rasor, Welpton, Calef and associates, Gryler and Kempner, Hartmann, Bowers and associates, Freedman, Fischmann, Weider and Kaplan, Khantzian, Chein, Savitt, and Pittel have all recently written about the personality of one class or another of drug abusers. There is, in all, much agreement about the personality of those who abuse illicit drugs. Yet most samples are skewed toward hospitalized patients or patients seen in treatment, and few studies have investigated the personality of users not in treatment or who have appeared in crisis at some medical facility. A study such as Offer's on normal adolescents is a model for such future research. Blacker and associates did study chronic users of LSD who were paid volunteers not in psychotherapy. "Although the . . . beliefs of chronic LSD users and schizophrenics are similar, . . . the clinical picture of . . . relatively intact interpersonal relationships and cognitive abilities suggests that these subjects are more similar to individuals usually termed eccentric than to individuals diagnosed as schizophrenic."

E. Glover introduced the concept that drug abuse is a repair activity akin to that found in the psychoses, and has placed the syndrome in the diagnostic context of the transitional states between psychosis and psychoneuroses, as are the perversions. Buckman, Bios, Vaillant, Erikson, Solnit, and Settlage specifically discuss drug use as part of adolescent development. Savitt, on the

other hand, recognizes that addiction as a symptom can occur in a variety of conditions such as schizophrenia, depressive states, psychoneuroses, character disorders, perversions, and borderline states. As Yorke says:

> ... a somewhat abnormal ego must, at the very least, be involved, and that is, moreover, an ego with a rather curious kind of reality testing... the addict's disregard for reality is more generalized than the neurotic's, though it remains more adequate when it comes to obtaining supplies.

Radford and associates focused on the diagnostic status of addicts, utilizing Anna Freud's diagnostic profile, and indicated the promising directions of future research.

Drug abusers are commonly characterized as individuals who are often depressed, who have a low tolerance for frustration, are deficient in their capacity to delay gratification, and who have a dearth of meaningful and satisfying object relationships with others. They use drugs to maintain their sense of self-regard, to experience exalted states of fusion or merger, and to temporarily lessen intrapsychic conflict and feelings of depression or anxiety. Many writers agree that abusers have serious pathology in the narcissistic realm, i.e., in the maintenance of stable feelings of self-regard, and recent theorists generally explain that drugs ameliorate ego defects in cognitive functions, affect, and impulse control, object relationships and superego functions. Furthermore, drugs help satisfy a search for intimacy of the narcissistic type, where there is a need to feel the same as others, and a wish

for fusion or merger experiences with an idealized object. Drug abusers are passive individuals who have difficulty in expressing neutralized aggression. Yorke comments that Glover most satisfactorily discussed the role of the superego, aggression, and sadism in the personalities of addicts. For some, the drug seems to decrease uncontrolled outbursts of rage; others feel that they can express aggression more easily when using the drugs. Freedman and Blacker and associates speculate that among LSD users passivity and avoidance of aggression is a learned consequence of the use of psychedelics.

Analysts reconstruct that in the narcissistic line of development, individuals who abuse drugs have experienced a sudden loss, severe frustrations, or traumatic disappointments in their relationships with their parents, who at an early age are experienced as idealized objects, not yet distinct from the person's own self-feelings. The parents have not been sufficiently empathic to the child's need for them as an adequate stimulus barrier or supplier of tension-relieving gratification at critical early periods. Taking (in) drugs symbolizes and partially gratifies a need to replace a disappointing unempathic parent or one who died or was lost through separation, divorce, or hospitalization; and it may be an unconscious motivation. Hartmann found traumatic childhood histories involving deaths, severe illness, or operations among the genetic determinants. The failure to phase—appropriately incorporate and internalize the idealized object, which in early childhood the parent represents—results in an ego structure that is

defective in its ability to regulate a sense of well-being, to tolerate frustration, to delay gratification, and to live up to an ego ideal.

Drug abusers appear to have impairments in their capacity for close, tender object relationships. They report a profound sense of psychological distance from others, which often predates their drug use. Many user's social contacts appear to be superficial, primarily with other individuals who take drugs. The drugs provide not only a sense of belonging to a group but also a consensual validation for the alienation that they feel from their parents, peers, themselves, and society as a whole. Sexual relationships are usually infantile. Whether homosexual or heterosexual, they tend to be on an narcissistic, masturbatory level rather than intimate, emotional relationships with specific partners. Conflict in therapy seems to be in terms of "risking exposure of tender feelings and becoming vulnerable to some sort of rejection."

The difficulty with drug experiences is that, although they temporarily provide gratifying affective experiences and often decrease the need for defensive operations, generally people are unable to assimilate such experiences in a way that would add to their psychological structure and modify ego defects. The drug experience is a prescribed time when reality testing and the inhibitions that reality imposes may be relinquished in favor of gratification through the expression of narcissistic grandiosity in fantasy,

fusion, or omnipotent control over mind and body.

Some studies have concentrated on the self-destructive aspects of drug abuse and the suicidal ideation that accompanies massive doses. Often the anxiety users describe prior to ingesting a drug, or in the beginning of a drug experience—particularly with the psychedelics —is the result of threatened ego disruption, annihilation, and fragmentation, which seems to be part of the psychedelic experience in particular. Drug abuse (and particularly self-destructive behavior) concerns important people in the user's environment. It tends to bring these need-satisfying objects closer to them.

Drug use is found in better-organized individuals as well as extremely disorganized ones, and plenty of healthy individuals get drawn into the drug movement. Individuals who are at ease with intimacy and whose egos function more or less adequately generally use drugs in defiance of their parents or therapists to reassure themselves of their autonomy and personal definition, or out of peer-group pressure.

Often associated with drug use in these individuals are feelings of guilt or shame over loss of control that tempts them to engage in acts that are ego-alien and do not measure up to their ego ideal. Such temptations may contribute to acute anxiety reactions during the intoxication or to depression after the intoxication has terminated. Borderline or psychotic individuals

often use drugs in extreme amounts to reinstate feelings of closeness through merger and fusion experiences, to narcotize themselves against the psychic pain they feel, and sometimes in an attempt to feel something, even if that means to feel painfully, in order to break through the depths of despair and hollow, empty feelings. Lindeman and Clark stress the role of different drugs in providing a specific compensatory ego integration.

In all drug-dependent individuals, the importance of magical wishes and demands is clear. They seem to be governed by a requirement for some kind of perfection, an uninterrupted and unchallenged serenity that also permeates their ideal demands for performance. This, of course, cannot be achieved in reality. Some of these individuals transfer their notions of power and perfection to the drug, the physician, or some other idol to whom they ascribe a sort of eternal presence, power, and perfection. They then become angry and crushed at the slightest disappointment either in themselves or in the idealized other. They engage in magical manipulations of supplies and needs. This is often socially evident as charm or blarney as the addict expresses his preoccupation with bringing others into the orbit of his control and inflated self-esteem. Narcissistic rage and frustration over failure and the lack of assured protection along with the inability to perceive how others manage their imperfections, all are quite characteristic. All these factors refer to the same eternal problem: that man is indeed limited, his capacity to perceive perfection is not identical to prescription for real life, and, in all of

this, the actual power to take the drug and its availability, no matter how this fact is masked, is crucial.

Drug-specificity Hypotheses

Drug users are a heterogeneous lot. Beyond certain general similarities in their personalities and behavior, the fact that they use illicit drugs—often multiple types of drugs—tempts investigators to group them together for purposes of diagnosis and treatment. Although multiple drug use is common, drug-specificity hypotheses have been proposed to explain that many individuals have a drug of choice.

Most theories neglect the importance of changing patterns of drug use and the peer group and social determinants involved in the subject's choice of drugs. Nevertheless, such drug specificity implications seem operative at least in part. Griffith Edwards' personal communication notes that pharmacologic effects of specific drugs differ in terms of behavioral plasticity or variability. In terms of expected behavior sedatives, including alcohol and marijuana, have the most variable effects; heroin moderately so; and stimulants, the least variability. Freedman notes that the effect of LSD is to enhance variability, which nevertheless does not obliterate a basic sequence and patterning of drug effects. Weider and Kaplan explained that withdrawal and the search for the relief-giving drug "induces artificial drive structures with their own

rhythms and periodicity." They discussed drug choice in terms of its psychodynamic meaning in a paper derived from intensive psychotherapeutic experiences with drug-using adolescents. Alcohol and marijuana in low doses "lessen defenses against drive and impulse discharge," and increase internal and external perception while leading to increased propensity for sexual and aggressive discharge in action. LSD and related drugs induced regressive states of "union, reunion and fusion with the lost or yearned for object." Opiates seem to recover a "lost state of oneness with the drive-channeling, tension-reducing, idealized object where motor activity and perceptual input is diminished." Amphetamines and cocaine subserved in their model a denial of passivity and a "real or illusory chemical increment in drive pressure," as well as reinforcing autonomous ego function, leading to increased self-assertiveness, self-esteem and frustration tolerance, while at the same time decreasing judgment and accuracy. Wurmser explained:

> [narcotics] appear to reduce the sensitivity and vulnerability to disappointment and to calm . . . anger. Amphetamines and cocaine . . . eliminate the sense of boredom and emptiness caused by the repression of feelings of rage and shame; and they give . . . a feeling of aggressive mastery, control, invincibility and grandeur. Psychedelic drugs have in common with the amphetamines their effect as antidotes to boredom, emptiness and meaninglessness. Also they reestablish an omnipotent, grandiose position but one centered less on aggressive mastery than on passive receptive merger through the senses, [pp. 17-18]

Fischmann found that among amphetamine addicts the preference for stimulants was determined "by the combined influence of cost, legal status of

the drug, and their specific type of action . . . [and suggests] that the energizing effect was by far the most important motive for choice." McCubbin disagrees with such generalizations. To him they suggest that internal psychodynamic needs can override pharmacogenic effects. He observes that most users show dramatic changes in drug preferences, not accompanied by dramatic changes in psychodynamics.

A high dose of a drug generally produces the more typical drug effects, while a low dose increases the influence of situational and personality factors. Particularly among latency children and adolescents, "paradoxical" drug effects are often noted with low doses of amphetamines and barbiturates. McCubbin has evidence that they also occur with the psychedelic drugs.

Although the meaning of the drug effects to the patient cannot be ignored and could lead to a deepened understanding of the dynamics of choice (and perhaps even quite useful treatment interventions) such differences are often obscured in the present, rapidly fluctuating, drug-abuse scene where social considerations, drug popularity and fad, and drug use to treat the side-effects and withdrawal syndromes of other drugs are often more important determinants of a person's drug choice at any one time.

Family Characteristics

Characteristics of the drug user's family have been studied to find

predictive factors that would place a child in a high-risk category. Trend studies of data obtained from users in the form of surveys or structured interviews, as well as a few case studies, have been the primary mode of research in this area. In such studies, one must ask to what extent the user's perception of his parent's drug use influences the data gathered and, therefore, how valid and reliable that data is. Adolescents who use illicit drugs *are* more likely to *report* that their parents use tranquilizers, amphetamines, or barbiturates. But the validity of such reports is at issue. It is a common supposition that the young who are reared in this culture and who see their parents using psychotropic drugs come to share the same behavior and start using mood-changing drugs themselves, albeit illicitly.- Kandel studied the relative importance of the parents, compared to peer-group and sibling influence, in introducing the subject to drugs and in perpetuating this behavior. She finds that among adolescent marijuana users, parental influence is relatively small compared to the influence of peers. (see page 572, The Role of the Peer Group).

Family pathology is found among users, especially delinquent ones. Hawks investigated abusers of methylamphetamine. He found drinking problems, criminal behavior, and having consulted a psychiatrist were more prevalent among the subjects' fathers than mothers. A smaller percentage of the abusers' siblings had similar difficulties. Robins and Murphy's investigation of drug use in a normal population of young Negro men found

that among delinquents and dropouts the father had been absent at some time during elementary school—a factor that was rather acutely related to the risk of heroin addiction once any drug had been tried. Data obtained from users often show a high incidence of parental loss or separation, particularly at an early age or during adolescence, that can often be associated in time with the onset of addiction.

More extensive descriptions of such family pathology are available. Hartmann finds that in the twelve cases of drug-taking adolescents studied, there seemed to be more pathology among the mothers than the fathers. "Infantile libido and superego development prevailed among the mothers; with regard to aggression, the fathers seemed to show more controlled, the mothers more uncontrolled, aggression; seductive behavior was much more prevalent among the mothers; inconsistency and distance, more among the fathers." Cohen and associates studied a group of adolescents referred for treatment of drug problems. They randomly selected a control group referred for other reasons. They found that although both groups had "disidentified" with their fathers and had lacked strong paternal ties, the group referred for drug problems "also disidentified with their mothers, whom they described as strong, narcissistic, and managerial." However, the authors felt that the homes would not be described as pathological, "since both parents were self-reliant, behaving adequately by societal standards, and living their lives in the pursuit of socially approved goals. Underlying this image, however, is often a

family characterized by emotional, environmental deprivation and communication deficiencies." Blum and associates recent studies concentrate specifically on the family as a predictor of drug abuse among students. Contained therein is a review of the issues involved in such family studies and the pertinent literature. They randomly selected 101 white, middle-class families from the files of a university and interviewed the family and the student. On the basis of their offspring's drug history, families were classified as low- , moderate- , and high-drug-risk families. High-risk families used more prescribed medications and more alcohol and cigarettes than low-risk families. They were generally more permissive, less religiously involved, less cohesive. They put less emphasis on child rearing, belief in God, and self-control than low-risk families. Traditional families of authoritarian fathers, emphasizing obedience and self-control, characterized low-risk families. The authors felt that such family factors "had a major predictive power for drug risk." The drug-using children of high-risk families had "more infant-health and feeding problems, more childhood-health problems, longer hospitalizations, and more psychosomatic disorders (bedwetting and headaches) . . . [they] receive more over-the-counter remedies of every sort and are given tranquilizers and, occasionally, alcohol, as infants and young children." They seem to "suffer from psychological problems during their youth and often cause their mothers to worry about their conduct. Mother-child relationships appear to be stressful for both," and occasionally mothers

of high-risk youth applied food deprivation as punishment.

The implication from Blum's study that family factors can prove predictive of drug risk among offspring needs adequate testing. It raises the question of how universal such "family factors" might be for other samples. The authors were able to construct a list of 176 items of family characteristics and narrow it down to thirteen items that they felt would be 75 percent accurate in predicting risk of drug use. These items were, however, bound to socioeconomic class; they were not reliable when applied to blue-collar or Mexican-American families.

Blum attempted to show that the statistical surface measures, predictive of drug risk, reflected the family interior; he studied the family dynamics of thirteen families. In low-risk families, love, forgiveness for failure, physical expressions of affections, were emphasized, and criticisms of an offspring's mistakes centered on the mistake rather than on the child himself. Opposite findings were noted for high-risk families. Vaillant, in a twelve-year follow-up of narcotics addicts, found that family pathology seemed unrelated to the outcome of eventual abstinence.

The idea that drug-using youth come from families where parents use psychotropic drugs is a notion that has been both supported and refuted by various studies. It is certainly not a sufficient condition, nor is it, perhaps,

even a necessary one for drug-using behavior to evolve. Family pathology and broken homes are prevalent findings in any study of deviant behavior, including mental illness, and there is little evidence that families of drug users are uniquely different from those of other psychiatric patients. Finally, the family constellation to be predictive must be predictive of some later condition that, in turn, will be related to current (and other) factors leading to some aspect of drug-taking behavior: the problem is to specify these sequences more sharply than with generalities about early experience and drug abuse.

Operant Conditioning Models of Drug Dependence

Experimental work on animals administered psychoactive drugs on various schedules of reinforcement—work pioneered by Wikler— has made an important contribution to the understanding of drug dependence, the development of tolerance, the effects of withdrawal, factors influencing relapse, and the assessment of abuse potential.® As Schuster and Thompson have noted, such methods have "the obvious advantage of greater experimental control . . . and the investigator using infrahuman organisms is less likely to invoke untestable mentalistic constructs as the factors generating the self-administration of drugs." These studies, based on behavioral conditioning models, "seek to determine the biological and environmental variables which modify a drug's reinforcing efficacy, that is,

the extent to which a drug is self-administered."

Primary reinforcement effects of various classes of psychoactive drugs have been intensively studied and compared, and Schuster and Thompson review this literature. Deneau and coworkers compared the various classes of drugs usually abused by humans and found that those which appear to have the least abuse potential in humans, including chlorpromazine and mescaline, will not be self-administered by monkeys. Cocaine and amphetamine will be self-administered by animals at very regular cyclical intervals, reminiscent of the high-dose cyclical pattern of intravenous amphetamine abuse in humans.

Individual differences in the extent to which animals and humans become dependent on drugs, and display psycho-toxicity or withdrawal, implicate various genetic (metabolic) sex and age variables with an unknown basis. These variables have been researched in animals. Once physical dependence on opiates develops in animals, the reinforcement efficacy of the drug is amplified by the effect of withdrawal. However, the drive-reduction model of reinforcement, i.e., that abusers continue administering heroin in order to avoid the effects of withdrawal, is called into question, since physical dependence is not a necessary condition for opiates to act as reinforcers, and the drug can reinforce behavior independently of its ability to relieve abstinence.[1]

Various kinds of behavior and experience— particularly those in close temporal association with the drug taking—such as the rituals of "shooting up," procuring the drug, the neighborhood or room where the user takes the drug, or his associates, are associated with the primary reinforcement of the drug and become secondary reinforcers; when these are encountered again, even long after withdrawal, they may contribute to relapse. This is the basis for Wikler's "hustling theory." Such observations have produced greater understanding about the determinants of the recurrent nature of drug-taking behavior and its intransigence. The acquired reinforcing effects of the ritual, setting, or acquaintances diminishes as extinction proceeds, but mere detoxification does not result in extinction of these conditioned responses. In treatment, active extinction, i.e., repeated elicitation of the conditioned response by the appropriate stimuli, is needed under conditions that preclude its reinforcing effects. This is less difficult for opiates since the advent of methadone blockade and the development of narcotic antagonists, but it poses some research problems for nonnarcotic drugs. How, for instance, could the reinforcement effect of a user's associates, home, or injection ritual, be actively extinguished? How effective would such procedures be in maintaining abstinence? No such studies of either opiate or nonnarcotic users have appeared.

Researchers have studied opiate abstinence and defined a primary as well as a secondary phase. In humans the primary phase of opiate abstinence

lasts for several months, followed by a secondary phase that lasts for at least an additional four months. Whether the secondary abstinence stage is a major variable contributing to relapse, and what neurochemical mechanisms may be operating, must be determined, as well as similarly characterizing such phenomena from other drugs. With such reinforcement principles operating, "the sharp distinction between 'psychic dependence' and physical dependence becomes untenable."

C. Schuster explains that it is normal for animals to begin self-administration of reinforcing drugs; this drug abuse is not "abnormal" behavior, but rather "biologically normal." What *is* abnormal in drug abuse is the relative lack of competing behaviors. "Perhaps a mistake is made in studying human drug addiction in that the question to be asked may not be why one individual succumbs to drug abuse, but rather why most are capable of abstinence."

Numerous studies assess the self-administration potential of the drugs of abuse. The question of how accurately an animal model will predict abuse potential in human beings, for whom a variety of personality and social variables may be relatively more important, is at issue.

Deneau and associates developed a method for assessing abuse liability of psychoactive drugs in animals, but explain, "While a drug must be self-

administered before it is abused, a total assessment of its potential danger cannot be made from the fact that psychological dependence, as manifested by some degree of self-administration, occurs [in monkeys]. The major limitation [of this method] is that

drugs which are not water soluble cannot be tested." The advantage of such a method is, of course, that abuse potential of new drugs could be estimated in advance of their widespread use. On the other hand, LSD, which will not be self-administered by animals, saw widespread—if only transient—abuse, which attests to the importance of social-psychological variables. Irwin has proposed that abuse liability or hazard indices take into account possibilities for mortality from chronic use, overdose and withdrawal, irreversible tissue damage, social and personal consequences, the production of violence or passivity, loss of control, psychomotor impairment, psychotic-like reactions, ease of overdose at use levels, and special hazards when taken intravenously or in combination with other drugs. He has proposed a classification of drugs along these lines.

Policy research requires coming to grips with those issues. Often we have a vague or theoretical notion about the abuse potential of a drug from previous experience in clinical and experimental settings. While this should alert monitors, it is not useful to be drastic about regulating the availability of the drug until there is evidence of actual abuse. At that point what responses

come about and which are legally sound, as well as the speed and effectiveness of these responses in deterrence, are all questions largely unresearched. The uses of drugs are culturally linked—and there is always the problem of predicting what will happen to cultural fads. It is important, of course, to monitor the climate of thinking about drug taking, as well as the actual prevalence of various patterns of use. Risks must be weighed against gains of availability of medically useful drugs. Toxic and lethal effects must be considered. Whether toxic effects can be readily diagnosed, treated and whether the drug signals toxicity to users or observers should be one consideration of relative availability of drugs of a similar class. It is important to consider how a drug lends itself to misuse—the dose and forms most likely to be misused, the assessment of physical dependence, withdrawal, and tolerance, as well as euphorigenic, sedative, or stimulant effects —all factors that help predict drug-abuse potential.

Concluding Remarks on Research into Causes

The research into possible causes of drug use and abuse implicate not one determinant but many. Intrapsychic (personality) factors, family values, beliefs and dynamics, peer-group pressure and their norms, sibling's drug use and influence combine with cultural values and social change and economic aspects of availability and demand to influence the epidemic communicability of drug-taking behavior. The reinforcement effects of the drug, each

experience and its setting add additional variables. All these factors can confound the researcher attempting to describe a single model in which to understand this multiple-determined behavior. Such factors are involved in any analysis of the critical factors in any deviant population, including mental illness.

Confusion still exists between what are causes and what are results of drug use, and which findings arise independently. Most studies of causes have been subsequent to the adoption of a particular drug, pattern, or peer-group identity. Assuming a factor predates drug abuse, can we be more precise as to what specifically has changed? If drugs are used to cope with stress, what coping mechanisms have been employed before that the drugs have now replaced?

How some persons succumb to drugs and why others utilize different means of dealing with their difficulties remains incompletely understood. There have been no set of reliable variables found that will predict drug-using behavior or outcome. Variables that place individuals in high-risk categories have been postulated, though not adequately validated. These variables often depend on the individual's socioeconomic background. The role of the initiator and reinforcing agents needs investigating to further understand the epidemic propensity of this behavior. How some persons refuse when invited to participate, and how others can maintain a pattern of occasional

recreational use, as well as what factors cause drug abuse in some to be self-limiting, invites research. The exchange of one drug for another also requires scrutiny. While the topic is no longer mysterious, and its dimensions are increasingly grasped, much remains to be learned about the causes of drug abuse.

The pattern of an individual's drug use involves a beginning, peaks, remissions, relapses, and, at times, termination. Remission may be drug specific or pattern specific. It may reflect an experience with adverse reactions, treatment efficacy, epidemic outcomes, changes in social groups, fads, and group norms, or fluctuations in psychological variables and precipitating causes. Hawks suggests that any "universality" that exists to explain the selectiveness of drug dependence resides in a relationship *between* variables studied, rather than in one variable itself. Due to experimental design, usually only two variables can be correlated and multivariant methods need to be utilized. It is problematic whether we can identify high-risk groups with precision; long-term prospective studies should be designed to define them better and to ascertain more subtle factors in resistance as well as susceptibility to drug use at all stages.

The last decade has witnessed an explosion of interest in drugs that has widened into a discussion of other altered states of consciousness,- accompanied by a public notion that one drug will reliably produce a specific

effect, feeling, experience, altered state, or behavior change. Instead, a wide variability of effects is evident, dependent upon dose, reinforcement effects, social and personal expectations and personal psychology, as well as metabolic, neurochemical, and tissue determinants as yet undefined.

Treatment and Prevention

Since treatment and prevention of nonnarcotic drug abuse is not an advanced art, but rather a tentative, fragmentary, and uncertain array of ventures, research is relatively undeveloped also. Probably—when the novelty dissipates—the same *principles* of diagnosis of situation, person, and his dysfunction, the same *resources* that prevail in psychiatric treatment generally, and the same *principles* of group, individual, occupational, and pharmacotherapeutic treatment, will be applicable. The phenomenon is recent and the natural history of multiple drug abusers, including mortality and morbidity statistics and the incidence of substitute addictions, is not yet well recorded. Follow-up studies such as Vaillant's represent a useful model. Enough young adults and adolescents have been heavily involved to warrant such study. In general, trend studies indicate experimenters and most users—though not most heavy users—shift their habits over time. The long-term follow-up of narcotic addicts receiving one or another kind of treatment is only beginning to be researched.-- For multiple drug abuse, various modes of treatment and prevention have been advocated, usually without planning to

evaluate the efficacy and influence of such interventions on the individual and society at large.

Centers for drug analysis that disseminate their findings to the individual users are a sort of FDA for young consumers; the message they convey and the way they are conducted —a service to check out the pusher, to educate toward caution, to give a general rather than specific report of average sales—is rarely thought through. That drugs are—more often than not—falsely marketed is evident. Whether a service to the consumer for qualitative and/or quantitative analysis of samples would be effectively used, before or after consumption, by whom (dealer or user), and most importantly, whether the applicant would alter his plans based on such information, perhaps reducing the incidence of adverse reactions, would need study. Drug-information education programs, the provision of alternatives to drug use, including meaningful employment and meditation,-- and efforts aimed at decreasing the availability of drugs- have all been proposed to aid in prevention. Self-help treatment programs, alternative activity programs, voluntary and compulsory hospitalization with or without supervised paroles, epidemiological field intervention, psychotherapy and drug maintenance have been proposed as treatment methods. The question of who will benefit from each type of treatment or preventive measure needs study; indeed, whether treatment—in the sense of skilled psychiatric intervention—is needed, and for whom, has been a crucial definitional question. Treatment

for *what* remains the question, and drug use as often is a secondary issue in disturbed adolescents as it is a sustained problem; it may be that ticket of admission—and may require primary and initial attention—but life and adjustment problems, neuroses and character disorders become —sooner or later—a focus.

Goals

The implicit or explicit goals of therapeutic intervention must be known before efficacy is assessed. It is most evident that *process* research may be—at this juncture—more productive than *outcome* research. Practically all contemporary programs accept the elimination of psychological and physiological dependence as their ultimate, if not immediate goal. Some programs utilizing methadone maintenance seem to hold that—until the life situation and psychosocial problems are effectively managed—relief from drug dependence will fail; others are simply pill dispensing, and others utilize methadone as outreach and anticipate subsequent self-regulated withdrawal with or without the support of *residential* treatment; and still others seek to establish— through practices and personnel—sufficient trust and response to human needs to provide a range of services, of reentering stations for dropouts and job training, that comprise authentic rehabilitation. These programs may also have prevention aims emphasizing early detection, and community participation and interaction on the one hand, and special units

for complicated problems—the addicted psychotic—on the other. The Public Health Service has advocated improved health prevention of disease among users, increased participation in conventional activities, decreased participation in criminal activities, and maximal social functioning and cessation of drug use other than in the treatment of illness as specific goals. Meyer discusses the three classic levels of prevention in a comprehensive public health approach: primary prevention of inappropriate drug use and drug abuse in vulnerable populations; secondary prevention that seeks to stop drug abuse in vulnerable populations; secondary prevention that seeks to stop drug abuse in an individual before he has become addicted, or before becoming solidly identified with a drug-abusing subculture; and tertiary prevention aimed at those individuals who are heavily involved with the abuse of drugs or in subcultures that support it. One can concentrate on treating the family or personality of the user, the symptom of addiction itself, or the social and medical consequences. For what group complete abstinence or more moderate use of drugs is the more practical goal needs research.

Treatment and Prevention Aimed at Nonnarcotic Users

Aside from arguments about efficacy and goals, a widespread treatment response— aimed primarily at opiate abuse—has been mobilized in recent years toward those persons who are most severely drug dependent, and whose habitual drug use has precipitated the most serious adverse

consequences. Although the present heroin epidemic seems to be waning, still a certain percentage of persons who try an illicit drug for the first time will eventually become drug dependent. One problem is how to minimize that number. The concern at this writing is the endemic problem of multiple drug use—generally in the underemployed, the sixteen-to-eighteen age group—that, with the unknown "right" circumstances, could become a heroin using population as well.

Free Clinics and Crisis Centers

An outreach response was mobilized at a time when a "process factor"—trust in and access to institutions with skilled facilities, which were either not responsive or unprepared for the needs and attitudes of the clientele— surfaced. The young took care of each other with the help of a few professionals who were tested for trustworthiness. "Hot-line" telephone services and free medical clinics have emerged as a way of providing immediate, often anonymous, contact for a drug user in trouble or requesting information. Often privately endowed, organized under various guises by persons of varying skills, the effectiveness of these facilities is for the most part unresearched. Smith and Luce document the establishment of the Haight-Ashbury Free Medical Clinic during the San Francisco drug epidemic of 1967 to 1969, and detail the history of the epidemic and the numerous problems involved in funding, accountability, conflicts with medical, social,

and legal authorities, as well as with the population served. During the 1960s, conflicts between legal authorities and groups providing treatment, and conflicts in the minds of the doctors over the use of these illicit drugs and of accountability— whether to the patient, the community, or legal authorities— and how the youth interpreted these, tended to alienate patients in need of help. These conflicts also made it hard to gather data on the prevalence of use and adverse reactions. They generated a social structure within the drug-using community that advocated treatment of adverse reactions outside of medical settings, with the help of other users within the community. The myth was perpetuated that medical personnel were unwilling, incapable, or hostile to treating or advising on a drug problem. In short, community, legal, and medical policies toward the treatment of the drug user and his attitudes toward them served to further relegate drug use and treatment to an extra-medical segment of the community.

Levy and Brown report experience with a twenty-four-hour phone service called "Acid Rescue." Situated in the St. Louis metropolitan area, it received 1543 calls during 1970. This research assessed the types of calls received, the types of information given, times of maximal use, and the types of persons volunteering to work in such a program. In all, the authors felt that management of the crises, through supportive psychotherapy over the telephone in less than thirty minutes, was not difficult if the goal of the counseling was not to end the drug experience but to protect the individual

from dangerous action and encourage a subjectively pleasant experience. Artificial separation of drug problems from other adolescent problems was impossible. Interestingly, the most common calls were for *drug information* from individuals contemplating using a drug or having recently used it, and only the second most common calls were about a *drug crisis*—usually from a youthful user. The action taken, information given, and counselor's accuracy and appropriateness of response, depended upon length of the counselor's experience. Only the correctness of the information given correlated significantly with the outcome. If the information given was appropriate, 65 percent of the callers altered their plans; if the information given was too detailed or unnecessarily frightening, no caller altered his plans. As the year wore on, as the counselors became more experienced, and as the correctness of the information given improved, the callers deciding not to take the drug increased from 9 to 21 percent. Two percent of the calls were unrelated to drugs and were mostly suicidal threats. The supervision of the employees of such a facility is discussed by Torop and Torop.

The prolific increase in such facilities, and their utilization, may speak to a need for centers to disseminate accurate information, obtainable immediately, but only upon request, and for patient referral and treatment during an acute drug crisis. The possibility that it is symptomatic of the loss and devaluation of institutional and parental functions is as likely. While ritualizing the use of dangerous drugs to diminish their fear and alienation,

users also emphasize drug experimentation and use as the warrant for attention and response. As transitional institutions, these facilities offer the cultural anthropologist and social psychologist interested in age-specific social roles an interesting topic for study.

Information-Education

The drug-abuse, information-education explosion has been a visible societal response to concerns generated by the 1960s. Drug-abuse education classes in schools, churches, and community organizations, and the TV, film, radio, and news media recognize the topic. Federal agencies generate their own pamphlets and public-service broadcasts, diverting 67.6 million dollars in 1972 toward efforts called preventive and educational. “At the present time, no one can even accurately assess the scope of information-education efforts, much less measure its impact on behavior. There is no federal information exchange to which independent programs report; no description of all programs currently in operation; no assurance that the information disseminated is correct; no check to see that it is reaching its intended audience.” Youth generally obtain their drug information from peers, seeing drug messages on television, printed drug information, radio messages, the school lecture, and only rarely from parents. Many materials about drug abuse are scientifically inaccurate; program sponsors add their own values to the facts; much of the information approaches drug use from the point of view

that “any use is equally dangerous,” which, from the recipient’s point of view, tends to undermine the credibility of the information. Government has also utilized this information to rally support for its programs, and this confusion of objectives further undermines acceptance. Experience with tobacco, alcohol, and venereal disease, demonstrates that knowledge about risks “in and of itself does not necessarily change behavior.” Certainly the various programs, even when objectively assessing risk versus gain, could arouse curiosity in an individual. Blachly has discussed types of educational approaches which may minimize the possibilities for seduction. The pressure on schools has often led to unprepared and unwise “shows of effort” by constructing artificial emergency “programs” to placate the press, legislators, or disturbed parents, rather than assessing parental attitudes and intra-school sentiment and practices as a start. The second marijuana commission recommends that “drug use prevention strategy, rather than concentrating resources and efforts in persuading or educating people not to use drugs, emphasize the alternative means of obtaining what users seek from drugs: means that are better for users and better for society. The aim of prevention policy should be to foster and instill the necessary skills for coping with the problems of living, particularly the life concerns of adolescents.” (A Chicago media program attempted to deglamorize drugs and was aimed at stimulating thought about nondrug issues relevant to the youths’ dilemmas: how do you say no to a friend and still be a friend?) Information about drugs and the

disadvantages of their use should be incorporated into more general programs, stressing benefits "with which drug consumption is largely inconsistent." The commission recommends that, from the standpoint of government, a single agency coordinate dissemination and screening of materials and recommend a moratorium on the production and dissemination of new drug-information materials and educational programs.

In spite of the many efforts directed at education, the incidence of drug use for self-defined purposes has risen. It may be that the avalanche of drug information has been counterproductive "and that it may have stimulated rebellion, or simply raised interest in the forbidden." For example, one as yet unreported study found that after "education" the youth were more comfortable using drugs. One aspect of such education that bears upon psychiatric interest in development and sociological and anthropological interest in societal change is the severe lack of interest in stimulating moral query: enlightened programs preach that the young should make up their own minds, but they rarely stimulate them to think beyond themselves or the moment. Making up their own minds is a challenge, not necessarily accepted out of enmity. Without more balanced, less "permissive" messages, the adolescent lacks even a feeble excuse for revolt against demand and is left without challenge to accountability by a seductively "free" counselor. Such subtle issues are factors little investigated. Without such research, programs are designed from relative ignorance about the specific needs (unrevealed by

questionnaire) and about the developmental tasks of the audience.

Research into the media and its impact on the various population subsectors is only beginning. The question of how the messages are presented and received, of how to advertise what you want the receiver *not* to do, and whether the target should be the behavior or the attitude, are all part of the larger issue of how people are influenced.

Psychotherapeutic Approaches

Psychotherapeutic encounters are most useful for persons least involved in a drug-using subculture, who evidence minimal intensity and duration of use, who are in various types of adolescent crises, and in whom a precipitant can be clearly identified. The efficacy, techniques, and especially the aims of such approaches, are largely unresearched. If precipitants (see page 590) can be identified, theoretically a focus upon the person's response to the precipitant, as well as explaining the link to him between the precipitant and his drug use, might be of benefit. Similarly, if a person's illicit drug use is an attempt at self-medication for an underlying medical or psychiatric disorder (see page 577), the accurate diagnosis and treatment of the disorder should be a therapist's first order of business. Interpreting a person's drug use to him as beneficial in ameliorating fluctuations in self-esteem, stress, conflict, guilt, and shame, and providing a sense of personal

and group identity, probably help him to understand, tolerate, and eventually relinquish his drug use. Although the influence of families on drug use is still debated (see page 582), family counseling could relieve conflicts and stresses, as well as educate parents on how to modulate their often misconstrued fears.

The peer group (see page 572) is an important variable influencing drug use for social as well as developmental psychology of modern youth, and this fact requires scrutiny. The second marijuana commission report suggests that "peer influence toward drug use may be greater for junior and senior high school students than for college students." The novelty of drug use, the relative immaturity of the younger students, the desire to experience something new, a need to test the effects of a drug that the students have learned to expect or anticipate, as well as a drive to win peer approval and recognition, tends to generate among secondary-school students a focus upon the *act* of taking the drug and its attendant rituals and social activity. On the other hand, the greater maturity of the college students, their increased exposure to drug use among their peers, and their greater opportunity to observe the effects on friends in college, may serve to alter their own behavior and to "encourage greater discrimination as they seem to focus on the pleasure of the experience and its *outcome,* rather than the act itself." It is unknown to what extent observations such as these—if valid—can be efficiently and effectively incorporated in a treatment approach. Participation in a group whose drug using is less serious, encouragement to form a

relationship with a specific, highly valued partner, and changing residence to a community where drugs are not as available are important factors that help sustain abstinence. If drug abuse is viewed as a symptom of widespread social factors (see page 570), then attempts to understand, modify and alleviate social problems could be a long-range goal. This is another way of indicating that community competence, responsive institutions, and rites of passage for the young can shift a variety of meanings and practices.

Wikler explains that verbal psychotherapy "might be utilized effectively to hasten extinction if it is directed toward 'cognitive' re-labeling of the conditioned responses." He has outlined the use of "active extinction" models to prevent relapse with the help of methadone blockade and narcotic antagonists, and whether such models could be utilized in nonnarcotic abusers invites research. The idea that drug abusers are unable to delay gratification led Wikler to conclude that "theoretically an 'ideal' vocation for such a person would be one that 'paid off' immediately on successful completion of a task," and perhaps that is one reason why illegal occupations are so often found among these people.

Some socially useful kinds of behavior that are acquired during chronic drug intoxication may have to be relearned in the drug-free state, since they may be extinguished along with other conditioned behavior surrounding the drug abuse if active extinction is implemented. Amphetamine users often

report that they have developed useful and valued behavior while taking the drug. Such ideas are reminiscent of similar observations among alcoholics. They deserve research. Much remains to be learned about "state-dependent" or "dissociative" learning and its application to the field of drug abuse.

Theoretically, better ego strength, good object relationships, better tolerance for frustration and the ability to delay gratification, higher intelligence, and acute onset of drug use related to a precipitant are all factors that would predict a better result from intensive psychotherapy. Savitt, Torda, and Hartmann report cases of successful psychoanalytically oriented psychotherapy with adolescents who abuse drugs. Hartmann found that drug use was resorted to surrounding the therapist's absence, misunderstanding or lapse in empathy, which is consistent with Kohut's formulations. Savitt explicitly states that the nonpunitive management of the patient's acting out around drugs and sex is an important technique. Such advice may only apply to those with better ego strength, and other authors have indicated that setting limits is quite important when managing drug-using individuals.

Premature dropping out of psychotherapy and failure to attend clinics regularly are major problems in attempting to provide treatment on an outpatient basis. Several explanations were proposed by Anderson and associates. Patients may be "poorly motivated" or are coerced into seeking treatment; patient's and therapist's expectations often are divergent since the

patient wants to change immediately, cannot delay gratification, and does not return to the clinic after his expectations are not met. They feel that these two explanations only perpetuate the problem in that they blame the poor results on characteristics of the patients. Whether innovative techniques (as, for example, occurred with methadone maintenance) could be developed to immediately gratify such patients and surmount this ever-present difficulty is a question. The contention that the appropriate treatment was being used, but needed to be administered in higher doses by therapists of greater skill is another. The authors conclude that with the population these therapists could not compete with the immediate reinforcement inherent in drugs, since traditional psychotherapy offers no immediate solutions.

Cohen and associates have written a most helpful article on the psychotherapeutic treatment of drug-abusing patients. They explain that drug abusers tend to alienate sources of help by assuming a help-rejecting stance and "by provoking feelings of competitiveness and resentment in the would-be helper. [They express] a wish to be passive and suspicious," engage in passive aggression and dependency, perhaps to ward off depression, and "can be described as angry, suspicious and self-doubting." They tend to be self-deceptive about their "assertive, . . . arrogant [and oppositional behavior, which are] almost the exact opposite of the passivity and dependence which they engage in. . . . Intervention which is explicitly defined as 'help' threatens [this] self-reliant facade and raises the specter of being manipulated and

exploited." Drug abusers "usually ask for help in an indirect way by requesting treatment for a 'bad trip' or in some other impersonal form which refers to the 'condition' rather than to themselves." The authors recommend that the therapist "be aware of the drug abuser's underlying despair about making an impact in a world perceived as critical, success-oriented, and unresponsive to needs which cannot be logically justified or even articulated directly . . . [and suggest] creating situations where he is in a position to offer something valued by the therapist, [and that the latter] present himself as a model who can risk exposing his tender feelings and the potential of experiencing rejection. [He must] empathize with the drug abuser's feeling of isolation and impotence [and focus away from details of drug abuse since] emphasizing [this] aspect of his behavior rigidifies his negative identity and restricts his possibilities for the future. Many resistances to involvement combined with acting out, [are] designed ... to test the [therapist's] genuineness and stability of concern." [pp. 353, 355, 357]

Vaillant-- recommends that the abuser be helped to find the best possible dependency objects, sustained employment with external support, and to discover a more mature way to deal with his instinctual needs. He contends that drug abusers can modify their defensive style to cope with traumatic events, which, in his patients, were handled by isolation, hypomanic suppression and denial, and a "deliberate search for the silver lining."

Psychotherapeutic approaches are useful for some drug-using persons and not for others. Difficulty enforcing drug abstinence and the failure to continue contact with a therapist are the most important reasons for disappointing results, and underlying factors are variously understood and communicated by both patient, therapist, and researcher. Continuing redefinition, description, and classification of patients and treatments is part of the meaningful categorization aimed toward prediction of who will benefit from psychotherapeutic approaches and exploration of the more subtle variables that lead to improvement or to relapse. Outpatient facilities are not to be disparaged, for often adequate attention to the adverse effects of chronic drug use encourages rapport with a potentially beneficial treatment facility and is a step toward involvement in a more efficacious treatment modality.

Finally, inpatient psychiatric facilities are accumulating a vast experience with drug-using adolescents with relatively severe pathology—experience that should generate principles and variables for study. Whether the drugs add anything new to the research of delayed development, borderline states, severe character disorders, and schizophrenia prevalent in the 1950s is as yet unclear.

Self-Help Groups

Since the advent of Alcoholics Anonymous and, later, Synanon, the original model for self-help groups for drug abusers, a number of similar programs have emerged, such as Day Top, Marathon House, Phoenix House, and Crossroads. Khantzian has discussed these programs which share in common several facts: they are residential programs staffed by ex-addicts; patients are expected to remain free of drugs; there is a heavy emphasis on work centered around responsibility for relatively mundane tasks within the program; residents gain status as they progress to the more sought-after job responsibilities dependent upon their improvement and length of stay; and encounter or confrontational methods are utilized in formal and informal situations around "the issues of addiction, problems in group living and analysis of each other's problems." These confrontations often assume extremely aggressive proportions that may lead to "splitting" from the group (in some instances to psychiatric casualties) and the intense, affective experience may substitute for the drug "high." There is, among these programs, a high dropout rate and much recidivism. The common attitude that the person who leaves as a result of such encounters is "copping out" or avoiding confronting himself or others, generally underestimates "many addicts' limited capacity to deal with intense affect, particularly aggressive feelings and . . . seems to be incongruent, anti-therapeutic and destructive for many of the addicted patients. It leads to further . . . sense of failure in people who, too often in their life time, have suffered rejection and failure. For many

borderline patients . . . failing to appreciate the dangers of prematurely forcing people to give up their defenses ... is dangerous and most likely contraindicated."

Residential treatment programs are helpful in removing the addict from his environment, and the emphasis on high expectation in the execution of their jobs serves to reinforce self-regulation and control. Khantzian explains:

> . . . the forced work and humiliating tasks and activities to which the addict is subjected is effective because these exercises are in part successful manipulations of the addict's sado-masochistic tendencies. What is probably underestimated by the proponents of such an approach is how they may merely play into the addict's sado-masochism, and therefore offer little towards producing permanent change; to the extent that this is not appreciated, there exists the constant danger that the treatment becomes just a symptom of the illness.

De Leon and associates have attempted follow-up studies comparing the persons who remain in the program with the persons who have left the program on measures of pathology and criminal activity. No follow-up studies have appeared about the residential treatment of nonnarcotic and youthful drug abusers.

The advisability of using ex-addicts as role models and therapists is largely debated informally. Ex-addicts may indeed represent useful models for those who seek to become abstinent, and yet, because of their own psychopathology, sadistic impulses, and medical naiveté, ex-addicts may

facilitate psychiatric casualties, be unempathic to a fault, and may not astutely observe when certain persons in the program are regressing toward decompensation.

Certainly the self-selection involved in clearly singling out those persons most "motivated" for treatment results in the high rates of improvement seen among those who complete the programs. The question of where the "failures" go for help is unresearched.

Fischmann reviews the California Rehabilitation Center Program involving mostly minority males between seventeen and thirty-five years from a lower socioeconomic background, broken or incomplete homes, with a history of intravenous drug use and a history of juvenile or adult arrests, and describes their methods of therapeutic leverage. He remarks that "perhaps the most important single factor in the establishment of a therapeutic climate is the personality of the leader and that success in bridging the gap between patients and staff is paramount in establishing a therapeutic group culture." Wilmer described his experience with an adolescent inpatient unit staffed by residents and utilizing videotape methods, group psychotherapy, and individual treatment. He has also discussed problems surrounding use of drugs smuggled into the ward. Hughes and associates described the development of inpatient services in a general hospital for the treatment of narcotics addiction, and the tendency of hospitalized narcotics addicts to

form an antitherapeutic patient subculture, which was reduced by giving ex-addicts equal responsibility with nurses for the operation of the unit. They discussed the important architectural considerations to insure control over outpatient traffic to and from the unit. They were successful in organizing the therapeutic potential of an addict-prisoner community by reducing the social distance between staff and prisoners, by replacing staff-disciplinary response to deviant behavior with a peer-group-helping response, by converting cliques into self-help interaction groups, by developing a rehabilitation-oriented, inmate-status and leadership hierarchy with important decision-making and rehabilitation functions, by structuring communication to and from inmate groups through rehabilitation-oriented representatives and by frequent community meetings to deal with rumors and distortions. They also described a model for precipitating identity crises in resistant sociopathic prisoners.

Epidemiologic Models for Intervention During an Epidemic

Hughes and associates have shown how successfully an intervention method patterned after a contagious-disease model can rapidly and without coercion stem the tide of a heroin micro-epidemic in a community." Their research concentrates on heroin epidemics, but it might be applied to epidemics of nonnarcotic nature as well. They have already described a method for monitoring adolescent drug-abuse trends in a suburban high-

school district that would be valuable in assessing the emergence of an epidemic. Where in the epidemic to intervene and what methods of treatment should be offered and which would be effective are questions for research. Hughes and coworkers have found that newly involved cases of heroin addiction are much more “contagious” than chronic users. Whether the same applies to nonnarcotic users is at issue. Their work suggests that by organizing the therapeutic potential of a community, by organizing intervention around the drug-distribution system, and by enlisting adolescents in treatment as part of the rehabilitation staff, one form of drug abuse can be prevented in many who are at risk.

De Alarcon has researched the effectiveness of prompt governmental action restricting the availability of Methedrine on one urban area and three rural districts in Britain one-and-one-half years after abuse had begun there. He found a sharp drop in prevalence of injection three months after limitation of the supply; however, many tried injecting other forms of amphetamines and barbiturates and eventually switched to oral amphetamine and cannabis, LSD and barbiturates. Two years later the majority were still taking drugs, but only one-third were still injecting; only 10 percent on a regular basis.

The usefulness of epidemiologic models in detection and assessment of drug-using trends is well established. The particular type of intervention instituted has legal, ethical, and social implications, and the development and

testing of a model for nonnarcotic epidemics awaits research.

Prognostic Factors in Abusers

There have been no systematic studies to date assessing the determinants of abstinence among treated or untreated persons who abuse nonnarcotic drugs. Several authors have speculated about prognostic factors in these persons on the basis of their experience. Age of onset of drug use or abuse may perhaps prove to be a powerful predictive factor of future chronicity of addiction. The question is how accurate such speculation of predictive factors may prove to be.

Studies of prognostic variables on institutionalized narcotic addicts have appeared. Vaillant followed opiate addicts incarcerated at Lexington for twenty years and found that at the twenty-year follow-up "most of the variables that affected the addicts prognosis twelve years after their Lexington hospitalization [the number of years of addiction; the amount of drugs used before Lexington; whether the addicts rapidly relapsed after the first hospitalization; whether they sought admission voluntarily; education, race and delinquency] appeared to be no longer important after twenty years." He found three variables that continued "to differentiate the best and worst outcomes": employment of four years or more prior to drug use; being raised in the same culture in which their parents had been raised; and having

been married were associated with stable abstinence. The question of how closely his sample represents the nonnarcotic drug abuser is at issue. At the twelve-year follow-up, he found that his sample tolerated abstinence well. Incapacitating mental illness was not a major risk and when the symptom of drug addiction was given up, it was replaced by neither depressions nor psychosomatic illnesses, although many found substitute addiction with alcohol. Only 10 percent of his sample had, in twenty years, one or more brief psychiatric hospitalizations for reasons other than drug addiction. Only four men were diagnosed as psychotic.

Twenty-three percent of his sample were dead after twenty years, two from natural causes, four from murder or suicide, two from accidental death, two from secondary alcoholism, and ten from overdose or infection secondary to their heroin use. He discusses possible determinants of mortality differences. The five-year report from the Illinois Drug Abuse Program finds that the death rate is somewhat less for the nonnarcotic user than for the narcotics addicts.

Never having been physiologically addieted, compulsory post-institutional supervision, good premorbid adjustment (late onset of delinquency, high-school graduation, regular employment, and late onset of addiction) and ego strength (“the ability to live effectively, productively and happily over a period of time”) were all associated with the favorable

outcome of continued abstinence. Similar prognostic factors among alcoholics, rather than psychiatric disorders, often predict remission more effectively than the severity of the manifest clinical symptoms. Employment, new meaningful non-parental relationships, and joining evangelical or mystical religious sects represent more constructive alternatives to addiction. Absence of a stable work history seemed, in Vaillant's sample, to be the best predictor of the chronicity of addiction. "Broken homes, per se, were not correlated with chronicity of addiction, but almost twice as many chronic addicts had broken homes before six."

Vaillant summarized his feeling that addicts improved "when they master their instincts and not when they burn out.". He likens the abstinent addicts (as, indeed, many addicts do themselves) to the maturing adolescent in that both must achieve independence from their families:

> ... to which each finds himself bound and towards which he finds himself ambivalently angry and intolerant . . . each must find substitute objects to love and each must find appropriate channels for aggressive and sexual instincts that up to this point have either been focused toward family of origin, biologically latent, or, in the case of the addict, narcotized. If addiction is conceptualized as a form of immaturity, then it is not surprising to find that: (a) the disorder like adolescence gets better with time; (b) when symptoms are removed, they need not be replaced with others; and (c) ex-addicts can manifest new defenses.

Tamerin and Neumann studied several hundred cases of addicts from the upper-middle and upper-socioeconomic classes and found several factors

that seemed predictive of successful outcome of short duration and could be classed under the rubric of motivation and a history of successful social and personal coping success.

When considering the wide range of degree and type of drug involvement in the nonnarcotic drug user, we are discussing factors such as the extent of his present involvement with drugs, the abuse potential of the drugs he presently uses, the total length of time he has used drugs—including alcohol—his present pattern of use and route of administration, the extent of his involvement in a drug-using subculture, and a consideration of possible precipitants for the addiction. Such factors may be more important among adolescents and early drug users than among heroin addicts of the type studied by Vaillant and others.

Conclusion

There are numerous problems involved with the diagnosis, prevention, and treatment of disorders associated with drug use as the primary influence disrupting psychosocial functioning. This is a self-reinforcing, risk-taking behavior, with immediate feedback that is often satisfying. What alternative kinds of behavior can be substituted for those where immediate sensate reinforcement accrues along with increased self-esteem, that have group-reinforcement potential, especially among peers, and that can satisfy a desire

for novelty and recreation as well? The public may have become supersaturated with the notion of drug abuse, and further input may only serve to reinforce interest in a deviant activity that, in reality, only small numbers engage in with seriously incapacitating outcomes. The treatment response must be directed toward these few, but what sort of treatment is effective remains a research issue. The prevention response has been hurriedly implemented without planning to research the needs of the receiver or the effectiveness of the output. Knowledge is better than ignorance about drugs, but naive, sensationalized reporting has neither aided prevention nor supported dispassionate appraisal. New epidemics can be contained with a rapid and humane public-health approach. Intervention during the beginning years of illicit drug use requires cautious techniques at grade-school, high-school, and college-age levels. The question of how and who should intervene needs careful planning and study. Illicit drug use seems to beg for control, but whether schools should actively try to discover who is and who is not using drugs, and whether they should attempt to define who is at risk—assuming an accurate method could be developed-—has numerous ethical, social, and legal implications. How parents can be educated toward effective response remains an avenue for exploration. To assess the needs of and resources available for those who ask for treatment is one issue; to assess the risk to public health of various sectors of other illicit users and their eventual outcome is another.

Consequences and Outcomes

The discussion of treatment illustrates the definitional problems of just who represents a "case." A case is usually self-defined—a drug user in trouble requests help from a medical facility. Only rarely does research investigate such difficulties within the community, where a (so far) unknown number of users experience adverse consequences from their drug use, yet define their difficulties in terms obviating—in their minds anyway—medical intervention: they remain contained, tolerated or sheltered by their subculture. The user requesting help—diagnosis, treatment, or explanation—generally cannot be explicit as to precisely what has changed other than the simple notion that he took a drug and now is worried, confused, or helpless in the face of his difficulty. The researcher, too, has difficulty; usually, he must rely on the self-report and his clinical observation. Often patient and physician focus upon lurid drug details and accounts, which only further submerges the more important psychosocial variables. Adverse reactions, particularly, but attitude, value, and behavior changes as well, are linked to family and personal crises for which the drug serves, temporarily at least, as a focus of concern and a ticket of admission. The investigator's conscious and unconscious attitudes toward drugs and youth in general often underlie the characterization—-or mischaracterization—of "the problem." Objective measures have been utilized, particularly in research about organicity and attitude, value and behavior change. Psychopharmacologic laboratory

research has contributed more balanced accounts of the various consequences of drug intoxication. However, these drug-specific physical and behavioral changes (often with unknown bases) may only appear specific on the surface, since adolescent turmoil, latent schizophrenia, depression, and early sociopathy often underlie what presents itself as a drug complaint. Individual differences and response to drug effect are great, and the capacity to tolerate, assimilate, and integrate the drug experience varies widely.

Research into the consequences and outcomes attempts to define who is at risk, to identify a characteristic reaction, to understand a user's adaptation, and to assess the cost to the individual and society, as well as to delineate any neurochemical or tissue basis for a reaction and/or operative personal and social factors. Accordingly, this research comprises toxicological investigation, neurological assessment, morbidity and mortality studies, and descriptions of adverse behavioral reactions, as well as attitude, belief, and value changes. These depend upon adequate follow-up studies, which are rare. Whether drug use can selectively "catalyze" permanent or transient psychotic reactions and "amotivational states" in predisposed individuals, still presents a research challenge.

Toxicological Research

Clinical toxicological studies of drug users that attempt to relate the

toxic syndromes encountered to a particular drug are intrinsically difficult since the purity, dose level, and schedule cannot be reliably assessed among users. Whatever the public-health interest of clinical studies, systematic animal-toxicity studies are needed to help define the mechanisms of toxic effects.

Research in toxicology of psychotropic drugs describes various pathophysiological, and especially neuropathological (parenchymal) changes in animals and man. No such effects have been shown for LSD. The uterotonic effects of this ergot alkaloid conceivably could influence pregnancy, although clear and controlled data have not warranted any conclusion other than the general caution that unnecessary drugs in pregnancy should be avoided. Jacobson and Berlin's report implies only that the milieu of the counterculture and multiple drug use are a hazard to birth. Suspicions that the drug was a teratogen are not borne out to date. Chromosomal changes in human lymphocytes have been neither verified as due to LSD nor linked to evidence of specific damage of genetic mechanism. While research might continue on the teratogenic effects of LSD, it cannot carry top priority from a public-health viewpoint.

Syndromes of "necrotizing angiitis" and abnormal cerebral angiographic findings associated with neurological complaints have been reported among intravenous users of multiple drugs. The role of direct toxic effects of a

certain drug, adulterants, sepsis, or other, unknown, factors is unsolved. How long such changes, when present, persist, whether they are reversible, and the extent to which thinking or behavior is contingently disturbed is unknown. Speculation that these findings are related directly to methylamphetamine abuse is not supported by studies of the chronic intravenous administration of methylamphetamine under aseptic conditions for as long as a year to monkeys who show no evidence of parenchymal damage at autopsy, although various behavioral effects, such as stereotyped behavior, are seen.

Tennant and coworkers have reported, not surprisingly, various degrees of respiratory irritation associated with heavy use of hashish by soldiers in West Germany. A more precise definition of such health risks with weak and potent preparations of marijuana awaits further study. Recent research with marijuana primarily concentrates on long-lasting and possibly cumulative effects of active metabolites of THC.

Morbidity and Mortality

Understanding the relationship and measuring the effects of drug abuse on mortality is important in assessing the costs of the epidemic of multiple-drug use; however investigated, such statistics are often not specifically useful in determining the danger of various patterns of various drugs. The

specific drug is often unknown, and the cause of death is not easily sorted out from the abuse pattern and life style with all its variability and adventitious factors. For example, the headline-catching statistics on opiate deaths not only reflect the results of multiple-drug interaction (such as morphine, alcohol, and sedative hypnotics), infections, malnutrition, and other medical complications, but probably include other factors hitherto unexplained.

In any case, there has been a dearth of epidemiological research into the mortality and morbidity of various patterns of use of nonnarcotic, psychoactive substances. Mortality among intravenous users is especially high and septic conditions, violent death, and narcotic or sedative overdose, as well as conscious or unconscious suicide attempts, are generally implicated. Morbidity figures that would assess the costs of different patterns of drug use to the individual are lacking, in part because there is little apparent problem with some commonly used agents. They would include the functional consequences of use, e.g., adverse reactions (which may or may not have a metabolic or tissue basis), accidents, hospitalizations, delinquency and imprisonment, progression to more dangerous drugs, and medical complications such as hepatitis, malnutrition, abscesses, and the like.

Neurological Consequences of Nonnarcotic Drug Use

Seizures associated with (but not shown to be necessarily contingent

upon) LSD use have rarely been reported. Seizures may be the cause of death in over dosage of amphetamines, especially in accidental ingestions in children. Perhaps because of tolerance, seizures occur rarely in chronic amphetamine abusers, except when barbiturates and amphetamines are used together. The diagnosis and treatment of the medical aspects of nonnarcotic dependence and withdrawal is discussed by Chambers, Smith, Wilder, Tinklenberg, and Shick et al.

Studies of organicity among drug users that attempt to relate findings to a particular drug are complicated by the fact that many drugs have been used, of unknown purity and composition, by various routes of administration, generally predrug measures are unavailable and differences in test scores may be due to differences in motivation. The characterization of the nature of any "organicity" in LSD users have so far eluded strict definition. All such studies have been retrospective, and the time interval between the last dose of LSD and organicity assessment varies. The subjects of Blacker and associates and S. Cohen and A. E. Edwards had not used LSD for 48 hours prior to testing. Thus, the effects of metabolic changes or of long-lasting metabolites (unlikely with LSD) cannot be ruled out. Blacker and associates studied twenty-one paid, volunteer subjects living in the community who were chronic LSD users. They found only "scattered and inconclusive evidence" for minimal brain damage and no increased rate of abnormal EEGs among the users; a number of EEG records were judged abnormal by one or

both readers at either the initial testing or six-month retest interval, but abnormal recordings did not correlate with the length of LSD ingestion; on auditory-evoked potentials (a measure found to be sensitive to intellectual disorganization in schizophrenia) the subjects showed no abnormality, yet visual-evoked potentials suggested that they were "uniquely sensitive to low intensity [visual] stimulation . . . [and] seemed to modulate and organize sensory input in a different fashion." S. Cohen and A. E. Edwards, assessing organicity in thirty chronic LSD users, found significantly poorer performance 011 two tests of visual perception and spatial orientation.

McGlothin and associates studied sixteen subjects drawn from a sample of 300 who had received LSD in a medical setting many years before the study, had no history of intravenous injections, and most of whom had not taken LSD for a period of about one year prior to testing, and matched them with a control group. The experimental design did not permit the implication of a causal relationship and could not exclude the possible influence of prior factors "associated with the decision to use LSD repeatedly." Measures of organicity (including the Halstead-Reitan battery) did not replicate S. Cohen and A. E. Edwards particular findings and confirmed previous studies "that there [was] no evidence of generalized brain damage [in the LSD group] related to the amounts of LSD ingested." Evidence of moderate impairment of abstract ability suggestive of minimal brain dysfunction was provided by a significantly poorer performance on Halstead's category test—a nonverbal

measure of ability to discern abstract principles, and involving memory for a sequence of presentations. No specificity of effects across users is shown, then, and slight and different changes observed cannot be clearly dissociated from motivational factors. No striking data of semi-permanent effects of extended LSD usage is, then, available.

The prevalence of organic brain syndrome among illicit, intravenous drug users is unreported, although intravenous amphetamine abusers report subjective difficulties with memory, concentration, and fine motor coordination months after discontinuation. Research involves the objective assessment of such complaints from intravenous users, the prevalence and outcome, as well as defining more precisely the tissue, metabolic, or neurochemical mechanisms involved. No studies have conclusively demonstrated central nervous system toxicity with amphetamine, and Freedman has discussed the evidence usually cited. “In the light of para-hydroxylated metabolites that leave the brain slowly, it is quite possible that a reversible biochemical effect is responsible for a change in behavior of this duration,” in addition to drug-behavior interactions—learning under the drug state.

On the other hand, abnormal central nervous system signs in drug users either on EEG, brain scan or neurologic exam, suggest cardiovascular or infectious disease processes as a result of intravenous drug abuse. Needle

sharing is a phenomenon endemic to needle-using subcultures and Howard and Borges found that the sharing of needles is a social phenomenon dictated by pressures of group participation and inferred that "even if fits and points were legally available, sharing the needles would continue." Intravenous drug users are exposed to a wide variety of other medical hazards relatively independent of the drug injected, including serum hepatitis, septic emboli, endocarditis, tetanus, syphilis, and malaria.

Adverse Reactions to LSD

Various categorizations of *adverse* functional reactions for LSD have appeared." These acknowledge psychotic and nonpsychotic varieties that can be acute (terminating as the intoxication dissipates) or chronic (lasting for various periods after the intoxication). Such adverse reactions include acute and prolonged anxiety states, depressive and paranoid states of psychotic or nonpsychotic proportions, schizophrenic-like reactions, mild or severe confusional states dominated by magical thinking, and spontaneous recurrences ("flashbacks"). The use of LSD may also result in suicide, self-mutilation, homicide, assault, and other antisocial behavior, personality, attitude, and behavioral changes, and religious conversions (including irresponsibility and omniscience). Schwarz and Smart and Bateman have reviewed the literature on adverse reactions with LSD prior to 1968.

Acute adverse reactions, ranging from mild anxiety to panic states of psychotic proportions, are known to occasionally occur with LSD and congeners in social as well as research settings, and are related to a threatened loss of control over inner stability, variably experienced and symbolized. For some it is dread transcended ("death of the ego"), for others, unwelcome, denied, or projected fears ("fragmentation of the self").

Some investigators have implied that acute panic states are fostered by fears generated by medical and research settings, and yet, perhaps just as often, the confidence engendered by the presence of competent and emphatic medical personnel leads to a diminution of such reactions. McGlothlin found no difference in harmful effects attributed to LSD between nonmedical as opposed to medically supervised exposure.

Clinical research into the acute effects of the intoxication cannot always be extrapolated to social drug use—reactions occur in the laboratory that may not occur in another setting and vice versa—and, furthermore, the results of such laboratory studies are influenced by the subjects previous experience with drugs, the research setting,] and the variables investigated, as well as the techniques used and the investigator's bias. Barr and Langs discuss the importance of control groups, the necessity for "active placebos," and the determinants of placebo responses with LSD in the laboratory; the placebo for a drug of the potency and clarity of response characteristic of LSD

has been found an abstract exercise by most competent investigators.

Research into the types of reactions that occur outside the laboratory, and their social management and interpretation, would be especially valuable since many such reactions are managed within the drug-using subculture and only the most serious reactions or least involved users reach medical facilities.

Certain determinants of these reactions have been identified and include such drug-behavior interactions as dose,§ social setting, personality make-up, expectations, degree of drug experience and current life crises. The role of a person's associates in precipitating and influencing such reactions is apparent. Many of these determinants are not specific to drug use and can occur in other psychiatric patients as well. Glickman and Blumenfield felt that reactions were more or less severe depending upon the patient's disappointment in the failure of LSD to avert threatened decompensation, his wish to attribute his symptoms to the drug, as well as the amount of pharmacologic effects, primarily dependent on dose. They characterized LSD users who later are hospitalized for an adverse reaction as having "pre-existing difficulties in adult social and sexual functioning, a tendency to use drugs to reduce tensions, a current life crisis [and] a fantasy . . . that LSD ingestion will enable them to overcome this crisis by introjecting strength. When this fantasy conflicts with reality, the patient may project upon LSD the

cause of his decompensation." Blacker and associates found that the "bum trip" with LSD usually occurred in the context of anger and speculated that anger or hate was magnified into "nightmarish proportions and . . . experienced as demons or primitive, cannibalistic creatures who attack and destroy their creator." Silverman has hypothesized that fear of overstimulation accounts for the production of the bad trip and that various maneuvers observed in adverse reactions such as withdrawal, blocking, and constriction of movement and speech serve to reduce the amount of sensory stimulation experienced. Intrusion of repressed material is no doubt also involved. Barr and Langs put it this way:

> [Psychoactive drugs as potent as LSD are] . . . certain to stir up trouble, and sometimes seriously upsetting trouble, in persons who do not have flexible defenses and ready access to their primary processes without being threatened by their own unconscious fantasies. LSD does not work merely by lifting repression, any more than alcohol really works by dissolving the superego, but many of the effects do seem to be attributable to alterations in important defenses. If this is the case, it is to be expected that most of the time what emerges into awareness will be frightening—since it has been held back precisely because it arouses anxiety, [p. 165]

Prolonged adverse reactions lasting beyond the usual duration of intoxication include psychotic decompensation, depressive reactions, acting out, and paranoid states. These have been described by many investigators.

Characterization of prolonged reactions to LSD have so far eluded precise description. Even "good trips" occasionally produce a syndrome of

rapid loss of will to exert competence—manifested by "dropping out," absorption in magical thinking, and generally retreating from complexity—a syndrome that is amotivational. Paranoid states and confusional states with an overreliance on magical thinking occur, as well as depression following the perception that the everyday world is not as stimulating as the drug state. Occasionally, impulsive acts based on misperception of reality occur.

In what respect prolonged drug psychoses (and the change that has occurred) are similar to and different from naturally occurring psychoses is incompletely understood. Historically, controversy centered around whether the LSD intoxication could be viewed as a "model psychosis."' "It was, at best, unwieldy to compare an acute drug response to a chronic behavior pattern." The hallucinogens, particularly, are thought to occasionally precipitate psychosis in individuals so predisposed, although the nature of the vulnerability is undefined. The question of whether the acute or chronic use of such drugs can produce psychotic adaptations (e.g., Smith's "LSD and the Psychedelic Syndrome") in individuals whose "premorbid personalities are not typical of pre-psychotic individuals" was broached by Glass and Bowers, and more recent thinking asserts that "[hallucinogenic drugs] can by single or repeated administration lead to a syndrome which behaves much like nondrug induced psychosis in the long as well as the short run." Whether an individual is "predisposed" is complicated, since "this judgment is always made retrospectively and involves some assumptions about schizophrenia

which are unproven, including the idea that pre-schizophrenic states can be characterized and recognized. . . . The implication in these instances that the drugs play relatively unimportant roles in the emergence and perpetuation of psychotic symptoms may be unwarranted." Vulnerability to a psychosis is something quite separate from prognosis, as Bowers explained, and the differentiating features between drug and nondrug psychoses "point in the direction of more favorable prognostic findings in the drug induced states." Although prognosis for the drug induced psychoses is generally better, they are not necessarily more benign since self-mutilation, suicide, and homicide sometimes, though rarely, occur.

Bower's retrospective measurements of spinal-fluid metabolites in drug psychosis are consistent either with the hypothesis that there is a persistence of an acute pharmacological effect of the drug or that a biochemical alteration present before the drug was taken "rendered the individual . . . more susceptible to the disruptive effect of these compounds." Tucker and associates found that those multiple-drug users with predominant LSD use who had "a longer history of use tended to show higher incidence of the disrupted thinking, boundary confusion, and to a degree a higher extent of over-specific, personalized, or idiosyncratic thinking, and also tended to show a lesser incidence of the appearance of affect in their responses." Neither "the age the drug use was started nor the variety of drug use was significantly related to thinking disturbance in the sample." Although selected aspects of

drug-induced psychoses are similar to certain aspects found in schizophrenics, Blacker and associates found that in contrast to schizophrenics, chronic LSD users were "involved with people and skilled interpersonally." The clinical picture of unusual beliefs, relatively intact interpersonal relationships and cognitive abilities suggest that [their] subjects were more similar to individuals usually termed eccentric than to individuals diagnosed as schizophrenic.

Drugs interact in a variety of nonspecific ways with personality and social setting, and nondrug situational and maturational stresses may predispose the subject to decompensation, influence both his coping ability and original motivation to use the drug. Whether such decompensation would have occurred without the drug cannot be definitely determined. McGlothlin notes how often persons view even extreme adverse reactions as beneficial in the long run, and Kendall believes that for some of his subjects drug use may have "halted the development of an organized disease syndrome" by reducing the intensity of drive conflict or redirecting the subject's attention away from conflictual material. Yet, in most adverse reactions, the drug seems to have played a crucial role in enhancing conflict and loosening control. The drug may "reactivate certain painful intrapsychic issues and heighten the experience of conflict at certain critical developmental periods."

Various treatments for the acute adverse reactions from LSD have been

recommended— generally sedative medication or supportive psychotherapy (often labeled the “talk-down approach”) or a combination of these. Detailed discussions of the techniques and outcome of the talk-down approach are available, and case descriptions are heuristically valuable. The viewpoints on the use of sedative medications and phenothiazines in treatment are discussed by Bowers,- Shick and Smith, and Bowers and Freedman. The studies on behavioral effects of the combination of phenothiazines and STP (DOM) that is, 2,5-dimethoxy-4-methylamphetamine, is reviewed by Shick and Smith. Phenothiazines can simply complicate the “bad trip,” but their use in prolonged drug-related psychotic reactions is often beneficial, and with amphetamines, phenothiazines seem specific.

To predict who is at risk to develop an adverse reaction is at present difficult, although research into individual differences in response to LSD sheds some light on this problem, as well as addressing the difficulties in such research. G. D. Klee and W. Weintraub found that “paranoid-like reactions under the drug were most frequent in persons who are usually mistrustful, suspicious and fearful, and who often use projection as a defense.” Tucker and associates noted that hospitalized drug users, regardless of diagnosis (psychotic or nonpsychotic) tested during the first week of admission, have “more signs of increased intrusions of primitive-drive material, higher penetration scores, and higher responsivity” on standardized scoring of Rorschach evaluations than hospitalized nondrug users. Duration of drug use

was more closely related to these thinking disturbances than the variety or intensity of the drug use. The old notion that schizophrenics are "tolerant" or "resistant" to LSD seems untenable now in light of more recent work. Bercel and associates reported that the Rorschach test could identify most psychotic reactors, but Rorschachs did not permit them to predict the form that these reactions would take. Hensala and coworkers, Kleber, and Frosh and associates attempted to determine the correlates of adverse reactions resulting in hospitalization. Barr and Langs report the results of a two-year, double-blind study into the individual differences in response to looygs. of LSD—carried out before the LSD effects were well known—and have reviewed the prior research on LSD and individual differences. They developed a typology of the LSD reaction at the level of *syndrome* (not symptom) and found that the reactions to the intoxication correlate well with personality. Regression did not occur uniformly across ego functions; drive-related and conflict-related contents attracted attention most readily in LSD states; and there was an impairment in active defensive functions and increased use of passive functions in the face of an LSD experience. They distinguished six groups of personalities that reacted differently and describe in detail those in whom the intoxication produced extreme anxiety and those who tolerated the experience well.

> Our findings show a built-in danger in a drug such as LSD. It is likely to be tried first and written about by people of the kind to whom it is least dangerous, whose rhapsodic accounts of euphoria, increased insight, or

> experiences of great beauty make the drug irresistibly attractive to those who are most vulnerable to its harmful effects. For it is the very people whose personalities make it likely that they will *not* have positive reactions who are likely to be allured by the promise of a quick and easy answer to their problem in living— boredom, anxiety, the feeling of being trapped in a conformist world, depression and the like, [p. 166]

Research by Becker and discussions of peyote use by the Navajo acknowledge that the culture's social ritual and tradition surrounding the use of psychoactive substances often serve to contain, explain and influence various aspects of the experience and outcome.

The *personal* ways individuals deal with the intoxication and how this affects outcome is crucial. Psychic defensive operations that correlate with personality have been described and certainly assignment of meaning is important, and the search for synthesis and mastery universal. There may be convictions of revelations, delusional mastery, and repeated attempts at mastery (flashbacks), and connotations often balloon into cosmic allusiveness and are experienced as religiosity, aesthetically, sensually, or in a variety of clear or confused frames of reference. Acting out, possibly out of a search for boundaries, is often seen, as well as aggressive and endless talking about experiences as if users were trying to explain and integrate them. Freedman has said, "The *need* for synthesis not the *ability* to synthesize with due accounts to real limits, is what tends to be reinforced in the drug state." Severe rumination and depression may result from a realistic inability to

recapture the lost illusory and brilliant drug world. Conflict and confusion about "what *is* reality" may ensue, as well as a variety of mild or severe symptomatic states of perplexity and disorganization.

> In any event, variably determined needs or capacities to cope with the split or breach of normal experience can be expected. This may be a simple 'sealing over,' or even an enlightened and useful thought formation we call insight. Some react with a denial of inadequacy and anxiety about loss of control; borrowing the enhanced omnipotence of the drug state, they show a delusional autonomy. This may lead to various out-comes: that of the benevolent and foolish prophet, or the defensive, alienated therapist, angry at those who prevent his curing the rest of the world. Any threat to the values of the illusory experience of union and omnipotence-—such as undrugged reality—could evoke defensive denial and strident proselytizing, [p. 338]

An individual can react to the acute experience of the drug intoxication with anxiety or panic, ecstasy or terror, awe or tempered judgment. "The *sense* of truth is experienced as compellingly vivid, but not the inclination to test the truth of the senses. Unlike the sleeping dreamer, the waking dreamer is confronted with the co-existence of two compelling and contradictory orders of reality—with the interface of belief and the orderly rules of evidence."

The consideration of drug factors, the expectations of the user and the setting comprise a bewildering array of variables that, to different degrees, may precipitate and influence the adverse reaction as well as its outcome. Within the drug culture, many suggestions, rituals, and explanations born

from experience, about how to manage the effects of the drug and minimize the possibilities for an adverse reaction—or how to cope with it if it occurs—have been concretized as shared myths. A systematic study of the content of these suggestions, as well as their effectiveness in averting adverse reactions or minimizing unfavorable outcomes, has not appeared.

Spontaneous Recurrences

The well-publicized, if not sensationalized, consequence of illicit drug use has been the occurrence of flashbacks among a small proportion of hallucinogen users. Described as a "transient spontaneous recurrence of certain aspects of a drug experience occurring after a period of relative normalcy following the original intoxication," the flashback is not unique to LSD, but can occur with psychotomimetic amphetamines, such as methylenedioxyamphetamine (MDA), DOM, etc., and has been reported to occur with marijuana. The early accounts stressed the perceptual changes that sometimes occur and the anxiety over loss of control that is not universally found. Flashbacks may occur in any sense modality and distort time sense, self-image, or reality.

The prevalence of this phenomena is difficult to assess since, besides the fact that most adverse reactions are managed within the subculture, persons without anxiety rarely seek medical attention, and many confirmed drug

users regard these recurrences as desirable. Furthermore, these subjective experiences are difficult to characterize, for both the user and researcher and are usually related after they occur. Often they cannot be separated from other aspects of the user's personality, behavior, and life situation. The prevalence of reported flashbacks increased with the increased use of LSD in nonmedical settings and also as the phenomenon was labeled, advertised, and popularized. Therefore, estimates are probably unreliable.

Clinical impressions indicate that flashbacks often occur in association with a previous bad trip, and the flashback often contains elements of content, affects, and perceptions reminiscent of that experience. Those persons with greater numbers of LSD experiences are more frequently reporters of LSD-like recurrences; serious psychiatric disorders are not overrepresented among them, and reporters of flashbacks score higher on tests of hypnotic susceptibility. "In very few instances does there appear to be substantial evidence of a causal relationship between the LSD experiences and the incidents described. [In most] . . . nothing more than the association of two events bearing certain similarities." Various degrees of dyscontrol, though usually quite short and mild, may occur during the flashback and can result in accidents, injury, or misperception.

Flashbacks occur frequently, but not exclusively with chronic use, and may occur after a single intoxication. The use of various licit and illicit

psychoactive drugs can apparently "trigger" a flashback, and such associations indicate that the flashback may be explained in terms of "arousal —state-bound recall" of experience or state-dependent learning.

Various other explanations described by Horowitz—a release theory, deconditioning theory, psychodynamic theory, and mystical theory—have been proposed to account for flashbacks. These recurrences may represent one type of repetitive symptom that is part of the larger search for synthesis of various aspects of the drug experience, and are similar to responses to overwhelming stressful stimuli seen in traumatic neuroses. They have also been likened to preemptory ideation, obsessive rumination, and repetitive visual pseudo-hallucinations, as in hysterical psychoses. Horowitz examined subjects' responses to stressful films and found that intrusive thought, repetition of film content in thought, and negative affect, all increased after the film. A brief discussion after the film appeared to reduce, but not eliminate, this response.

The "barrier" against dereistic thinking in altered states of consciousness (and to what extent a person can control slipping into these states) merits investigation. Various treatments have been described by Shick and Smith, and Horowitz explains that, with supportive psychotherapy, the elimination of the symptom may be "accomplished through establishing a positive relationship rather than resolution of a trauma or lifting repression

per se."

The behavior, social stress, and psychodynamics preceding these lapses from reality deserve close scrutiny. The effectiveness of various treatments, psychological coping mechanisms, and social myths and responses that aid reintegration, await study.

Attitude, Belief and Value Change with LSD

Those LSD users who feel they are never quite the same as before they took the drug, no matter what the outcome, are usually not able to specify to themselves or to the researcher what specifically has changed. Users may report a greater tolerance toward others; less defensiveness, materialism, anxiety, competitiveness, aggression, and rigidity; greater capacity for introspection; and increased creativity and appreciation of art and music since their use of LSD. The question is, the extent to which such changes can be objectively verified.

McGlothlin and associates studied outcomes of 200 *μg.* of LSD administered in a clinical setting to 24 naive subjects in the early 1960s before the effects of the drug were widely known. A matched control group received 20 mg. of amphetamine or a 25-jug. LSD dose. Tests of anxiety, including galvanic skin response, tests of personality, attitudes and values and aesthetic sensitivity and creativity tests, were administered before the

LSD experience and again at two weeks and six months following the last session.

Although personality-test measures of anxiety were not significantly different between the experimental and control group, measures of galvanic skin response to traumatic words and neutral words, digit span, mental arithmetic and proper names, tended to support the hypothesis that the experimental group experienced less emotional response to laboratory stress in the postdrug period at the six-month but not the two-week interval. At the six-month follow-up, the experimental group reported a "greater feeling of detachment," and "more intense mood swings," yet no one reported a "tendency to feel depressed." They indicated they were "less easily disturbed by frustrating situations," as well as now having a "less materialistic viewpoint toward life." It is interesting that 15 percent to a quarter of the subjects who received amphetamine reported an "enhanced understanding of self and others, and a greater tolerance toward those with opposing viewpoints," and practically no one who had received 25 *μg.* of LSD reported similar positive responses. Approximately twice as many of the experimental group who had received 200 *μg.* of LSD in each session answered positively to those four items. Such findings attest to the influence of expectations and set and setting in reported changes, and the need for active placebos and dose response studies.

In contrast to the *reported* changes in personality, attitude, and values between the control and experimental groups, the psychological-test measures in these areas tend to agree in the predicted direction with the subjective reports, although the magnitude of the changes was generally small. Objective tests of increased creativity or aesthetic sensitivity did not support the subjective reports, although they were supported by increased behavioral activities such as number of phonograph records bought, spending more time in museums, and attending more musical events. Generally, the only evidence of lasting effect was the subjective report of personality, attitude, value, and behavior change. The authors felt that many of the self-perceived changes were related to the "capacity of the psychedelics to temporarily suspend firmly entrenched perceptions, beliefs and values, and the capacity for viewing any belief system as essentially arbitrary."

McGlothlin and Arnold explored the lasting effects of LSD on 247 randomly selected subjects from a population of 750 who had received LSD for psychotherapy or experimental purposes from three physicians in the 1950s; 25 percent of the sample had some nonmedical experience with LSD. These subjects were compared to matched-control patients who had received psychotherapy from the same physicians but who had never taken LSD. Subjective reports and testing of personality, beliefs and values, attitudes, alienation, and behavior revealed "very little evidence of LSD-related change" among those who had experienced LSD in medical settings when compared to

a matched-control group. By contrast, those who had taken LSD prior or subsequent to their medical exposure "demonstrated relatively large and consistent differences in comparison to the control, both in terms of the proportion reporting changes and the scores on related measures." Such changes are probably explained by considering that nonmedical LSD use attracted a certain type of individual, or that LSD interacted with critical milieu variables to produce the change. The LSD experience itself seems insufficient in many people to produce the often reported changes.

Such studies generally indicate that the claims of those who proselytized for LSD use —states of religious ecstasy, union with God, lasting personality change—were overenthusiastic. It appears that many of the alterations attributed to LSD use were subjective evaluations and were highly correlated with the expectations of the users reinforced by the group. Studies at NIMH on the army, before the psychedelic frenzy of the 1960s, did not produce cults of users. The only claims that appear to have some objective validation are a period of decreased anxiety in the postdrug period for some, and claims of increased passivity and decreased aggressiveness with chronic LSD use among some users.

Adverse Amphetamine Consequences

Acute panic reactions can occur with amphetamine use, as well as with

LSD, and some of the same determinants are involved. Kramer has described the syndrome of acute toxicity with an overdose that may result in “chest pain, immobilization and even brief comatose states.” Competitive “shoot outs” between users are described by Smith, and the user may ingest or inject other drugs in an attempt to counteract the acute effect of overdose. As with LSD, during acute panic the user may focus his attention on the physical symptomatology of the sympathomimetic effect, such as the profuse sweating, photophobia or tachycardia which accompanies high doses.

Chronic users often report apathy (“amphetamine blues”), psychomotor retardation and sleep disturbances after discontinuation. They commonly state that this syndrome is often the stimulus for resuming a new round of amphetamine use in an effort to counteract the dysphoria. Such findings await more precise definition and explanation, since no such withdrawal is seen when the drug is abruptly discontinued in monkeys given chronic high doses. Animals allowed to administer amphetamine intravenously ad lib show the same cyclical pattern of use which intravenous methamphetamine abusers demonstrate.

Tolerance to a wide variety of the effects of amphetamines has been demonstrated in animals and in man. Monkeys gradually made tolerant to increasing amounts of intravenously administered methamphetamine on a chronic schedule every three hours become tolerant to all the effects except

the stereotypic behavior. Stereotypic behavior in humans is visible in jaw grinding and formications ("crank bugs") which produce continued scratching of the body.

Connell, Ellinwood, Snyder, Griffith and associates, and Bell have described the amphetamine psychosis and proposed various neurochemical and neurobiological explanations. The picture presented practically mimics paranoid schizophrenia and often goes unrecognized as a toxic psychosis in hospitalized psychiatric patients. Bell and Snyder have sought symptoms by which the two can be distinguished. Griffith and coworkers produced a paranoid state in all volunteer subjects by increasing oral administration of dextroamphetamine, although they found large individual differences in the dose needed to produce the psychosis. These subjects were previous users of amphetamines with diagnoses of moderate personality disorder, and this "prior-state" factor has not been ruled out as a component of amphetamine psychosis. There is a close correlation between the hallucinatory experiences and paranoid thinking and the blood level of amphetamine, and the disappearance of these phenomena and the amphetamine excretion level in the urine. The classic amphetamine psychosis is a transient affair, disappearing on abstinence, but it exhibits various characteristics of psychosis, and at times may be prolonged. The preexisting pathology that contributes to the paranoid state has not been characterized.

"Many investigators consider this high dose amphetamine reaction the closest experimental analogue of the naturally occurring psychoses," supported by the specificity of clinically effective antipsychotic compounds to antagonize the effects of amphetamines. However, Bowers and Freedman, and Bell describe psychedelic and visual perceptual changes in the very early onset of amphetamine psychosis, and Freedman emphasizes that the second "stage" (four hours) of an LSD trip shows ideas of reference in a clear sensorium so that the clinical specificity of the amphetamine psychosis is not at all established, nor is the occurrence and threshold of occurrence of amphetamine psychosis in normal people understood.

Adverse Reactions to Marijuana

Many of the various adverse reactions described for LSD use have occasionally been reported to occur with marijuana,! and similar psychosocial determinants operate. There have been case reports of memory loss, paranoid reactions, precipitated psychoses, various degrees of organic-brain dysfunction, perceptual distortion, and confusional states, depressive reactions, panic reactions, and "flashbacks." Weil and Bialos review this literature. Jones discusses the literature on the psychotomimetic potential of marijuana and the alleged schizophrenic's "sensitivity" to the drug. He discusses the precipitants of adverse reactions in his laboratory, and he asserts that reports of paranoid experiences on mild doses of the drug are

best explained by the user's expectation of this effect, and the interaction with personality and social variables, rather than the effects of the drug per se. Bialos describes the criteria operating in the various conceptualizations of an adverse marijuana reaction.

The dose of THC often correlates with these experiences, but there is great inter-subject variability. Although marijuana, as it is presently used in this country, seems to produce relatively few such reactions and constitutes a minor hazard from a public-health viewpoint, studies of the more potent preparations raise the possibility of the occurrence of acute toxic psychoses, panic reactions, and flashback phenomena (generally reported when hashish was used in combination with other drugs), transient or prolonged psychotic states, and long-term adverse effects—reminiscent of Smith's "amotivational syndrome"—with chronic high doses. The further characterization of such effects and elucidation of the mechanisms involved await research.

Drugs and Antisocial Behavior

There has been much discussion and little data about the relationship of drugs to criminal activity. The British have assessed the extent of drug use among delinquents and have found that drug use is associated with higher intelligence and unfulfilled educational aspirations in their delinquents. Ellinwood has discussed cases of assault and homicide associated with

amphetamine abuse.

Tinklenberg has most recently reviewed this literature in a study prepared for the National Commission on Marijuana and Drug Abuse. The research into associations between drugs and criminal behavior is complicated by the difficulty of replicating in the laboratory the critical nonpharmacological variables.

> Naturalistic studies are appropriate but require careful design and large samples to assure appropriate control data.
>
> A large number of studies indicate that alcohol, the most widely used drug in the world, is clearly linked with violent crime. In many assaultive and sexually assaultive situations, alcohol is present in both assailant and victim.
>
> An increasing amount of data links barbiturate users and amphetamine users with criminal activity, especially assaultive crimes. In a recent large scale study, the users of either amphetamines or barbiturates were more likely to be arrested for criminal homicide, forcible rape, or aggravated assault than were the users of heroin, morphine, cocaine, marihuana, hashish, tranquilizers, psychedelics, methadone, and special substances. However, amphetamine and barbiturate users were no more likely to be charged with violent crimes than were individuals who were identified as nondrug users, a category that probably included alcohol users, [p. 266]

Tinklenberg recommends that future research in the relationship of crime and drug use should include assessment of the relative contributions of the pharmacologic properties and the nonpharmacological variables to the crime process. He explains that it is not correct to assume that the heavier

drug use of the intravenous drugs is positively associated with violent behavior. He finds, to the contrary, that in his sample the *non-assaultives were much heavier users of all drugs,* especially marijuana, hashish, the psychedelics, and the opiates. Furthermore, the repeated association of violence with alcohol and barbiturates suggests that more extensive research with a large sample size may result in an important association between these drugs (used singly or together) and violent crimes.

Concluding Remarks on Consequences and Outcomes

Research into the consequences and outcomes of illicit drug use requires an even more precise understanding of the metabolic, molecular, and tissue bases for the adverse consequences. The prediction of who is at risk and how various outcomes are managed by the social group, the individual, and the clinical personnel is a major issue. Mortality and morbidity statistics are scant in this literature, and toxicological research, especially with chronic use of the higher potency THC compounds and the high doses of amphetamines, is just beginning. A more precise definition of the public-health risk of the various consequences described will require epidemiologic methods accurately defining prevalence of different patterns of use and sorting out the effects of the drug from the other social and psychological factors.

Conclusion

Research in nonnarcotic drug abuse deals with a broad public-health issue that has involved many different segments of society. It spans the field of psychopharmacological and social-psychological studies, utilizing trend surveys, case studies, and epidemiologic, sociological, and psychiatric models (from psychoanalytic to operant conditioning) to describe and predict extent and trends of current use, to investigate causes, to define and implement treatment and prevention models (as well as to assess their efficacy), and to delineate and attempt to predict the consequences and outcomes. A thin cadre of knowledgeable research and treatment personnel in this area has been slowly growing.

Although knowledge and perspective have accrued, research is far from precisely and reliably defining who is at risk for a particular pattern of use or a particular outcome. What factors cause drug use and sustain it, as well as effects contingent on joining a subculture and factors arising independently, are still largely unspecified. Some observations of how subcultures grow are available but largely are unanalyzed. Why drug habits once entrenched are so hard to give up and are so rarely forgotten, how the search for novelty, recreation, risk taking and control influence drug use, how people medicate themselves and what they are treating, as well as how historical and cultural influences interact with drug-taking behavior, these are relevant dimensions

and questions for further inquiry. In general, there is a grasp of the relevance of each issue to the entire range of issues. Placing each item in its context seems far more possible today than formerly. The definition of the problems to be solved and questions to be asked is beginning to be focused. The relationships of mental, bodily, behavioral, and social events can be studied through such psychopharmacological research, but psychopathological mechanisms have not been closely studied in drug-abusing individuals.

The research sector has been perhaps too involved in providing expertise to help mediate transitions in social customs centered about the giving, getting, and consumption of drugs, and the management of the outcomes. But while it is fair to warn the public about what is known—that there is always the unexpected that occurs with drugs, and that drugs are never given without weighing the risks—it is not appropriate for research to provide flimsy rationalizations for issues that require value judgments and public choice. All too frequently fragmentary findings have been lent to various social movements in attempts to influence public behavior with premature publicity. A crisis of trust, communication and understanding about the authenticity, validity, applicability (and intrinsic limitation) of research findings to the use and abuse—not only of illicit drugs but all medicines and their regulated traffic—has arisen. Scientific restraint is required to diminish the influence of those with vested interests in sensationalizing such issues.

Rapidly evolving social forms and redefinitions of personal purposes confront societies with truly severe crises. The uses of technology confuse and confound public decision. Adaptive man will probably confront and eventually construct answers to these complex problems—of which drug abuse is but a symptom. As with any symptom, it deserves and requires treatment in its own right as basic remedies are sought and researched. Precise definition of the kinds of harm of a particular drug or pattern of use is required. Initial diagnosis and goal setting, dispassionate assessment, selective fitting of means to ends, anticipation of consequences to the entire system of drug supply and use are essential principles in designing responses to concerns about drug use.

Perhaps the end of the epidemic of the 1960s is at hand; illicit drug abuse is again becoming a problem for *some* instead of a "problem for everybody." But drug misuse is an endemic problem and today's response may not be tomorrow's answer. Man's appetite for recreational drugs always has an epidemic or fad-like quality. Whether society will be better prepared for a future epidemic remains to be seen. The task will be to convert episodes of public panic into concern, and generally to encourage more selective and responsible patterns of drug taking.

Drug use, not just illicit drug use, is a complex legal, economic, social, and health issue. Essentially, a society regulates drug use by laws and by

attitudes—establishing customs controlling both the manufacture of and access to drugs, and attempting to influence, interpret and control the drug-taking behavior of individuals. It is striking that the total drug and medicine network has never been looked at in a systematic way, nor has there been a responsible assembling of involved persons (manufacturers, educators, scientists, distributors, and consumers) to assess public needs and the consequences of randomly proposed solutions.

Policy formulation in support of research often fails because there is little public understanding of how research problems are approached and solved, how inquiry is, in fact, mounted (rather than engineered) how room must be left for the "surprising" finding, and how the scientific conclusions of the moment may be abandoned in the process of reaching the findings of the future. Neither the value, the limit, nor the intent of scientific method is widely comprehended even by some technically facile as well as administratively prominent scientists. The contingent status of a scientific finding, the "wasted activity" that bridges the gaps between occasional peaks of accomplishment, the unpredictability of the source of new knowledge, and respect for the complexity with which ultimately simple operations are organized as sequences of behavior are tasks for public education. So, too, is the existence of the system of inquirers ranging from the bench to the clinic, reciprocally posing problems and exchanging ideas—and adjudicating truth by critique and the logic of science.

The defects in our total societal capacity to regulate medicines make us highly vulnerable to respond shortsightedly to the concerns about currently unpopular drugs and the persons using them. The piecemeal approach to drug abuse simply makes such fissures in the body politic more visible. Drugs *are* a vehicle for other issues, as the recent epidemic demonstrated. The research sector should recall that, while the rules of evidence belong to science, what is and is not legitimate research and medical practice is ultimately defined by society. The role of inquiry plays a part in all of this, and its integrity and vitality rests on its freedom, its intrinsic limitations as well as its responsiveness to general social concerns.

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Notes

1 Personal communication.