ABSTRACT

MULTIVARIATE PREDICTION OF PSYCHOACTIVE DRUG USE:

A SOCIAL-PSYCHOLOGICAL APPROACH

By

Victor Anthony Battistich

The purpose of the present research was to develop and
test a comprehensive theoretical system which was capable of
accounting for individual differences in the use of psychoac-
tive drugs. Two basic assumptions guided this undertaking.
First, it was assumed that psychoactive drug use was best con-
ceptualized as a _deviant_ _social_ _behavior_. This assumption fo-
cused attention on those factors which may conceivably serve to
inhibit or counteract the influence of various forces of social
control, as well as those interpersonal influences which may
serve to initiate and maintain an individual's use of drugs.
Second, it was assumed that neither sociocultural or intraper-
sonal variables were capable, individually, of accounting for
psychoactive drug use. Rather, what was needed was a multivari-
ate framework which utilized both sociocultural and personality
variables as part of a social-psychological _system_. Rotter's
(1954) social learning theory of personality, as modified and
extended by Richard Jessor and his colleagues (Jessor, _et_ _al_,
1968, 1973) in their theory of deviant behavior, was selected
as an initial framework on which the theoretical system could
be constructed. The final theoretical system contained three

sociocultural and two personality variables. Specifically,
the theoretical framework focused on an individual's access
to opportunities for attaining valued goals, the extent of nor-
mative constraints against engaging in deviant behavior, oppor-
tunities for observing and interacting with drug users, atti-
tudinal tolerance of deviant behavior, and expectations about
the consequences of drug use.

Since it was desirable to obtain subjects who differed as
much as possible in terms of drug use and related characteris-
tics, two separate samples were obtained: a "College Sample"
(n = 51) drawn from individuals utilizing the services of the
Counseling Center at a large Midwestern university; and a "Street
Sample" (n = 72) composed of individuals utilizing the services
of a local Drug Education Center. Although on an a priori basis
these two groups were considered to represent different popu-
lations, examination of the relevant information revealed that
the two samples did not differ significantly in terms of drug
use or the majority of sociodemographic characteristics. Con-
sequently, the two samples were combined for the major statis-
tical analyses.

Data was collected by means of a comprehensive, anonymous
questionnaire assessing a variety of drug use, sociodemographic,
interpersonal, and personality variables. On the basis of this
information, measures of drug use and the sociocultural and per-
sonality variables included in the theoretical system were con-
structed.

Three separate measures of drug use were utilized as depen-
dent variables. The first consisted of a sample trichotomous

classification of <u>user</u>, <u>past</u> <u>user</u>, or <u>nonuser</u> for each indivi-
dual on each of the psychoactive substances examined. The sec-
ond measure consisted of a <u>frequency-variability</u> <u>index</u> of use
for each of the substances. Finally, the third measure of drug
use was a measure of the individual's overall <u>pattern</u> of drug
use. Frequency-variability scores for each of the psychoactive
substances were cluster analyzed, revealing two discrete clus-
ters or groups of substances. The first cluster was composed
of marijuana, hallucinogens, barbiturates, amphetamines, cocaine,
opiates, and nitrous oxide, while the second cluster contained
only alcohol and tranquilizers. The distribution of subjects'
"cluster scores" on each of these clusters was then dichoto-
mized at the median, forming "high" and "low" groups for each
drug cluster. These groups were then combined to yield four
separate "patterns" of drug use: high use of drugs in both of
the clusters, low use of drugs in both of the clusters, or high
use of drugs in one cluster but low use of drugs in the other.

The independent variables were eight measures of sociocul-
tural and personality characteristics. Two measures of access
to opportunities for valued goal attainment were constructed:
a measure of <u>Socioeconomic</u> <u>Status</u> based on Hollingshead and
Redlich's (1958) two-factor index of social position; and a
measure of <u>Objective</u> <u>Access</u> based on the respondent's age, race,
marital status, and religious background. Normative constraints
against deviance was assessed through a measure of <u>Involvement</u>
<u>with</u> <u>Prosocial</u> <u>Groups</u>, based on the extent of respondents' par-
ticipation in conventional religious groups. The third socio-
cultural variable, opportunities for observing and engaging in

drug use, was measured through three separate indices: a measure based on the respondent's age, marital status, and the size of the home community (Opportunities for Deviance 1: Sociodemographic Factors); a measure of the percentage of the respondent's friends who used drugs (Opportunities for Deviance 2: Perceived Drug Use in the Social Environment); and a measure of interaction with the respondent's five closest friends (Opportunities for Deviance 3: Extent of Use with Friends). The two personality variables were assessed by means of a scale of Positive Expectations for Drug Use based on respondents' subjective probability of future drug use, the percentage of pleasant experiences with drugs, and perceived physical and psychological danger in use of the various drugs; and a Tolerance of Deviance Scale developed by Jessor, Graves, Hanson, and Jessor (1968).

The relationship of each of the sociocultural and personality variables to both use-nonuse and frequency-variability of use of each of the psychoactive drugs was examined through a series of univariate analyses. In addition, the efficacy of the system of variables in accounting for overall patterns of drug use was examined through a multiple discriminant analysis. In general, the results of these two sets of analyses were complementary and supported the hypotheses. For use-nonuse, frequency-variability of use, and overall patterns of drug use, the more extensively an individual was involved with drugs: (1) the less his/her participation in prosocial groups; (2) the more opportunities for observing and engaging in drug use s/he perceived in the immediate social environment; (3) the greater the amount of time spent using drugs with his/her closest friends;

(4) the more tolerant of deviant behavior in general s/he was; and (5) the more positive were his/her expectations concerning the consequences of drug use. Of the eight measures of variables in the theoretical system, only the two measures of access to opportunities for valued goal attainment failed to show any consistent, significant relationship to any of the measures of drug use.

The overall pattern of results is consistent with the findings of previous studies in demonstrating the importance of peer influences in accounting for psychoactive drug use (Kandel, 1973, 1974; Jessor, et al, 1968, 1973; Sadava, 1973). Of the six measures of sociocultural variables, the best predictors of drug use were measures of interpersonal influences (i.e., perceived drug use among friends and the amount of time spent using drugs with one's closest friends). Thus, these findings support the hypothesis of involvement in a drug-using "subculture" which serves to initiate and maintain the individual's use of drugs (Goode, 1969; Kandel, 1973, 1974). However, the single most predictive variable in the present study was a personality variable: Positive Expectations for Drug Use. In addition, both sociocultural and personality variables were needed to maximally differentiate the four patterns of drug use. These findings thus support the assumption that both sociocultural and personality variables are needed to adequately account for an individual's use of psychoactive drugs.

Finally, a number of modifications and additions to the theoretical system were discussed, including the addition of measures of socialization practices which theoretically mediate

between the individual personality and the sociocultural environment. In addition, it was suggested that future research in the form of a longitudinal study would prove invaluable for understanding the complex processes underlying psychoactive drug use.

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INTRODUCTION AND OVERVIEW

Although there is ample evidence of the use of psychoac-
tive[1] drugs by a significant percentage of the population (Na-
tional Commission on Marihuana and Drug Abuse, 1973; O'Donnell,
Voss, Clayton, Slatin, & Room, 1976), theoretical conceptuali-
zations of the antecedents of drug use remain remarkably incom-
plete. This is especially true in regard to accounting for
differences in type or pattern of drug use among various groups
of users. Thus, while elaborate theories of the dynamics of
drug use have been developed for individual drugs such as alco-
hol (e.g., Jessor, Graves, Hanson, & Jessor, 1968; McClelland,
1972; Wilsnack, 1973), marijuana (e.g., Jessor, Jessor, & Finney,
1973; Johnson, 1973; Sadava, 1973), opiates and hallucinogens
(e.g., Akers, 1973), these theoretical perspectives have yet
to be applied to use of the entire range of psychoactive drugs.
Consequently, and despite the tremendous amount of research con-
ducted in the area, an adequate comprehensive theory of drug
use has not yet been fully developed. It is toward the develop-
ment of such a theoretical perspective that the present research
is directed.

Early conceptualizations tended to take an overly simplis-
tic view of drug use. The use of <u>any</u> psychoactive drug or drugs
was seen as related to particular personality or sociocultural
characteristics of the users, and individual differences in type

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or pattern of drug use were ignored (Johnson, 1973; Russell, 1972). Although studies attempting to contrast this "universal drug user" with individuals not using psychoactive drugs have reported some general differences (Cohen & Klein, 1970, 1972; Kohn & Mercer, 1971), they have commonly failed to show any adequate differentiation.

Recent investigators have argued for a more detailed analysis of drug use (Goldstein, Gleason, & Korn, 1975). Individuals may differ in such factors as the type of drug used (e.g., alcohol vs. heroin), number of drugs used (e.g., single vs. multiple drug use), as well as in the frequency of drug use (e.g., occasional vs. regular). Given these variations in use, it would seem probable that individuals conforming to different types of use would also differ along other dimensions. Such factors as individual reactions to various drugs and motivations for use, the "popularity" of particular drugs among different groups of users, and certain socio-psychological and demographic variables may all relate to individual differences in drug use. Consequently, any conceptualization of drug use which equates all types of use is unlikely to provide an adequate explanation of the phenomenon.

Before proceeding further it is necessary to define a number of terms. In the discussion which follows, the term "drug use" is used to refer to self-administered, non-prescribed use of psychoactive substances. Likewise, the term "drug user" refers only to individuals engaging in such use. Medically supervised use of any substance and self-administered use of

such substances as caffeine and tobacco is therefore not considered "drug use" in the present context. In addition, the terms "type" or "pattern" of drug use are used to refer to differences in both: (1) the particular psychoactive drugs used, and (2) the frequency and variability with which they are used. Thus, individuals will be said to differ in their type or pattern of drug use if they either use different substances, or use the same substance(s) but differ in their frequency of use.

Within the context of this research, the use of psychoactive drugs is viewed as a behavior resulting from the complex interaction of various personality, interpersonal, and socio-cultural variables. It should also be noted here that the use of psychoactive drugs is seen as predominantly a social behavior. In a review of the majority of relevant studies conducted prior to 1971, the National Commission on Marihuana and Drug Abuse (1973) found that a substantial number of drug users reported that their initiation into drug use resulted from a need for social approval, enhanced sociability, a better understanding of friends, and/or a shared experience with significant others. Across all studies, the reported reasons for drug use relating to social experiences generally outweighed personal reasons. In addition, over 75% of all high school and college users reported that they were introduced to drug use by a friend, and that they rarely used drugs alone. The commission concluded that drug use is an experience which is perceived by the user as an exciting and pleasurable social activity.[2]

Drug use is also a deviant behavior. That is, with the exception of tobacco and caffeine use, moderate use of alcohol,

and medically sanctioned use of certain stimulants, depressants, and narcotics, the use of psychoactive drugs violates both social and legal sanctions. Consequently, even where use conforms to the norms of a particular social group, it is still viewed as a deviant behavior by the larger society, and has at least the potential for incurring negative consequences to the user (e.g., arrest and imprisonment).

The problem, then, for any comprehensive theory of psychoactive drug use is the identification of those variables and processes in the person and the sociocultural situation which operate together to make the probability of drug use higher than that of nonuse. These variables and processes should account for the circumstances under which an individual will use drugs, differential drug use by persons in the same situation, and the distribution of drug use in different sociocultural locations. That is, an adequate theory of drug use should not only account for whether or not an individual will use drugs, but his/her particular pattern of drug use as well.

One theory which holds promise in this regard is Rotter's (1954) social learning theory of personality. This is the general theoretical perspective adopted in the present research, and will be described in greater detail in a subsequent chapter. At this point, it suffices to say that from this perspective behavior is viewed as the outcome of a choice, selection, or decision process in which alternative behaviors are "sorted" to determine which has the highest probability of maximizing consequences desired by the actor in a particular situation. To account for any behavior therefore requires knowledge of

four interrelated factors: (1) that the behavior has been
learned by the actor and is available in his/her repertoire;
(2) the expectations held by the actor that the behavior will
lead to certain outcomes; (3) the value placed on these out-
comes; and (4) the outcomes perceived by the actor as poten-
tially available in the particular situation. From this per-
spective, then, drug use will occur when it is perceived as
having a higher likelihood of maximizing valued goal attain-
ment than nonuse.

This theoretical perspective is seen as having a number
of distinct advantages when applied to psychoactive drug use.
First, since all learned behavior is viewed as goal directed,
drug use and nonuse are theoretically homogeneous in that the
same principles should account for both. Second, the theory
is sufficiently general in nature to enable it to account for
such a complex behavior as drug use. Previous theories of drug
use have generally focused on one set of determinants to the
exclusion of others. For example, psychological theories have
tended to concentrate on certain "basic personality traits" of
the user (e.g., oral dependency needs), while sociological the-
ories have focused on sociocultural determinants (e.g., socio-
economic status). Neither of these perspectives have been able
to provide an adequate explanation of drug use. The psychologi-
cal approach fails to account for the fact that similar constel-
lations of personality traits may result in different behaviors
under different circumstances, or for the location and distri-
bution in society of these personality attributes. On the other
hand, the sociological approach provides little understanding of

the structures and processes which mediate between a state of society and the occurrence of behavior, and fails to account for individual differences in the relationship between a socio-cultural state and behavior. As Yinger (1963) has emphasized, every behavior is both personal and situational.

In Rotter's theory, personality is conceived of as a _system_. That is, "personality" refers to the organization of relatively enduring psychological structures of the person. The interaction of these elements results in _tendencies_ to respond in certain ways. However, personality does not directly determine behavior. Rather, the response is viewed as a joint function of the personality and sociocultural systems. Behavior reflects both personality-determined dispositions and socioculturally-determined characteristics of the situation in which the response occurs. By considering both of these sets of determinants, the theory promises to provide a more comprehensive explanation of the phenomenon.

LITERATURE REVIEW

The review of the literature which follows is neither exhaustive nor representative of the existing empirical and theoretical literature on psychoactive drug use. Instead, only those findings particularly relevant to the present research are reviewed. These findings may be organized into two broad categories: (1) those concerning the patterns or types of drug use; and (2) those studies reporting factors which differentiate users from nonusers. Since the issue of drug use patterns has received relatively little attention in the literature, the studies reviewed in this section represent, to the best of the author's knowledge, all of the reported findings in this area. In regard to the correlates of drug use, an attempt was made to selectively review the literature. The studies reviewed in this section are representative of the major findings in the area. Studies reporting findings which were either redundant to those presented or contributed little additional relevant information are not reviewed.

Patterns of Drug Use

A number of studies report either correlations between the use of several drugs (Blum, 1969; Johnston, 1973; O'Donnel, et al, 1976), or the extent of use of several drugs in relation to use of a given drug--predominantly marijuana (Goode, 1969; Johnson, 1973; National Commission on Marihuana and Drug Abuse, 1973).

In general, these studies indicate that use of a given drug or drug class is significantly and positively related to use of all other psychoactive drugs. Thus, for example, regular marijuana users are highly likely to have used all other psychoactive drugs (Blum, 1969; Johnson, 1973). However, these studies do not generally reveal detailed patterns of use for the individual. That is, they do not reveal either the specific drugs a given individual is likely to use on a regular basis, or the sequence in which he is likely to use them.

In an intensive study of student drug-use, Blum (1969) collected data from 1,314 drug users attending four colleges and one junior college in the Western United States. A factor analysis of the users' lifetime drug-profile scores revealed four clear factors which accounted for 66.8% of the variance in drug use. Marijuana and hallucinogens loaded highly on Factor I, sedatives and tranquilizers on Factor II, alcohol and tobacco on Factor III, and amphetamines, opiates, and "special substances" (i.e., glue, nitrous oxide, etc.) on Factor IV. Blum considered Factor II to represent a "distress and anxiety diminishing" factor, and Factor III a "conventional social-drug use" cluster. Since amphetamines correlated .33 with marijuana, Factors I and IV were considered to be substructures, with Factor I possibly representing "psychedelic enthusiasts" or "drug experimenters," and Factor IV a "drug immersion factor."

While these groupings appear to have a certain logical validity, the extent to which they correspond to actual patterns of use remains unclear. In a survey of over 2,000 Canadian secondary school students, Russell (1972) described three patterns

of use which accounted for 75% of all drug users: 36% reported marijuana use only; 28% marijuana plus LSD; and 10% marijuana, LSD, and methedrine. On the other hand, Freedman and Brotman (1969) reported only two dominant drug-use patterns among a sample of urban, upper-middle class New York high school students--marijuana only and marijuana plus amphetamines; while Goode (1969) has reported that 88% of all drug use among two samples of New York university students was marijuana only. Thus, with the exception of Russell's marijuana plus LSD usage pattern, none of the reported patterns correspond to Blum's factors. Rather, the two dominant patterns appear to be marijuana use only, and marijuana plus "other substances."

The variance in these findings may relate to a number of factors. First, the samples differed in such demographic characteristics as age, socioeconomic status, and geographical area of residence. Each of these factors has been shown to be significantly related to differences in drug use (Blum, 1969; National Commission on Marihuana and Drug Abuse, 1973; Berg, 1970). Second, although there is ample evidence that most users of illicit psychoactive drugs also use alcohol (Blum, 1969; Bogg, Smith, & Russell, 1969; National Commission on Marihuana and Drug Abuse, 1973), only Blum's study included alcohol use in the reported findings. Conversely, many alcohol users undoubtedly do not use marijuana or other illicit drugs. For example, while only 15% of a national household sample of adolescents had used marijuana, 50% had used alcohol outside of a family setting (Josepheson, Haberman, Zanes, & Elinson, 1972).

Failure to consider the entire range of psychoactive drugs un-
doubtedly alters any reported findings to an appreciable extent.

Recent findings concerning the sequence of drug use sug-
gest a somewhat different approach to distinguishing various
patterns of use. Goldstein, Gleason, and Korn (1975) made both
longitudinal and cross-sectional comparisons of drug use among
over 3,000 students attending Carnegie-Mellon University. The
majority of the sample were males from urban and suburban areas
of the middle Atlantic states. Their analysis indicated that
users most frequently began use with alcohol and tobacco, and
progressed to marijuana, depressants, hallucinogens, and nar-
cotics, in that order. This hierarchical ordering was suffi-
ciently invariable that use of a given drug indicated far be-
yond chance that an individual had used all preceding drugs.
In addition, as one ascends the continuum from alcohol to nar-
cotics, successive drugs are used by fewer individuals (Bogg,
Smith, & Russell, 1969; Hager, Vener, & Stewart, 1971; Wolfson,
Lavenhar, Blum, Quinones, Einstein, & Louria, 1972).

These findings seem to suggest that a primary differenti-
ating factor between various patterns of use is the degree to
which the user has ascended the "drug-use continuum." Thus,
the largest type of use would be expected to be alcohol only,
followed by an alcohol and marijuana type, etc (cf. O'Donnell,
et al, 1976). However, Johnson's (1973) study of marijuana use
among a stratified sample of college students indicates that,
beyond marijuana, patterns of drug use do not invariably conform
to this hierarchical progression. He found evidence for two

distinct "subcultures" of drug use separated along racial lines. Black users were about twice as likely as whites to have used cocaine and heroin; while white users were about twice as likely to have used amphetamines, sedatives, and hallucinogens as blacks. Thus, while both groups used marijuana, black users tended to "bypass" drugs in the middle of the continuum and progress directly to narcotics. Although the sequence of drug use within any single group may be linear, it appears that the specific drugs utilized differs among various user groups.

Studies of drug use among non-students also report varying patterns of use for different groups. Based on observations made as part of an ethnographic field study of the Haight-Ashbury "hippie" community in San Francisco, Davis and Munoz (1968) described three types of use. "Heads" were characterized by their regular use of LSD. This group was composed of individuals of both sexes, in their middle-to-late twenties, and predominantly from middle and upper-middle socioeconomic class backgrounds. "Freaks," on the other hand, were characteristically males from working class backgrounds who rarely used LSD, but used methedrine extensively. The third group was composed of "mixed drug users" who regularly used a wide spectrum of drugs, including both LSD and methedrine. A more recent study (Smith & Gay, 1972) has indicated the existence of a fourth group in the community consisting of regular heroin users.

While these studies provide ample evidence for the existence of different types of psychoactive drug use, the exact nature of these patterns remains unclear. Differences in such critical factors as the number or range of drugs considered, as

well as the age, sex, and other demographic characteristics of
the samples, makes any comparison of these studies difficult.
In addition, the frequency of drug use was rarely examined.
Individuals not only differ in terms of the particular drugs
they use, but in the regularity with which they use them. Thus,
two individuals may both use the same drugs, but differ exten-
sively in their frequency of use. Disparities such as these
may well relate to much of the inconsistency in previous find-
ings.

Correlates of Drug Use

As noted earlier, individual variations in type or pat-
tern of drug use are undoubtedly related to differences in other
personal characteristics of the users. Unfortunately, with the
exception of the Johnson (1973) and Davis and Munoz (1968) stu-
dies, the relationship between patterns of drug use and other
characteristics of the individual has infrequently been exam-
ined. However, a large number of studies have examined the re-
lationship between various personality, social, and/or demogra-
phic variables and either general drug use or the use of a spe-
cific drug--typically marijuana or LSD. For the purposes of the
present discussion, these findings can be conveniently grouped
into three categories: (1) demographic, (2) interpersonal or
social, and (3) personality factors which have been shown to
differentiate drug users from nonusers.

Demographic Factors. The use of psychoactive drugs has
been found to be positively related to socioeconomic background
(Berg, 1970; Haagen, 1970; Leahy, et al, 1972), urban as compared

to rural environment (Bogg, et al, 1969; Blum, 1969; Josephson, et al, 1972), a Protestant or Jewish religious background (Blum, 1969; National Commission on Marihuana and Drug Abuse, 1973), a lack of participation in conventional religious groups and activities (Jessor, et al, 1973; Lavenhar, et al, 1972; Blum, 1969), and parental drug use (Lavenhar, et al, 1972; Blum, 1969; Kandel, 1973, 1974). However, few of these factors have been shown to exhibit any differential relation to the various types or patterns of drug use.

A large number of studies have found drug use to be higher among males than females (Johnson, 1973; Hager, Vener, & Stewart, 1971; Leahy, Steffenhagen, & Levine, 1971). However, Berg (1970) has noted that this is far from a consistent finding. Josephson, et al (1972) and Kohn and Mercer (1971) found no relation between drug use and the sex of the user, while Bogg, Smith, and Russell (1969) found that males were significantly more likely to be users only in urban environments. The inconsistency in these findings may well relate to a failure to consider type of use. The Lavenhar, et al (1972) study reported that while the sexes contributed equally to the overall use of drugs, males and females differed in their patterns of use. Males were more likely to be regular marijuana users, while females were more likely to use amphetamines and barbiturates frequently. Unfortunately, the authors offer no possible basis for accounting for these differences.

Drug use would also appear to increase with age (Josephson, et al, 1972; Blum, 1969; Hager, et al, 1971) or school level

(Leahy, et al, 1971). Kohn and Mercer (1971) found no significant association between drug use and age, but report that use was significantly associated with class level: the majority of users were in their later years of study. On the other hand, Johnson (1973) found no differences in the extent of drug use with increasing class level. Perhaps age also is differentially associated with particular patterns of drug use. Lavenhar, et al (1972) report that the use of marijuana, LSD, and amphetamines increases with age, but not the use of heroin or barbiturates.

Interpersonal Factors. While certain demographic factors are undoubtedly related to drug use, the single factor consistently found most predictive of drug use by any given individual is the number of his/her friends who use the drug (Lavenhar, et al, 1972; Jessor, Jessor, & Finney, 1973; Blum, 1969; Tec, 1972; National Commission on Marijuana and Drug Abuse, 1973; Kandel, 1973, 1974). In fact, the results of Johnson's (1973) study strongly indicate that demographic factors such as sex and religiosity are more highly related to the frequency of drug use than use per se. Thus, a religious, conservative female with many user friends is highly likely to use drugs, but unlikely to be a regular or heavy user.

Kandel and her colleagues (Kandel, 1973; 1974; Kandel, Single, Treiman, & Faust, 1974) examined the relative importance of parental and peer influences on marijuana use among a multiphasic random sample of over 8,000 adolescents representative of New York secondary school students. Twenty-three percent of the adolescents were matched to their parents and best school

friend, allowing comparison of the adolescent's perception of
parental and peer drug use, and the self-reported use of the
parents and best friends. Their results indicated that while
adolescent marijuana use was directly related to the perceived
frequency of parental use of stimulants and tranquilizers, there
was little relation between self-reported parental use of these
drugs and the subject's use of marijuana. However, peer influ-
ences were found to be much greater. The use of marijuana by
the adolescent was directly related to both perceived and self-
reported use by the best friend. In addition, frequency of use
was also directly related to the frequency of the friend's use.
Using a multiple classification analysis (see Cooley & Lohnes,
1971) with 13 predicter variables (e.g., closeness to parents,
political attitudes, etc), Kandel, et al (1974) accounted for
40% of the variance in subjects' marijuana use. Friend's use
alone accounted for 25% of the variance, with the next most
predictive factors (i.e., political attitude and involvement
with peers) accounting for only 8% of the variance. In addi-
tion, demographic variables such as sex, year in school, and
urban vs. rural residence were only minimally related when other
characteristics were controlled. Kandel, et al (1974) conclu-
ded that:

> Marihuana use is clearly the result of attitudinal
> and interpersonal processes and influences rather
> than sociodemographic factors...the importance of
> peers and the role of life-style variables, such as
> political attitude and degree of involvement in peer
> activities, support the hypothesis of an adolescent
> subculture that revolves around the use of marihuana
> (pp. 16-17).

A number of other longitudinal studies are in substantial
agreement with Kandel's findings. Sadava (1973) examined

marijuana use in a longitudinal study of 151 Canadian high school students. His measure of social support for drug use consisted of a 16-item Likert scale assessing exposure to deviant role models, social reinforcement for drug use, and the absence of negative social sanctions. Social support was found to be significantly related to frequency of marijuana use in both the spring and fall of the academic year, with a significant increase between measurements. In addition, it was the most powerful predictor of marijuana use. The multiple correlation using all predictors (i.e., internal-external control, tolerance of drug use, perceived positive and negative consequences of use) was .47, while the social support variable alone correlated .42 with marijuana use.

Jessor, Jessor, and Finney (1973) examined marijuana use among a random sample of high school and college students. Across sex, school level, and intensity of use, marijuana users were consistently found to perceive less compatibility between peers and parents, greater peer relative to parental influence on their views, and more models, pressures, and peer approval for drug use. Of greater interest, however, are their longitudinal findings. Regardless of sex or school level, there was a significant increase in perceived social support for drug use among individual's becoming marijuana users during the year, but not for those remaining nonusers.

There is thus a considerable body of evidence suggesting that individuals use those drugs which are used by their friends. The strength and consistency of this finding has led several investigators (e.g., Goode, 1969; Johnson, 1973; Kandel, et al,

1974) to propose that drug use is primarily a function of the particular subculture in which one is involved. Thus, the predominant differentiating factor among various types of psychoactive drug use may be the "popularity" of the drugs among the users' friends. However, the evidence for such a subcultural theory of drug use has come from studies primarily focused on the use of marijuana (Jessor, et al, 1973; Sadava, 1973; Tec, 1972; Kandel, 1973, 1974; Kandel, et al, 1974; Johnson, 1973; Goode, 1969). Consequently, the extent to which these findings are applicable to the use of any or all other psychoactive drugs has yet to be clearly demonstrated. Indeed, there is some evidence that the use of at least two drug classes is not directly related to peer influences. Johnson (1973) found that regular use of marijuana increases the probability of having used hallucinogenic drugs regardless of whether or not one's friends use them; while Battistich and Huffman (in press) found that opiate use was not related to use by one's friends. Thus, in addition to subcultural influences, such factors as individual reactions to various drugs (Tec, 1972; Haagen, 1972; Faunce & Johnson, 1970) and motivations for use (Wolfson, et al, 1972; Ahmed, 1967) may relate to individual differences in type of drug use.

Personality Factors. In general, investigations of the relationship between personality characteristics and drug use have been disappointing. The majority of these investigations have been clinical studies, and/or have utilized clinical diagnostic instruments such as the Minnesota Multiphasic Personality Inventory (Cohen & Klein, 1970; McAree, Steffenhagen, & Zheutlin,

1972; Rosenberg, 1969; Pittel, 1972; Lombardi, O'Brian, & Isele, 1968; Hill, Haertzen, & Glaser, 1960). In addition, the majority of subject samples in these studies were drawn from psychiatric and prison populations, or non-institutionalized drug addicts (Cohen & Klein, 1970, 1972; Rosenberg, 1969; Pittel, 1972; Cohen, White, & Schoolar, 1971; Hill, et al, 1960; Knight & Prout, 1951; Lombardi, et al, 1968; Gerard & Kornetsky, 1954). Consequently, it is not surprising that these studies typically report an abundance of neurotic and psychotic features characteristic of drug users (e.g., immaturity, passivity, strong dependency needs, difficulty in coping with anxieties), although rarely conclude that a definite psychopathic syndrome is present (Pittel, 1972; McKenna-Hartung, Hartung, & Baxter, 1971; Hill, et al, 1960; Cohen & Klein, 1970; Lombardi, et al, 1968; Gerard & Kometsky, 1954).

While this has been a fairly consistent finding among institutionalized and addict populations, these factors have not been found to reliably differentiate users from nonusers among high school and college populations (Blum, 1969; National Commission on Marihuana and Drug Abuse, 1973; McAree, et al, 1972). Rather, the factors found more predictive of drug use in these more typical user populations are those personality variables which are more cognitive or social in nature (i.e., beliefs, attitudes, values, expectations, etc.). Thus, drug users have been consistently found to be less religious (Jessor, et al, 1973; Blum, 1969; Lavenhar, et al, 1972; National Commission on Marihuana and Drug Abuse, 1973) and less accepting of conventional attitudes and values (Haagen, 1970; Blum, 1969; Cohen & Klein,

1972), and to have "left-wing" political attitudes (Kandel, et al, 1974; Blum, 1969; National Commission of Marihuana and Drug Abuse, 1973), lower expectations for academic achievement (Kandel, et al, 1974; Sadava, 1973; Jessor, et al, 1973), and higher expectations for social acceptance (Sadava, 1973; Kandel, et al, 1974). However, the personality variables which seem most predictive of use are those attitudes and expectations which are more directly related to drug use. That is, drug users have a more positive attitude toward use, expect more positive and less negative consequences of use, and are more tolerant of deviant behavior than nonusers (Sadava, 1973; Jessor, et al, 1973; Kohn & Mercer, 1971; Haagen, 1970; Gorsuch & Butler, 1976).

In sum, those personality variables which are most predictive of drug use appear to be cognitive and/or social in nature, and generally appear to be indirect measures of the individuals' degree of socialization into conventional society (Gorsuch & Butler, 1976). While interpersonal variables appear to play a much stronger role than personality in drug use, the latter undoubtedly makes a significant contribution to prediction. As Jessor, et al (1973) concluded from their study of marijuana use:

> Despite its distal relation to marijuana use, the system of personality variables alone contributed significantly to accounting for the variance in marijuana use and...is, indeed, central to variation in drug use, whether there is high social support for it or not (p. 13).

THEORETICAL PERSPECTIVE AND PURPOSE OF THE STUDY

In this section, attention will be directed toward integrating the empirical findings concerning psychoactive drug use into a comprehensive theoretical perspective. First, the various problems in the extant empirical and theoretical literature will be noted and commented upon. Next, Rotter's (1954, 1955, 1960, 1967) social learning theory of personality will be presented. Finally, an attempt will be made to extend and apply this conceptual framework to the problem of psychoactive drug use; working toward the goal of a comprehensive, logically consistent theoretical system.

Statement of the Problem

The preceding review of the literature has indicated a number of problems. First, there are an inadequate number of studies investigating variations in type or pattern of drug use. Where they exist, methodological differences in such factors as the number of drugs examined and whether or not frequency of use was considered, as well as differences in the subcultural characteristics of the samples, have led to substantial inconsistency. Since the adequacy of any typology is directly related to the comprehensiveness of the original data, there is little useful information regarding differences in type or pattern of drug use and associated characteristics among drug users.

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Second, much of the literature relating various personality, interpersonal, and sociodemographic variables to drug use is contradictory or ambiguous. The majority of previous studies have focused on the use of either one or several drugs across a general population of "drug users." Yet, much of the evidence regarding the relationship between interpersonal and sociodemographic variables and drug use suggests that individuals may differ extensively in type or pattern of drug use as a function of various cultural and subcultural influences. Not only do individuals generally appear to use those drugs which are used by their friends, but such factors as the age and sex of the user may well have a differential relation to drug use as a function of subcultural norms. In other words, these variables may be highly related to a particular type of drug use, yet minimally related to use in general. Consequently, many of the empirical relationships between drug use and other characteristics of users may actually have been derived from specialized subsamples, and hence cannot be generalized to other user populations. If subcultural factors are indeed as important in psychoactive drug use as the evidence suggests, any satisfactory understanding of the phenomenon necessitates consideration of differences in type or pattern of drug use across subcultures. That is, studies of drug use may actually be investigating a particular relationship between culture and personality. If this is indeed the case, the lack of replicability of the various findings relates to the failure to consider subcultural differences between particular samples.

Each of these problems relates to a more basic problem: namely, the lack of a comprehensive theoretical perspective which can serve to integrate the various empirical findings and guide future research. As noted earlier, previous conceptual schemes have tended to focus on one set of determinants (i.e., personality factors or sociocultural factors) to the exclusion of others. While this limitation has been in accord with the maintenance of a strict disciplinary focus, the scope and detail of any explanation of social behavior has been limited by the corresponding limitations of the separate paradigms. As Jessor, et al (1968) have noted, this practice results in numerous "gaps" in the causal chain and reflects the narrow scope of the explanatory network in which social behavior is embedded. What is needed, then, is the development of a more comprehensive explanatory system which can encompass and integrate the sociocultural and personality approaches into a single coherent system. That is, an interdisciplinary "social-psychological" framework which "...assumes a knowledge not only of the main facts about the social structure...but also of the main facts about the personalities operating in that structure" (Inkeles, 1959, p. 273). Examples of such interdisciplinary conceptual schemes may be found in the work of Lewin (1951), Parsons and Shils (1951) and Gillin (1954). More recently, this perspective has been applied to the analysis of several areas of social behavior (Yinger, 1968; Inkeles & Levinson, 1963), including deviant behavior (Jessor, et al, 1968; Akers, 1973).

In order to realize such a comprehensive explanatory framework, the variables selected should meet a number of requirements (Jessor, et al, 1968). First, they should be of sufficient abstractness to permit certain essential properties of social behavior to be revealed. Thus, the concepts should constitute more than mere description of surface characteristics. Second, the concepts selected from each set of determinants should suggest implications for concepts in the other set. That is, personality variables should be selected which allow coordination with sociocultural variables, and vice versa. Finally, the concepts should have clear implications for the behavior in question, for it is behavior which lies at the intersection of personal and social processes. To the extent that these conditions are fulfilled, there should result a "structural identity" between the personality and sociocultural systems which provides the basis for their systematic and conceptual coordination with behavior (Inkeles & Levinson, 1963).

One approach which meets the foregoing requirements, and the perspective selected for the present research, is Rotter's (1954, 1955, 1960, 1967) social learning theory of personality. This approach is seen as particularly suited to the present investigation as the component structures are delineated at the level of the "social personality" (Inkeles, 1953), and refer to cognitive variables which are the outcomes of patterned exposure to the sociocultural environment. Consequently, they allow for the construction of a relatively direct linkage with their correlates in the sociocultural system. In addition, the resulting framework should be sufficiently abstract to be

applicable with only minor modifications to analysis of other
deviant social behaviors (e.g., juvenile delinquency). In this
regard, the author's extreme indebtedness to Richard Jessor
and his colleagues (Jessor, et al, 1968) for their general the-
ory of deviance will be apparent.

Rotter's Social Learning Theory

Rotter's (1954, 1955, 1960, 1967) social learning theory
of personality is essentially concerned with cognitive learning
or central processes, rather than with peripheral motor respon-
ses. Personality is thus conceived of as the outcome of learn-
ing, and is represented in systems of preferences and of expec-
tation which mediate goal-directed behavior tendencies. The
term "social" conveys the concern of the theory for the inter-
personal or societal mediation of the significant learnings,
rewards, and punishments experienced by individuals. That is,
the individual's beliefs, values, and expectations are consid-
ered as outcomes of interpersonal transactions or interactions
which take place in a socially defined context. This context,
in turn, endows the objects and actions of social interchange
with meaning.

The fundamental concepts in Rotter's theory are: (1) _ex-
pectation_ (E), which refers to the subjective probability held
by an individual that a specific behavior will lead to the occur-
rence of certain outcomes; (2) _reinforcement value_ (RV), or the
individual's preference for these outcomes; (3) _behavior poten-
tial_ (BP), or the probability of a behavior occurring; and (4)
the _psychological situation_ (S), or the individual's perception
or interpretation of the immediate context of action.

Prediction or explanation at the personality level is based on the following formula generated from the basic concepts: BP = f(E + RV). That is, the likelihood of any behavior occurring in a given situation is some function of the expectation that it will lead to a certain outcome, and the value placed on that outcome. The psychological situation is implicit in that each of the terms in the formula is coordinated to the situation. Consequently, the magnitude of each term varies as the situation varies. Actual behavior always involves a process of selection of that particular behavior in a repertoire which is perceived as having the highest probability of securing gratification in a given context.

Through the processes of socialization and experience, various specific behaviors become functionally related as a consequence of their substitutability in leading to classes of similar goals. Likewise, specific goals become functionally related through their interchangeability in reinforcing certain behaviors. These sets of functionally related behavior potentials are termed need potential (NP). The mean expectancy of obtaining gratification characteristic of a set of related behaviors is called freedom of movement (FM). Finally, the mean preference value of a set of goals is referred to as need value (NV). Thus, it is possible to state a more generalized formula analogous to the basic formula: NP = f(FM + NV). That is, the probability of occurrence of a set of functionally related behaviors in relation to a set of similar goals is a function of the mean expectancy for these behaviors securing these goals, and the mean value placed on the set of goals. In this manner the

theory can be applied to either a general class of behaviors (e.g., deviant behaviors) or a specific member of that class (e.g., drug use) while maintaining the basic theoretical logic.

The sets of functionally related behavior potentials may be considered the needs or motives of Rotter's theory. However, these needs are not considered dependent on physiological referents. Instead, they are conceptualized as predispositions to respond in certain ways, whose nature and organization are consequences of the social learning experiences and enculturation of the individual. In as far as they represent the outcome of social learning, they reflect in large measure the patterns of valuation and success and failure with which the culture has confronted the individual.

Finally, the substantial importance attached to the psychological situation should be emphasized. In Rotter's theory individuals are not seen as conglomerations of traits or attributes which determine behavior irrespective of the context of its occurrence. The situation is seen as not only influential in determining the relative strength of the behavioral tendencies, but also in determining the process of selection among them leading to action. Consequently, the situation is describable in terms parallel to those used to describe persons (e.g., in terms of the various goals available, etc.). The psychological situation is thus the environment of learned meanings constituted predominantly of the social definitions of the world in which the individual is embedded. It therefore provides the bridge between personality and the sociocultural environment.

This brief description of Rotter's theory will serve as the framework for an analysis of psychoactive drug use. Consistent with this perspective, discussion will center around factors seen as influencing the individual's _expectation_ that drug use will lead to certain outcomes, and the corresponding _preference_ or _reinforcement_ _value_ of these outcomes. In overview, Rotter's theory predicts that the greater the expectation that drug use will lead to preferred or positively-valued outcomes, the greater the probability that it will occur. Since these expectations and valuations are considered outcomes of patterned exposure to the sociocultural system, various sociocultural factors which are seen as conducive to drug use will be discussed first.

The Sociocultural System

According to Rotter's theory, drug use, like other behaviors, is goal directed. That is, it is a learned way of seeking and securing gratification or success and of coping with frustration and failure. Any analysis of factors conducive to drug use, then, should begin with consideration of the possible gratifications or goals obtained from engaging in the behavior.

Leighton, Clausen, and Wilson (1957) have proposed that the possible goals of drug use fall into two classes: (1) tension release;[3] and (2) enhancement of a sense of group membership, _as_ _much_ _by_ _the_ _shared_ _act_ _of_ _use_ as by any intrinsic effects of the drug. While either or both of these may serve as the dominant motivation for drug use in any individual case, the preceding review of the literature strongly suggests that

the latter goal is typically of greater import. That is, drug use appears predominantly the outcome of social rather than personalistic motivations. However, the use of drugs is only one of many possible means of attaining these goals.

Considering drug use as a deviant behavior, one would expect that individuals typically hold low expectations for drug use leading to desired outcomes. With the exception of certain restricted types noted earlier (e.g., moderate use of alcohol), the use of psychoactive drugs is generally likely to entail more negative than positive outcomes for the user. For example, such costs as the risk of arrest, negative evaluation by non-using peers, the user's family, and other conventional groups (e.g., school and church groups), as well as any negative effects of drugs themselves (e.g., addiction), would be expected to overshadow such positive outcomes as tension release and the satisfaction of affiliation needs. This is particularly true in that these positive outcomes could be obtained through non-deviant behaviors without the large risk of negative consequences. Consequently, the sociocultural factors which induce an individual to use drugs must be those which increase the expectation that deviant behavior will lead to positive outcomes, and/or decrease the expectation that such behaviors will be punished (i.e., lead to negative outcomes).

Since the outcomes attainable through drug use may also be attained through legitimate, nondeviant behaviors, the socio-cultural factors which serve as an instigation to deviance are likely to be those factors which inhibit the individual's socialization into conventional society. One of the primary functions

of socialization is to make the individual responsive to the
normative structure of the society. This structure may be de-
fined as a set of socially defined standards or expectations
about appropriate modes of behavior, the violation of which
results in the application of some pattern of sanctions--i.e.,
punishment (Merton, 1959; Jessor, et al, 1968). To the extent
that this structure is operative, there will be significant
pressures against the occurrence of deviant behavior. Thus,
the more conventionally socialized the individual, the less
likely s/he should be to adopt illegitimate means of goal at-
tainment. Conversely, to the extent that normative constraints
against deviance are reduced, there should be a greater insti-
gation to attain goals through illegitimate means such as drug
use.

Durkheim (1951) and Merton (1957) have suggested a number
of conditions which may result in a breakdown of the normative
structure; a condition they refer to as "anomie." One such
condition is low consensus on norms. When a norm is not widely
shared there is uncertainty about appropriate behavior. Sec-
ond, even when norms are widely shared they may lose their moral
authority, and hence their effective influence on behavior.
Finally, and related to a loss of moral authority, there may
be a decline in the application of sanctions for normative vio-
lation. As Jessor, et al (1968) have noted, the moral author-
ity of norms derives in large part from the fact that adherence
is rewarding in the long run, even in the negative sense that
it avoids the possibilities of punishment. Thus, to the extent

that sanctions are not applied, norms may no longer serve to inhibit deviance.

One index of the degree to which norms are likely to inhibit deviance is the extent to which the individual is exposed to the social institutions responsible for instilling a sense of normative obligation. The communication of appropriate modes of behavior is largely the responsibility of social institutions such as the family, school, and church groups. An individual who participates in these groups will be exposed to pressures serving to inhibit deviance, and is therefore unlikely to engage in deviant behaviors such as drug use. In other words, participation in conventional, non-deviant groups is incompatible with engaging in deviant behavior.

The preceding review of the literature suggests that this is indeed the case. Individuals who use psychoactive drugs are unlikely to be active participants in school or church groups (Blum, 1969; National Commission on Marihuana and Drug Abuse, 1973). In addition, drug users have been found to be less accepting of the norms and values of society (Cohen & Klein, 1972), and to have little respect for social institutions (Gorsuch & Butler, 1976). Thus, one sociocultural factor conducive to deviance appears to be inadequate interaction with the socializing agents of society, leading to a lack of normative constraints on behavior.

A second set of sociocultural factors possibly conducive to the adoption of illegitimate means are those which restrict the individual's access to legitimate, nondeviant means of goal attainment. That is, to the extent the individual feels that

valued outcomes are unattainable through nondeviant behaviors, there should be a greater instigation to deviance. The importance of this aspect of the social environment is conveyed in Merton's (1957) concept of "value-access disjunction," Nadel's (1957) emphasis on the degree of command over existing benefits and resources, and may be seen as a large part of the conceptual meaning of "social class" (Hollingshead & Redlich, 1958). In addition, it is also the focus of Rotter's (1955) concept of "freedom of movement."

Merton (1957) documents the overwhelming emphasis placed on success or achievement values in American social life, but points out that the institutionalized or legitimate channels for achieving these goals are not uniformly distributed throughout society. In particular, the lower social strata and certain ethnic and racial minorities occupy disadvantaged positions with respect to access to legitimate means of goal attainment (e.g., education, participation in socially influential groups, etc.). According to Merton's theory of anomie, it is this "disjunction" between the pervasive value emphases of the culture and the socially-structured limitations on legitimate access to these goals which generates pressure toward the adoption of deviant, illegitimate means of achieving success and coping with failure. The distribution of access to legitimate opportunities, and therefore of value-access disjunctions, parallels the hierarchy of socioeconomic status and membership in ethnic or racial minorities. Consequently, this sociocultural source of pressure for deviance would be expected to be concentrated in the lower social strata. Thus, location in the

"opportunity structure" (Jessor, et al, 1968) may serve as an
index of the degree of instigation for the use of illegitimate
means of goal attainment. In addition, patterned exposure to
such differential opportunity should result in differential
expectations of achieving valued goals through legitimate means.
This factor may partially explain drug users' disdain for social
institutions and conventional norms and values, as well as the
findings that use of "hard" drugs such as opiates (as opposed
to "soft" drugs such as alcohol and marijuana) tends to be nega-
tively related to socioeconomic status (National Commission on
Marihuana and Drug Abuse, 1973) and positively related to mem-
bership in ethnic or racial minorities (Johnson, 1973).

Limited access to legitimate opportunities for goal at-
tainment and the lessening of normative constraints on behav-
ior are thus two sociocultural factors which may serve to in-
crease the probability of an individual engaging in deviant
behavior. However, these factors are not directly conducive
to the use of drugs. That is, they may serve as an instigation
to deviance per se, but not necessarily to drug use in parti-
cular. In order to adequately account for drug use, those soci-
ocultural factors which bear directly on this particular form
of deviance must be examined.

It is in this regard that peer influences on drug use would
seem of crucial importance. The emphasis here is on socially
patterned opportunities for learning and performing deviant be-
haviors, and the nature and operation of the sanction systems
for discouraging such behavior. The opportunity to learn and
engage in deviant behaviors is considered an important causal

agent in Sutherland's (1955) "differential association" theory of criminal behavior, as well as Cloward's (1959) and Cloward and Ohlin's (1960) analysis of delinquency. Cloward and Ohlin's general thesis is that socially patterned and differentially distributed access to illegitimate means can usefully refer to differences in the exposure of individuals to the everyday manifestations of deviant behavior by other persons in the environment. Consequently, they argue that such opportunities influence not only the likelihood of deviant behavior, but also the specific <u>form</u> of deviance. Thus, this factor may not only serve to account for drug use, but also the particular type or pattern of drug use manifested by the individual.

The preceding review of the literature indicated that individuals who use psychoactive drugs are likely to have friends who use drugs. These friends not only supply the opportunity to observe and engage in deviant behavior, but may also demonstrate the absence of negative consequences, thereby serving to weaken pressures against its occurrence. Consequently, to the extent the individual is exposed to and interacts with drug users, s/he should be more likely to use drugs. In addition, since these individuals serve as the person's models of drug use, the individual's usage pattern should largely conform to that of his/her friends.

In summary, three factors in the sociocultural system have been identified which would appear to influence the probability of an individual using drugs: (1) restriction of access to legitimate means of goal attainment; (2) a lessening of normative constraints against deviant behavior; and (3) opportunities to

observe and engage in the use of drugs. Each of these factors may be seen as related to the degree of socialization in conventional society in that each serves to weaken the effectiveness of the culture's means of social control. In addition, the first two factors may be seen as related to the instigation of deviant behavior in general, while the third is most related to the particular form of deviance--drug use, in this case.

It should also be noted that these factors are probably not independent, but interdependent to some greater or lesser degree. For example, restriction of access to legitimate means of goal attainment in itself probably serves to lessen normative constraints against the adoption of illegitimate means. Further, any decrease in the effectiveness of social control may lead to an increase in the frequency of deviant behavior in the social environment. Thus, more opportunities to learn and perform deviant acts would be provided. Conversely, interacting with individuals who engage in deviant behavior is likely to be incompatible with participation or interaction with non-deviant individuals and groups, thereby lessening exposure to normative sanctions, etc. These structures in the sociocultural environment may thus be viewed as comprising a system of interrelated structures, each interacting with the others to provide a greater or lesser instigation to engage in deviant acts such as drug use.

The Personality System

While certain conditions in the sociocultural system may account for the differential distribution of deviant behavior

across various social groups, such factors are not capable of accounting for differential behavior <u>within</u> a given segment of society. For example, not every member of the lower social strata adopts illegitimate means of goal attainment; nor do all individuals who interact with drug users become users themselves. In order to account for these individual differences, characteristics of the individual personality must be examined.

Consistent with Rotter's theoretical framework, the personality factors to be discussed are considered a consequence of patterned exposure to the sociocultural system. That is, they refer to attitudes and expectations which are the result of social interaction. In addition, these factors parallel those of the sociocultural environment. They refer in some sense to the extent to which the individual is responsive to agents and institutions of social control, and therefore reflect the adequacy of socialization into conventional society. However, whereas the factors discussed in the preceding section referred to mechanisms of <u>social</u> control, these factors are considered to represent the degree of <u>personal</u> control over behavior.

One personality factor which seems of crucial importance is the individual's attitude toward deviance. This variable may be seen as reflecting the degree of personal acceptance or tolerance of transgressions from socially approved behavior, and is thus probably an index of the degree to which social norms have been internalized. To the extent that the normative structure has been internalized the person should hold a negative attitude toward deviance, and deviant behavior should be

personally aversive. That is, engaging in deviance should result in negative self-attributions, a loss of self-esteem, and other aversive consequences. Therefore, the individual should be less likely to engage in deviant behaviors such as drug use.

The relation of the individual's attitude toward deviance and actual behavior may be seen as mediated by the concept of expectancy. That is, holding a neutral or positive attitude toward deviance may indicate a low expectation that such behavior will lead to punishment, and/or an expectation that deviant behavior is required to achieve valued goals. Since expectations of punishment operate to inhibit behavior in Rotter's theory, tolerance of deviance should be conducive to its occurrence. Thus, the less negative the attitude toward deviance, the more likely the use of psychoactive drugs.

A second personality factor which is more directly related to drug use is the individual's expectations concerning use itself. That is, while an individual may be tolerant of deviance in general, s/he may expect the use of drugs to lead to negative outcomes (e.g., addiction, overdose, etc.). Therefore, the use of drugs should be less likely. In addition, these expectations may differ depending on the particular drug, and therefore be related to the type or pattern of drug use. For example, an individual may view use of alcohol or marijuana as relatively harmless, but expect use of opiates or barbiturates to lead to extremely negative outcomes. Consequently, the individual would be much more likely to use the former substances than the latter.

As with factors in the sociocultural system, these personality factors are probably related. For example, holding a positive expectation for drug use may generalize to other forms of deviant behavior and increase the individual's tolerance for deviance, or vice versa. In addition, these factors should theoretically be related to the various sociocultural factors. Restricted access to legitimate means of goal attainment and/or a decrease in normative constraints on behavior may each serve to increase an individual's tolerance for deviance. Likewise, the opportunity to observe and interact with drug users may lead to a greater expectation that drug use will lead to positive outcomes. Groups of friends tend to be highly similar in terms of attitudes and norms (Heider, 1958; Newcomb, 1961), especially in so far as these attitudes are relevant to group functioning (Cartwright & Zander, 1968). Thus, individuals who interact with drug users should be more tolerant of deviant behavior and expect more positive consequences from drug use. Following Rotter's perspective, these interrelations are a logical necessity. In order for the individual to mediate the relation between the sociocultural environment and deviant behavior, his/her personality must reflect to some degree the consequences of patterned exposure to that environment.

The theoretically expected relations and interrelations between the sociocultural system, the personality system, and drug use are schematically summarized in Figure 1.
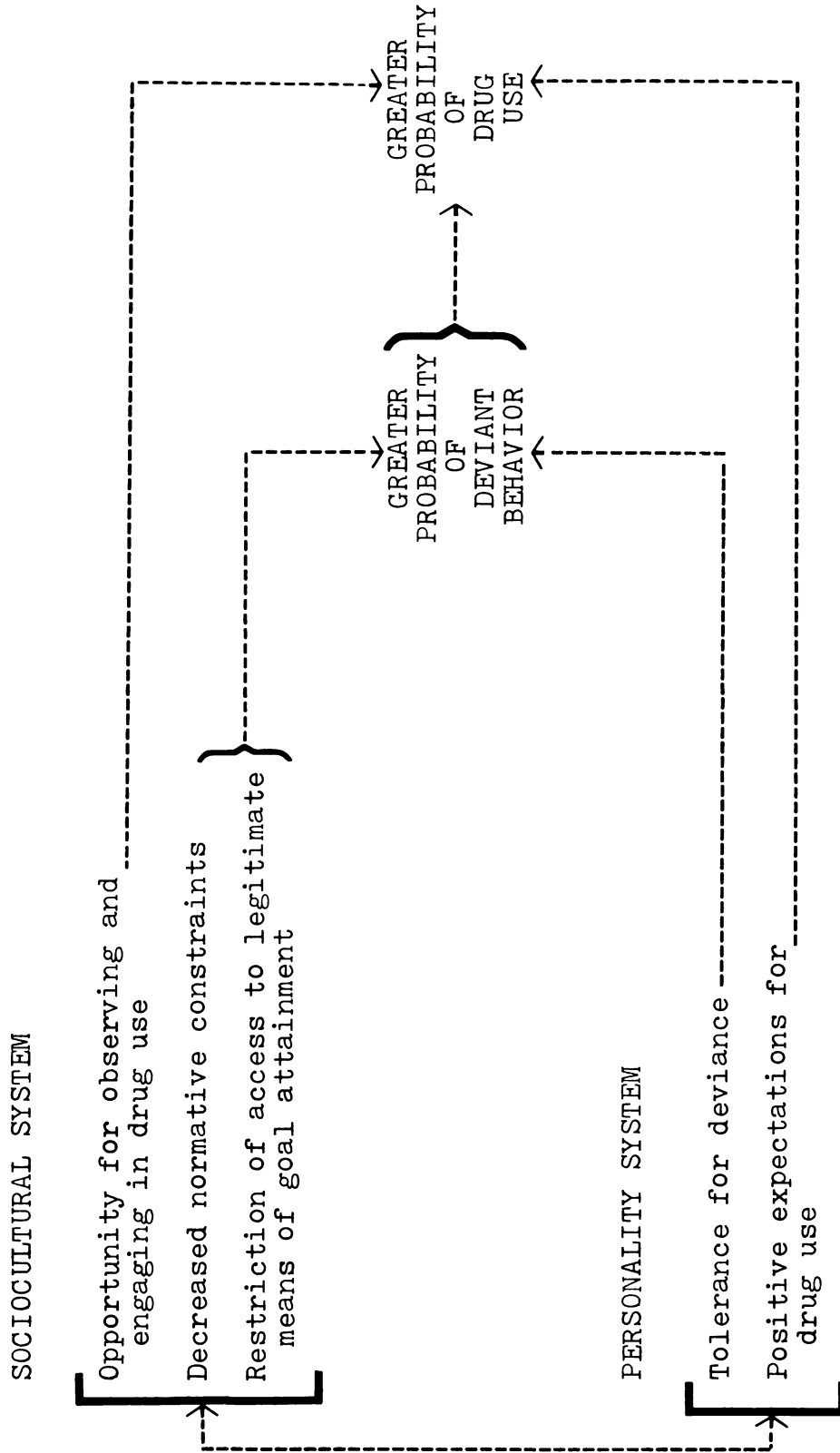
FIGURE 1

Sociocultural and Personality Influences on Drug Use

Purpose of the Study and Hypotheses

The purpose of the present research is to examine the factors influencing individual differences in psychoactive drug use. A review of the relevant empirical literature demonstrated that there is insufficient knowledge regarding variations in type or pattern of drug use. In addition, the relationship between these variations in use and associated characteristics of the individual is unclear. This ambiguity in the previous research is considered the result, in part, of a lack of any comprehensive theory of psychoactive drug use. In an attempt at developing such a conceptual framework, Rotter's (1954, 1955, 1960, 1967) social learning theory was applied to an analysis of drug use as a deviant social behavior. Consistent with this perspective, a number of sociocultural and personality factors were identified which should influence: (1) the likelihood that an individual will use psychoactive drugs, and (2) the particular drugs s/he is likely to use. As a result of this analysis, the following general thesis is advanced:

> Individuals will differ in their type or pattern
> of drug use as a function of specific combinations
> of sociocultural and personality influences.

The validity of this proposition will be demonstrated through a test of the following hypotheses:

1. The number of individuals reporting use of a
   given drug will vary inversely with the sev-
   erity of normative sanctions against its use.

Hypothesis One is directly related to the conceptualization of drug use as a deviant social behavior. Societal norms define which drugs an individual is allowed to use and place restrictions on the situations in which use is permitted.

Violation of these sanctions results in some form of punish-
ment. Drugs whose use is socially sanctioned have few social
and legal restrictions on their use. Consequently, the user
does not typically risk punishment, and these drugs are likely
to be used by relatively large numbers of individuals. On the
other hand, use of drugs with relatively severe social and le-
gal sanctions against use involves a sizeable risk of punish-
ment, and these drugs will therefore be used by comparatively
few individuals. In other words, it is reasoned that use of
such drugs as alcohol and marijuana does not imply that an in-
dividual is willing to use any or all other drugs. For exam-
ple, while the use of marijuana, moderate use of alcohol, and
medically sanctioned or occasional self-prescribed oral use
of amphetamines and barbiturates may be viewed as acceptable
by sizeable numbers of individuals, it is likely that few would
perceive frequent or intravenous use of amphetamines and bar-
biturates, or virtually any form of heroin use as acceptable
behavior. Thus, while the overall proportion of users of any
given drug may vary greatly across different subcultures, even
among groups characterized by extensive drug use the propor-
tion of users should decrease as the severity of use-related
penalties increase.

2.　(a)　Individuals who use drugs with relatively
　　　　　severe normative sanctions against use
　　　　　(i.e., "hard" drugs) will be more restric-
　　　　　ted in access to legitimate opportunities
　　　　　for goal attainment than nonusers of these
　　　　　drugs.

　　(b)　Individuals with a relatively high fre-
　　　　　quency of drug use will be more restric-
　　　　　ted in access to legitimate opportunities

>for goal attainment than individuals
>with a relatively low frequency of
>drug use.

One sociocultural factor identified as likely to induce an individual to use psychoactive drugs is restriction of access to legitimate opportunities for goal attainment. It was reasoned that an inability to achieve valued goals by normative means would result in the use of deviant means of goal attainment such as drug use. Since access to legitimate opportunities parallels to a large extent socioeconomic status and membership in ethnic or racial minorities, individuals in the lower social strata and minority group members should experience relatively greater pressure to use drugs. However, there are a number of reasons why this relationship is expected to apply predominantly to the use of "hard" drugs, rather than drug use per se. First, "soft" drugs have relatively few or minor social and legal restrictions against their use, and are therefore likely to be used by many individuals regardless of their location in the socioeconomic structure of the society. Consequently, one would expect that socioeconomic status and minority group membership would not show a consistent relationship to use of these drugs. On the other hand, use of "hard" drugs is restricted to those individuals who are willing to violate societal norms, and restriction of opportunities provides one source of pressure to engage in socially unacceptable behavior. Second, restriction of opportunities is likely to result in frustration, and may motivate the individual to attempt an "escape" from the undesirable situation. Since those substances with powerful euphoriant and/or analgesic properties

are predominantly "hard" drugs (e.g., opiates, barbiturates, and cocaine), one would expect that the use of these substances is more consistent with such escape motivations. On the other hand, while restriction of access to legitimate opportunities for goal attainment may not be highly related to use per se of "soft" drugs, it is likely to be related to the frequency with which any drug is used. For example, while individuals from lower socioeconomic strata are not more likely to use alcohol, those who drink are more likely to be heavy drinkers than individuals from higher socioeconomic strata (Cahalan, Cissin, & Crossley, 1969). Thus, one would expect that individual users whose access to opportunities is restricted would show a higher frequency of use for both "soft" and "hard" drugs.

3. (a) Individuals who use psychoactive drugs will interact with prosocial, nondeviant groups to a lesser extent than will non-users.

   (b) This relationship will be stronger for use of "hard" drugs than use of "soft" drugs.

   (c) Individuals with a relatively high frequency of drug use will interact less with prosocial, nondeviant groups than will individuals with a low frequency of use.

A second sociocultural factor considered as having a significant relationship to drug use is a lessening or absence of normative sanctions. Social groups such as religious institutions are seen as having a significant role in communicating and enforcing societal norms. That is, these groups are considered "prosocial" in the sense that they serve to reinforce and thereby maintain the norms and values of the larger society.

Individuals who participate in these groups are exposed to pressure to conform to these norms, and are therefore unlikely to engage in deviant behaviors such as drug use. Thus, to the extent that participation or interaction with these groups is minimal, there should be a greater likelihood of drug use. However, since various drugs differ in the extent to which their use is considered deviant, use of "hard" drugs should be less compatible with participation in prosocial groups than use of "soft" drugs. For example, while certain religious groups accept the use of alcohol (e.g., Catholic, Jewish, liberal Protestant), they do not accept the use of heroin. Thus, an individual who participates in these groups may use alcohol, but is unlikely to use heroin. On the other hand, extensive use of virtually any drug is considered deviant in this society. Thus, extensive interaction with prosocial groups should be incompatible with a high frequency of use of any drug.

4. (a) Individuals who use psychoactive drugs will have more opportunities for observing and interacting with drug users than will nonusers.

    (b) Individuals with a relatively high frequency of drug use will have more opportunities for observing and interacting with drug users than will individuals with a relatively low frequency of use.

5. (a) Individuals with a relatively high frequency of drug use will participate in drug use with other users to a greater extent than will individuals with a relatively low frequency of use.

    (b) The more severe the normative sanctions against the use of a particular drug, the greater the extent of the individual's participation in drug use with other users, relative to nonusers of that drug.

Perhaps the single most important sociocultural factor
inducing an individual to use drugs is the extent to which the
social environment provides opportunities for learning about
the effects and consequences of drug use. Given that an in-
dividual is motivated to engage in deviant behavior, the fre-
quency with which various illegitimate activities occur in the
social environment is likely to have a direct influence on the
particular form of deviance the individual is likely to parti-
cipate in. Thus, the greater the opportunities for an indi-
vidual to observe and interact with drug users, the higher the
likelihood s/he will use drugs. Likewise, one would expect
that opportunities for observing and engaging in drug use would
relate to the frequency with which drugs are used. The occur-
rence of deviant behavior in the individual's environment pro-
vides social support for deviancy. While an individual may
engage in a deviant behavior such as drug use on one or two
occasions out of mere "curiosity," s/he is unlikely to repeat-
edly engage in the behavior as long as it entails a signifi-
cant risk of punishment. Consequently, individuals with a rela-
tively high frequency of drug use would be expected to perceive
more social support for use (i.e., a lower risk of negative
outcomes) than individuals who engage in a lower frequency of
use. In addition, actual participation in drug use with other
drug users undoubtedly influences the individual's drug use.
Interaction with other drug users may be seen as serving to sup-
port and maintain the individual's use of drugs. Consequently,
one would expect that individuals with a high frequency of use
would be more extensively involved with other drug users than

individuals with a low frequency of use. Further, since the penalties imposed on the use of various drugs differ in severity, this factor would be expected to differ across various types of use. Individuals utilizing drugs whose use is socially sanctioned are subject to relatively few pressures to terminate use, and thus have comparatively little need for the support of a particular social group. On the other hand, the support of other users would seem extremely important in maintaining use of drugs which are subject to severe societal deterrants. Thus, the more severe the normative sanctions against use of a particular drug, the greater the expected interaction with other drug users.

6. An individual's type of drug use will conform to the type of use characteristic of his/her particular social group (i.e., his/her friends).

The reasoning for this hypothesis closely parallels that of Hypotheses 1 and 4. An individual's friends are seen as having a direct influence on his/her use of drugs, and groups of friends are likely to differ in their acceptance of the use of various drugs. Thus, for example, one's friends may enthusiastically accept and encourage the use of marijuana, but be extremely negative toward the use of heroin. Consequently, the use of heroin carries the risk of being ostracized from the group, and the individual would therefore be unlikely to use it. The drugs an individual's friends use are likely to be the only drugs whose use they accept, and the individual would therefore be expected to conform closely to his/her friends' pattern of use.

7. (a) Individuals who use psychoactive drugs will be more tolerant of deviance than nonusers.

(b) This relationship will be stronger
for individuals using "hard" drugs
than those using "soft" drugs.

Since the use of most psychoactive drugs is a deviant be-
havior, to the extent the individual has internalized the norms
of society, s/he should be less likely to engage in drug use.
In addition, the more a particular type of drug use constitutes
a normative violation, the more tolerant of deviance an indi-
vidual who conforms to this type of use would be expected to
be. Thus, individuals who use "hard" drugs should be more tol-
erant of deviance than individuals who use "soft" drugs.

8. Users of a given drug will have more posi-
tive expectations concerning drug use and
will evaluate use more favorably than non-
users.

In addition to being tolerant of deviance in general, an
individual who engages in psychoactive drug use should find
that activity rewarding. That is, s/he should have positive
expectations about drug use and evaluate it favorably. On the
other hand, individuals who hold negative expectations about
use of a particular drug should evaluate its use unfavorably,
and would therefore not be expected to use the drug.

In addition to these hypothetical relationships between
sociocultural and personality factors and drug use, the con-
ceptual scheme proposed to account for drug use requires a num-
ber of interrelationships among the predictor variables. Spe-
cifically, there should obtain a significant relationship among
these factors both within and between the sociocultural and
personality systems. In addition, the magnitude of these rela-
tionships should differ according to the manner in which the

various factors are seen as related to drug use. Thus, those factors which are directly related to deviant behavior and only indirectly related to drug use _per_ _se_ (i.e., decreased normative constraints, restriction of access to legitimate means of goal attainment, and attitudinal tolerance for deviance) should be more related to each other than to those factors specifically related to drug use (i.e., opportunity for observing and engaging in drug use and positive expectations for drug use). Likewise, the latter factors should be more related to each other than they are to the former, indirect factors. Thus, while each of the factors should be significantly related both to drug use and to each other, the magnitude of these relationships should vary as a function of the particular "pathway" through which they are theoretically linked to the behavior in question (i.e., directly or indirectly).

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METHOD

Instrument

A ten-page anonymous questionnaire assessing demographic characteristics, drug use characteristics, involvement with drug-using peers, and personality characteristics was constructed for the study. A complete copy of the questionnaire may be found in Appendix A. In addition, a cover letter was included with the questionnaires which assured respondents that all information would be held strictly confidential and should be given anonymously, and indicated where and when copies of the results would be available. A copy of the cover letter may be found in Appendix B.

A Note on the Validity of Self-Report Measures. Since the use of most psychoactive drugs is currently illegal, there is reason to be concerned about the truthfulness of information concerning drug use obtained solely through self-reports of the users. For example, drug users may not admit to using certain substances out of fear of discovery and subsequent punishment, social undesirability, or for similar reasons. Alternatively, since drug use may contribute to an individual's status in certain subcultures, respondents may report use of substances which in fact they have never experienced. While the use of anonymous questionnaires and various other procedures for insuring the confidentiality of responses (see Appendix D) may

considerably reduce the underreporting of drug use, such pro-
cedures do little toward reducing overreporting on the part of
respondents. Consequently, some means of assessing the truth-
fulness of responses is desirable.

In this regard, a number of previous studies have demon-
strated the validity and reliability of self-report measures
for inquiring about drug use (Whitehead & Smart, 1972; King,
1970; Petzel, Johnson, & McKillip, 1973). For the purposes
of the present study, respondents were asked about their use
of a bogus drug (i.e., "Salazone") as a check on the validity
of responses. No subject reported use of this nonexistant sub-
stance. Thus, one may be reasonably confident that respondents
were truthful in reporting their use of drugs.

Subjects

The preceding review of the literature indicated that in-
dividuals differ extensively in their use of psychoactive drugs
as a function of membership in a particular drug-using "subcul-
ture." That is, individuals appear to use those drugs which
are used by their friends, and groups of friends which are lo-
cated in different positions within the sociocultural environ-
ment may also differ extensively in their patterns of drug use.
Consequently, an attempt was made in the present research to
obtain two groups of subjects differing in subcultural member-
ship. The first group of subjects (n = 51) were drawn from
individuals utilizing the services of the Counseling Center on
the campus of a large midwestern university. Since clients of
the Counseling Center must be members of the university community

(i.e., students, faculty, staff, or their spouses or dependents), this group of subjects will subsequently be referred to as the "College Sample." The second group of subjects (n = 72) were drawn from individuals utilizing the services of the local Drug Education Center (DEC). The services of the DEC include counseling and medical treatment for drug use problems, the dessemination of information about drugs, as well as general health care services. These services are available to anyone without cost, largely on a "walk-in" basis. Consequently, although a number of university students utilize their services, the DEC's clientele also includes high school students, non-students, and "street people" (i.e., transients and other individuals who maintain only a marginal membership in the community). This group of subjects will subsequently be referred to as the "Street Sample."

All subjects in both samples voluntarily completed and returned questionnaires. However, since the questionnaire was rather complex and required some time to complete (approximately one hour), the majority of subjects in the Street Sample (n = 60; 83%) were given a lottery ticket for responding to the questionnaire. The remainder of subjects in the Street Sample (n = 12) and all subjects in the College Sample were not offered an incentive for participating in the study.[4] A comparison of the demographic and drug use characteristics of individuals in the Street Sample who were not offered an incentive with subjects who received a lottery ticket for participating in the study is included in Appendix C. Briefly, the two subsets of subjects were found not to differ significantly in terms

of drug use or any demographic characteristic except class level: students in the Street Sample who completed the questionnaire without incentive were more likely to be graduate students than those who received a lottery ticket (33% vs. 5%, respectively; Kendall's Tau C = -.21; $p < .05$).

A summary of the demographic characteristics of the two samples is presented in Table 1. As can be seen, the two samples differ in terms of sex, χ^2 (1) = 12.05, $p < .001$, age, $F(1,118) = 7.12$, $p < .01$, marital status, χ^2 (2) = 7.08, $p < .05$, and class level, $F(1,90) = 8.07$, $p < .01$. With the exception of the sex difference, the other three significant differences can be seen as interrelated: subjects in the Street Sample are younger, more likely to be single, and, if students, more likely to be high school students or college freshmen. Conversely, subjects in the College Sample are older, more likely to be divorced, widowed, or separated, and more likely to be graduate students.

The significant sex difference reflects the fact that while an approximately equal proportion of subjects in the College Sample are males and females, the majority of the Street Sample (85%) are female. Consequently, it is necessary to examine the relationship between sex and other demographic characteristics. The relevant information for this comparison is presented in Table 2. Collapsing across the two samples, females are significantly younger than males, $t(118) = 2.05$, $p < .05$, are more likely to prefer affiliation with a Protestant or Catholic religious group than males, χ^2 (2) = 10.47, $p < .05$, are less likely to be upper-division of graduate students than

TABLE 1

Demographic Characteristics of the Two Samples

Variable	College Sample (N = 51)			Street Sample (N = 72)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
Age**		23.74	4.81		21.60	3.95
Sex**						
Male	23(46)			11(15)		
Female	27(54)			60(85)		
Marital Status*						
Single	34(68)			61(86)		
Married	9(18)			8(11)		
Div./Separ./Widowed	7(14)			2(3)		
Religious Background						
Protestant	22(44)			31(44)		
Catholic	20(40)			22(31)		
Jewish	3(6)			8(11)		
Other	0			3(4)		
None	5(10)			7(10)		
Religious Preference						
Protestant	7(14)			14(20)		
Catholic	9(18)			12(17)		
Jewish	1(2)			5(7)		
Other	4(8)			13(18)		
None	29(58)			27(38)		

TABLE 1 (Cont'd)

Variable	College Sample (N = 51)			Street Sample (N = 72)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
Church Attendance						
Frequent	7(14)			6(9)		
Infrequent	13(27)			27(39)		
None	29(59)			37(53)		
Race						
White	45(93)			66(96)		
Black	3(7)			2(4)		
Other	0			0		
Father's Education						
(1) Grammer school or less	5(10)			6(9)		
(2) Some high school	5(10)			4(6)		
(3) High school grad.	13(27)	3.73	1.57	11(16)	4.21	1.58
(4) Some college	8(17)			13(19)		
(5) College grad.	9(19)			15(22)		
(6) Post grad.	8(17)			18(27)		
Mother's Education						
(1) Grammer school or less	1(2)			3(4)		
(2) Some high school	9(19)			4(6)		
(3) High school grad.	17(35)	3.44	1.13	22(32)	3.81	1.21
(4) Some college	11(23)			18(26)		
(5) College grad.	9(19)			16(24)		
(6) Post grad.	1(2)			5(7)		

TABLE 1 (Cont'd)

Variable	College Sample (N = 51)			Street Sample (N = 72)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
Annual Family Income						
(1) ≤$5,000	2(4)			4(6)		
(2) $5-9,999	10(21)			6(9)		
(3) $10-14,999	7(15)	3.65	1.26	15(23)	3.75	1.21
(4) $15-24,999	13(27)			17(26)		
(5) ≥$25,000	16(33)			23(35)		
Community Size						
(1) Farm/Rural	5(11)			15(22)		
(2) Sm. Town (≤10,000)	5(11)			4(6)		
(3) Avg. Town (10-99,000)	11(23)	3.64	1.51	11(16)	3.56	1.76
(4) Suburb	15(32)			16(24)		
(5) City (100-500,000)	3(6)			10(15)		
(6) Lg. City (> 500,000)	8(17)			12(18)		
Occupation						
Student	40(83)			49(73)		
Unemployed	1(2)			2(3)		
Unskilled	0			5(7)		
Semi-skilled	0			4(6)		
Skilled/foreman	1(2)			4(6)		
Clerk, etc.	1(2)			2(3)		
Proprietors, managers	0			0		
Professional	5(10)			1(1)		

TABLE 1 (Cont'd)

Variable	College Sample (N = 51)			Street Sample (N = 72)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
STUDENTS ONLY						
Academic Major						
Social science	21(49)			12(27)		
Natural science	1(2)			4(9)		
Humanities	2(5)			6(13)		
Education	6(14)			6(13)		
Business	2(5)			5(11)		
Engineering	2(5)			0		
Ag. & Nat. resources	2(5)			0		
Medicine	2(5)			5(11)		
Other	2(5)			2(4)		
Undeclared	3(7)			5(11)		
GPA						
(1) ≤ 1.99	0			1(2)		
(2) 2.00-2.49	5(12)			6(12)		
(3) 2.50-2.99	11(26)	3.79	.99	17(35)	3.49	.96
(4) 3.00-3.49	15(35)			18(37)		
(5) 3.50-4.00	12(28)			7(14)		
Class**						
(1) High school	0			2(4)		
(2) College freshmen	3(7)			12(14)		
(3) " sophomore	8(19)	4.42	1.26	10(20)	3.61	1.44
(4) " junior	11(26)			9(18)		
(5) " senior	10(23)			11(22)		
(6) Graduate student	11(26)			5(10)		

TABLE 1 (Cont'd)

Variable	College Sample (N = 51)			Street Sample (N = 72)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
School						
MSU	41(98)			40(87)		
LCC	0			4(9)		
Other	1(2)			2(4)		
Expected Occupation						
Semi-skilled or unskilled	0			0		
Skilled/foreman	3(8)			9(25)		
Clerk, etc.	2(5)			0		
Proprietors, managers	2(5)			5(14)		
Professional	29(78)			22(61)		
Don't know	1(3)			0		

*p < .05
**p < .01

males, $t(88) = 2.77$, $p < .01$, and are less likely to be working toward a professional occupation than males, Kendall's Tau $C = -.27$, $p < .001$.

Procedure

The questionnaires were distributed to subjects by members of the staff of the Counseling Center and DEC. Subjects were asked to read over the cover letter, briefly examine the questionnaire, and decide if they were willing to participate in the study. Individuals who were unwilling to participate were asked to return the blank questionnaire. Otherwise, subjects who received no incentive for completing the questionnaire were allowed to take the questionnaire with them for completion at their convenience. A self-addressed, stamped envelope was enclosed for returning the completed questionnaire. Subjects who received a lottery ticket for their participation in the study were asked to complete the questionnaire immediately. They were given their lottery ticket upon returning the completed questionnaire to the author or a member of the DEC staff who was present at the time.

Since the use of most psychoactive drugs is currently illegal, a number of steps were taken toward insuring the confidentiality of responses. A statement of these procedures is included in Appendix D.

Since the procedure followed for distribution and collection of the questionnaires allowed individuals to return questionnaires immediately if they decided not to participate in the study, it is unfortunately impossible to determine

TABLE 2

Sex Differences in Demographic Characteristics

Variable	Males (N = 34)			Females (N = 87)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
Age**		23.74	4.49		21.98	4.34
Marital Status						
Single	25(73)			70(80)		
Married	7(21)			10(12)		
Div./Separ./Widowed	2(6)			7(8)		
Religious Background						
Protestant	16(47)			37(42)		
Catholic	10(29)			32(37)		
Jewish	3(9)			8(9)		
Other	0			3(4)		
None	5(15)			7(8)		
Religious Preference*						
Protestant	2(6)			19(22)		
Catholic	3(9)			18(21)		
Jewish	3(9)			3(3)		
Other	8(23)			9(10)		
None	18(53)			38(44)		
Church Attendance						
Frequent	3(9)			10(12)		
Infrequent	9(26)			31(36)		
None	22(65)			44(52)		

TABLE 2 (Cont'd)

Variable	Males (N = 34)			Females (N = 87)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
Race						
White	31(94)			83(97)		
Black	2(6)			3(3)		
Other	0			0		
Father's Education		3.66	1.66		4.13	1.56
(1) Grammer school or less	4(12)			7(9)		
(2) Some high school	4(12)			5(6)		
(3) High school grad.	8(25)			16(20)		
(4) Some college	5(16)			15(18)		
(5) College grad.	5(16)			18(22)		
(6) Post-grad.	6(19)			20(25)		
Mother's Education		3.34	1.21		3.77	1.18
(1) Grammer school or less	2(6)			2(2)		
(2) Some high school	5(16)			8(10)		
(3) High school grad.	12(37)			27(33)		
(4) Some college	7(22)			20(24)		
(5) College grad.	5(16)			20(24)		
(6) Post-grad.	1(3)			5(7)		
Annual Family Income		3.56	1.19		3.83	1.18
(1) < $5,000	0			4(5)		
(2) $5-9,999	9(28)			7(9)		
(3) $10-14,999	5(16)			17(21)		
(4) $15-24,999	9(28)			21(27)		
(5) ≧ $25,000	9(28)			30(38)		

TABLE 2 (Cont'd)

Variable	Males (N = 34)			Females (N = 87)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
Community Size						
(1) Farm/Rural	5(16)			15(18)		
(2) Sm. Town (≤10,000)	4(13)			5(6)		
(3) Avg. Town (10-99,000)	7(23)	3.39	1.58	14(17)	3.66	1.69
(4) Suburb	8(26)			23(28)		
(5) City (100-500,000)	3(10)			9(11)		
(6) Lg. City (>500,000)	4(13)			16(10)		
Occupation						
Student	23(72)			64(79)		
Unemployed	2(6)			1(1)		
Unskilled	1(3)			4(5)		
Semi-skilled	0			4(5)		
Skilled/foreman	1(3)			4(5)		
Clerk, etc.	0			3(4)		
Proprietor, manager	0			0		
Professional	5(16)			1(1)		
STUDENTS ONLY						
Academic Major						
Social science	11(42)			22(37)		
Natural science	1(4)			4(7)		
Humanities	1(4)			7(12)		
Education	4(15)			7(12)		
Business	1(4)			6(10)		

TABLE 2 (Cont'd)

Variable	Males (N = 34)			Females (N = 87)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
Academic Major (Cont'd)						
Engineering	2(8)			0		
Ag. & Nat. resources	1(4)			1(2)		
Medicine	2(8)			5(8)		
Other	1(4)			2(3)		
Undeclared	2(8)			6(10)		
GPA						
(1) ≤1.99	0			1(2)		
(2) 2.00-2.49	1(4)			10(16)		
(3) 2.50-2.99	7(27)	3.92	.84	20(31)	3.51	1.02
(4) 3.00-3.49	11(42)			21(33)		
(5) 3.50-4.00	7(27)			12(19)		
Class**						
(1) High school	0			2(3)		
(2) College freshmen	2(8)			13(20)		
(3) " sophomore	6(23)			11(17)		
(4) " junior	2(8)	4.61	1.47	18(28)	3.73	1.35
(5) " senior	6(23)			14(22)		
(6) Graduate student	10(38)			6(10)		
School						
MSU	24(96)			55(90)		
LCC	0			4(7)		
Other	1(4)			2(3)		

TABLE 2 (Cont'd)

Variable	Males (N = 34)			Females (N = 87)		
	n (%)	X̄	S.D.	n (%)	X̄	S.D.
Expected Occupation*						
(1-4) Semi-skilled or unskilled	0			1(2)		
(5) Skilled/foreman	0			10(21)		
(6) Clerk, etc.	0			2(4)		
(7) Proprietor, manager	2(9)			5(10)		
(8) Professional	21(91)			30(63)		

* p < .05
** p < .01

unambiguously the return rate for the two samples. However, an estimate can be determined based on the number of questionnaires which were actually distributed. A total of 98 questionnaires were distributed at the Counseling Center, of which 51 (52%) were completed and returned. Of the 115 questionnaires distributed to clients at the DEC, 60 were completed and returned by respondents who received an incentive for participating in the study. A total of 12 (21%) of the 55 questionnaires distributed to subjects at the DEC without offering an incentive were returned. Combining these two groups, the overall estimated return rate for the Street Sample is 63%; which does not differ significantly from the return rate in the College Sample, χ^2 (1) = 2.34, $\underline{p}$ > .05. However, within the Street Sample subjects offered an incentive returned significantly more questionnaires, χ^2 (1) = 68.78, $\underline{p}$ < .0001. Thus, since subjects who received a lottery ticket did not differ significantly from those who were not offered an incentive except in terms of class level, there is little reason to expect that offering an incentive had any significant effect other than to increase return rate.

The Measurement of Drug Use. A central problem in any study of drug use, and a major criticism of the majority of previous studies relates to the method used to measure drug use. Perhaps the most common method has been a simple classification of use-nonuse. However, such a gross measure yields little information about the individual's drug use. For example, the use of simple discrete categories does not take the frequency with which drugs are used into account. Thus, an

individual who has used marijuana on five or six occasions would be classified into the same category as one who has used the drug on over 60 occasions. Yet, few would contend that the drug usage of these two individuals was comparable. What is clearly needed is a more refined measure.

In the present research, three separate measures of drug use were utilized. The first was a gross measure of use-nonuse. Respondents were asked the following two questions for each of the 12 substances examined (see Footnote 1): (1) Have you ever used this substance?; and (2) Have you used this substance within the past year or so? On the basis of these two questions, respondents were classified into one of three categories for each of the 12 substances:

1. nonuser - Individuals who had never used the substance.

2. past user - Individuals who had used the substance, but not within the past year.

3. user - Individuals who had used the substance within the past year.

As can be seen, this measure does not take either frequency of use into account or the individual's overall pattern of drug use. Consequently, it only allows comparison between users and nonusers of each substance, and not among users as a group.

The second measure is more refined, and allows examination of the variation among users of each drug. Respondents were asked for each drug which they used: (1) The frequency with which they used the substance within the last year (ranging from about once a year to three or more times a day); and (2) Considering all the occasions on which they use drugs, the

proportion of the time they use the particular substance (rang-
ing from less than 10% to over 90%). These two responses were
then combined into an overall <u>frequency-variability</u> index[5] of
use for each drug (see Cahalan, <u>et</u> <u>al</u>, 1969). Specifically,
the frequency with which an individual used a drug was weigh-
ted by his/her variability in use of the drug. Thus, indivi-
duals who used a drug with a low frequency, or with a moderate
frequency and much variability would receive a low score; while
individuals who used a drug with a high frequency, or a moder-
ate frequency but little variability would receive a high score.
Thus, this index summarizes in a single score frequency and
variability of use of psychoactive drugs, permits the calcula-
tion of group statistics which are not possible with discrete
categories and, since the scores are continuously distributed
along a single dimension, allows statistical comparison of group
means, correlational analyses, etc.

While the frequency-variability index is a considerable
refinement over any discrete categorical measure, it does not
allow assessment of an individual's <u>type</u> of drug use. That
is, it does not differentiate between individuals who only use
a single drug and multiple drug users, nor differentiate among
multiple drug users who differ in the particular drugs utilized.
Thus, a third measure of drug use was constructed which takes
into account the number and type of substances used, as well
as the frequency-variability with which they are used. The
subjects' frequency-variability scores were intercorrelated and
subjected to a discrete cluster analysis (see Fruchter, 1954).
This procedure classifies the drugs into discrete groups on

the basis of their intercorrelations, and allows the computa-
tion of "cluster scores" for each subject (analogous to factor
scores; see Harman, 1960). These scores can then be used for
grouping subjects on the basis of their having similar types
or patterns of drug use.

The first two measures were utilized for testing the hypo-
thesized relationships between drug use and the various socio-
cultural and personality characteristics in a series of uni-
variate analyses. The third measure was utilized for a multi-
variate analysis of drug use, simultaneously examining the re-
lationship between the set of personality and sociocultural
measures and the various types of drug use characteristic of
individuals in the samples.

The Measurement of the Sociocultural System. In the pre-
ceding theoretical analysis, three sociocultural structures
were described which were hypothesized as related to drug use.
Specifically, drug use was seen as varying directly with the
degree of restriction in access to legitimate opportunities for
attaining valued goals, the lessening of normative constraints
or social control over deviant behavior, and the degree of op-
portunities for observing and engaging in drug use. In the
following pages, the methods used to measure each of these socio-
cultural structures will be described.

Two indices of access to legitimate opportunities were
constructed for the present research. The first measure was
an index of Socioeconomic Status (SES), based on Jessor, et al's
(1968) modification of Hollingshead's (1956) two-factor Index
of Social Position. Specifically, Father's Education, Mother's

Education, and Annual Family Income were additively combined, yielding SES scores ranging from 3 to 23. These items, their internal splits, and item-total correlations are presented in Table 3.

The second measure of access to legitimate opportunities was designed to take into account a broader class of factors, following a similar scale constructed by Jessor et al (1968). Briefly, it was reasoned that younger people have more access to opportunities than older individuals, since the young have a greater potential for achieving unattained goals in the future. In addition, youth itself is seen as an asset in many occupational settings, while age is often considered a social drawback. In a similar vein, older persons who have never married or have lost their spouses have less access to opportunities than those who are married. Individuals who are unemployed or have only unskilled jobs have less opportunities for achieving success goals than those who have skilled or higher occupations. Whites have greater access to opportunities than minorities and, finally, individuals who belong to higher-status Protestant churches have more opportunities than those who are affiliated with less prestigeful congregations or have no religious affiliation at all. Thus, the index of Objective Access was composed of five items, each scored dichotomously: Age (0 = 30 and over; 1 = under 30); Age plus Marital Status (0 = 30 and over and single; 1 = under 30 and/or married); Occupation (0 = unskilled or unemployed; 1 = student, semiskilled or higher); Race (0 = other than White; 1 = White); and Religion (0 = other than Protestant; 1 = Protestant). Obviously,

TABLE 3

Socioeconomic Status

Variable	n (%)	Item-Total Correlation[1]
Father's Education		.64
1 = Grammer school or less	11(9)	
2 = Some high school	9(8)	
3 = High school graduate	24(21)	
4 = Some college	21(18)	
5 = College graduate	24(21)	
6 = Post graduate	26(23)	
Mother's Education		.55
1 = Grammer school or less	4(3)	
2 = Some high school	13(11)	
3 = High school graduate	39(34)	
4 = Some college	29(25)	
5 = College graduate	25(22)	
6 = Post graduate	6(5)	
Annual Family Income		.47
1 = ≤ $5,000	6(5)	
2 = $5-9,999	16(14)	
3 = $10-14,999	22(19)	
4 = $15-24,999	30(27)	
5 = ≥ $25,000	39(35)	

Reliability Coefficient (Alpha) = .72

[1]Corrected to remove effect of item on total score.

since these items are not conceptually homogenous (e.g., there is no reason to suspect any relationship between age and religious affiliation), this measure is, a priori, the weakest of the two.

Measurement of normative constraints was accomplished through the construction of a scale of Involvement With Prosocial Groups, which focuses on participation in religious groups. Four dichotomous items concerning religous background, religious preference, and church attendance were additively combined, yielding a range of scores from 0 (no involvement) to 4 (high involvement). These items, their internal splits, and biserial correlations with total score are presented in Table 4.

Of the three sociocultural structures considered to be related to drug use, opportunities for observing and engaging in drug use is theoretically the most powerful predictor. Consequently, three measures of this structure were constructed for the study. The first scale (Opportunities for Deviance 1: Sociodemographic Factors) is the weakest of the three measures, and is composed entirely of demographic variables. It was reasoned that individuals between the ages of 18 and 25 have more opportunities for engaging in deviant behavior than individuals 16 or 17 years of age, or individuals between the ages of 26 and 29. Likewise, individuals in these last two groups have more opportunities for deviance than individuals under 15 years of age, or over 30 years of age. Similarly, individuals who are single are seen as having more opportunities for deviance than individuals who are divorced or separated, while the latter have more opportunities than married people. That is,

TABLE 4

Involvement With Prosocial Groups

Variable	$\underline{n}$ (%)	Item-Total Correlation[1]
Religious Background		.19
0 = None	12(10)	
1 = Any	109(90)	
Religious Preference		.52
0 = None	56(46)	
1 = Any	65(54)	
Church Attendance 1		.58
0 = None	66(55)	
1 = Infrequent/Frequent	53(45)	
Church Attendance 2		.40
0 = None/Infrequent	106(89)	
1 = Frequent	13(11)	

Reliability Coefficient (Alpha) = .63

[1]Corrected to remove effect of item on total score.

single individuals and those between the ages of 18 and 25 typically have fewer responsibilities and greater freedom than individuals in the other age groups or those who are married. Likewise, individuals who were raised in a city have more opportunities for observing and engaging in deviance than those who were raised in smaller towns or the suburbs, who, in turn, have more opportunities than small town or rural residents. Thus, the first measure of opportunities for deviance consisted of three trichotomously-scored items: Age (0 = 15 or under and 30 or over; 1 = 16-17 and 26-29; 2 = 18-25); Marital Status (0 = married; 1 = divorced or separated; 2 = single); and Size of Home Community (0 = farm, rural, or small town; 1 = average town or suburb; 2 = city or large city). Once again the items are not conceptually homogenous (e.g., there is no reason to expect any relationship between age or marital status and community size). In addition, from examination of the demographic characteristics of the two samples (Table 1), one would expect that the range of scores on this measure would be relatively restricted. Thus, there are a number of reasons for expecting that this measure will be somewhat inadequate. Examination of the internal-splits and item-total correlations for these three items presented in Table 5 confirms this expectation. However, although the reliability coefficient for this measure is relatively low, it is sufficiently large to allow the measure to be retained. Nonetheless, any results based on this measure should be interpreted with caution.

The second measure of opportunities for observing and engaging in drug use (Opportunities for Deviance 2: Perceived

TABLE 5

Opportunities for Deviance 1:   Sociodemographic Factors

Variable	$\underline{n}$ (%)	Item-Total Correlation[1]
Age		.36
0 = $\leq$ 15 and $\geq$ 30	12(10)	
1 = 16-17 and 26-29	17(14)	
2 = 18-25	94(76)	
Marital Status		.38
0 = Married	17(14)	
1 = Divorced/Separated	9(7)	
2 = Single	95(79)	
Size of Home Community		.10
0 = Farm, rural, sm. town	29(25)	
1 = Avg. town or suburb	53(46)	
2 = City or lg. city	33(29)	

Reliability Coefficient (Alpha) = .40

[1] Corrected to remove effect of item on total score.

<u>Drug</u> <u>Use</u> <u>in</u> <u>the</u> <u>Social</u> <u>Environment</u>) concerns the extent to which the individual interacts with drug users in his general social environment. Specifically, respondents were asked what percentage of their friends used each of ten classes of psychoactive substances[6] (on a six-point scale ranging from less than 10% to over 90%). The responses to these 10 scales were then additively combined to yield a range of scores from 0 (less than 10% of their friends used any of the drugs) to 60 (over 90% of their friends used each of the drugs). These ten items, their intercorrelations, and item-total correlations are presented in Table 6.

The third measure of opportunities for drug use (<u>Opportunities</u> <u>for</u> <u>Deviance</u> <u>3</u>: <u>Extent</u> <u>of</u> <u>Use</u> <u>With</u> <u>Friends</u>) concerned interaction with drug-using friends. Respondents were asked for each of their five closest friends: (1) The amount of leisure time spent with the friend (scores ranging from 0 for none to 4 for all); and (2) The amount of time the individual and friend used drugs when they were together (scores ranging from 0 for none to 4 for all). These two scores were then multiplicatively combined for each friend, and then summed across the five friends to yield a range of scores from 0 (none of the five friends used drugs with the subject <u>or</u> none of the friends spent any of their time with the individual) to 80 (all five friends used drugs with the subject <u>and</u> they spent all their leisure time together). Basically, it was reasoned that of two friends who both used drugs when with the subject, the friend who spent more time with the subject provided more opportunities for observing and engaging in drug use. The five

TABLE 6

Opportunities for Deviance 2: Perceived Drug Use in the Social Environment

Percentage of Friends Who Use Drug	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	Item-Total Correlation[1]
(1) Alcohol	-										.28
(2) Marijuana	52	-									.45
(3) Hallucinogens	23	45	-								.82
(4) Tranquilizers	17	29	79	-							.75
(5) Barbiturates	18	32	84	78	-						.77
(6) Amphetamines	25	40	69	67	74	-					.74
(7) Cocaine	12	40	47	36	34	55	-				.58
(8) Opiates	06	25	53	51	55	48	50	-			.60
(9) Solvents	02	08	30	35	31	18	30	46	-		.40
(10) Nitrous Oxide	09	12	41	51	37	30	47	39	68	-	.50

Reliability Coefficient (Alpha) = .87

[1]Corrected to remove effect of item on total score.

items, their intercorrelations, and item-total correlations
are presented in Table 7.

In summary, measurement of the sociocultural system con-
sisted of six scales: two measures of access to legitimate
opportunities for attaining valued goals (i.e., Socioeconomic
Status and Objective Access); one measure of extent of norma-
tive control over deviance (i.e., Involvement with Prosocial
Groups); and three measures of opportunities for observing and
engaging in drug use (i.e., Opportunities for Deviance 1, 2,
and 3).

The Measurement of the Personality System. Two personal-
ity variables, attitudinal tolerance of deviance and positive

TABLE 7

Opportunities for Deviance 3: Extent of Use With Friends

Interaction With Drug Using Friend	(1)	(2)	(3)	(4)	(5)	Item-Total Correlation[1]
Friend 1	–					.62
Friend 2	.55	–				.72
Friend 3	.37	.49	–			.45
Friend 4	.60	.59	.31	–		.70
Friend 5	.38	.55	.24	.57	–	.55

Reliability Coefficient (Alpha) = .80

[1]Corrected to remove effect of item on total score.

expectations for drug use, were considered theoretically related to drug use. That is, to the extent that an individual is tolerant of deviant behavior in general and has positive expectations for drug use, s/he should be more likely to use drugs. Each of these personality structures was measured with a single scale.

The measure of Tolerance of Deviance consists of a 12-item scale developed by Jessor, et al (1968) for their study of deviant behavior among high school students, modified by the present author for use with older subjects. Each item consists of a socially defined deviant act, ranging from "doing things on the spur of the moment" to "taking something of value from a store without paying for it," to which the subject responds by indicating the extent to which it is felt to be wrong on a ten-point Likert-type scale ranging from "Not Wrong" to "Extremely Wrong." These items are then summed, yielding a total score ranging from 0 to 108, with lower scores indicating greater tolerance of deviance. Item intercorrelations average .33, while item-total correlations average over .60 for the original scale (Jessor, et al, 1968).

The measure of Positive Expectations for Drug Use consisted of four items, asked for each of the ten substance classes. The first item was an estimate of the probability that a subject would use each of the ten drug classes within the next year (ranging from 0 for definitely not to 3 for definitely will use the substance). A second item consisted of the subject's judgement of the extent to which each of the substances should be legally available (ranging from 0 for not at all

available to 3 for no restrictions on availability). Item three consisted of the subject's estimate of how dangerous use of each of the drugs was to an individual's physical and mental health (ranging from 0 for no danger to 3 for extreme danger). The final item consisted of the percentage of positive experiences the individual had had with each of the drugs s/he used (ranging from 0 for none to 4 for over 90%). These items were then additively combined to yield a range of total scores from 0 to 130. The items, their intercorrelations, and item-total correlations are presented in Table 8. Clearly, these latter two measures of opportunities for deviance are statistically much more reliable than the first measure based on sociodemographic variables. Thus, in interpreting results relevant to the hypothesized relationship between these variables and drug use, the greatest weight should be given to these latter measures.

The theoretical framework presented earlier posits a number of interrelationships among the variables in the sociocultural and personality systems. Table 9 presents the intercorrelations among the eight scales. As can be seen, there are a number of significant relationships. As expected, Socioeconomic Status is positively and significantly related to Objective Access. Likewise, the three measures of Opportunities for Deviance are positively intercorrelated. However, Opportunities for Deviance 1 is more highly related to the Socioeconomic Status and Objective Access scales than to either of the two other Opportunities scales, while the measure of Involvement with Prosocial Groups is significantly and negatively

related to <u>Socioeconomic</u> <u>Status</u>. While the former relation-
ships undoubtedly relate to the overlap of items in the three
scales, there is no theoretical reason for the measure of nor-
mative constraints to be negatively related to measures of ac-
cess to opportunities. Indeed, if anything one would expect
these measures to be positively related. However, <u>Involvement</u>
<u>with</u> <u>Prosocial</u> <u>Groups</u> does show the expected relationships with
the two personality variables. Of the eight measures, <u>Toler-</u>
<u>ance</u> <u>of</u> <u>Deviance</u> is the only one that is not significantly cor-
related with any of the other scales. However, while the cor-
relations are not significant, <u>Tolerance</u> <u>of</u> <u>Deviance</u> is corre-
lated in the expected direction with <u>Involvement</u> <u>with</u> <u>Prosocial</u>
<u>Groups</u> and <u>Positive</u> <u>Expectations</u> <u>for</u> <u>Drug</u> <u>Use</u> (noting once again
that low scores indicate <u>greater</u> tolerance of deviant behavior).

TABLE 8

Positive Expectations for Drug Use

Variable	(1)	(2)	(3)	(4)	Item-Total Correlation[1]
(1) Positive Experiences with Drugs	-				.47
(2) Legal Availability	.42	-			.16
(3) Danger in Use	.08	.41	-		.19
(4) Future Use	.54	.36	-.09	-	.58

Reliability Coefficient (Alpha) = .63

[1]Corrected to remove effect of item on total score.

TABLE 9

Intercorrelations of Variables in the Theoretical Framework

| Variable | Correlation |||||||| |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Socioeconomic Status	-							
(2) Objective Access	.19*	-						
(3) Involvement with Conventional Groups	-.19*	-.03	-					
(4) Opportunities for Deviance 1	.34*	.24*	.04	-				
(5) Opportunities for Deviance 2	.04	-.07	-.09	.02	-			
(6) Opportunities for Deviance 3	.10	.06	-.03	.19*	.42**	-		
(7) Positive Expectations for Drug Use	.00	-.10	-.25**	.04	.41**	.46**	-	
(8) Tolerance of Deviance	.05	-.02	.11	.09	-.04	.05	-.10	-

*p < .05
**p < .01

Thus, although all of the expected interrelationships were not supported, considering the manner in which the measures were constructed the scales generally conform to the theoretical system presented earlier. Consequently, all of the measures will be retained and utilized for examination of the hypotheses proposed earlier.

The Measurement of Social Sanctions Against Drug Use. The theoretical framework presented earlier relies heavily on the conceptualization of drug use as a deviant social behavior. In addition, a number of the hypothesized relationships between the sociocultural and personality systems and drug use depend for their evaluation upon some measure of the extent to which use of particular drugs is contra-normative. In this section, the methods utilized in the present research for evaluating normative violation will be discussed.

Individuals who use psychoactive drugs are subject to two broad classes of penalties. First, the use of most psychoactive drugs is currently illegal. Hence, users are subject to various fines and/or periods of imprisonment if apprehended. In addition, manufacture or distribution (i.e., sale) of psychoactive drugs is typically considered a more serious offense, and is consequently subject to even heavier punishment. Thus, one measure of the extent to which use of particular drugs constitutes a normative violation is the penalty imposed on possession, manufacture, or distribution of these substances. While these legal penalties vary somewhat from state to state, they generally conform to the policies of the federal government.

The Comprehensive Drug Abuse Prevention and Control Act of 1970 sets forth the maximum penalties for possession and manufacture or distribution of psychoactive drugs, and serves as a federal guideline for state laws concerning drug use and abuse. This act classifies psychoactive drugs under four "control schedules" with varying penalties for possession and sale, based upon such factors as whether or not the drug has a legitimate medical use and its potential for organic damage, physiological and psychological dependence. Substances falling under Control Schedule I are considered to have a high potential for abuse, no legitimate medical use, and are subject to controlled production (e.g., heroin, LSD). These substances are subject to the heaviest penalties for sale (the penalties for possession are the same for all substances). Schedule II substances differ from those in Schedule I only in that they have a legitimate medical use (e.g., amphetamines). Drugs falling under Schedules III and IV have less potential for abuse, and are not subject to controlled production (e.g., barbiturates and tranquilizers for Schedules III and IV, respectively). Substances in Schedule IV are subject to the least penalties for sale. Thus, one measure of normative violation may be derived from the Control Schedules under which the various substances fall. The Control Schedules and penalties for possession and sale of the various psychoactive substances examined in the present research may be found in columns 3 through 5 of Table 10.

While the legal penalties associated with use of psychoactive drugs undoubtedly act as a deterrant to their use, there

TABLE 10

Social Disapproval and Legal Penalties Associated with Drug Use

Drug	Social Disapproval[1] Mode	Social Disapproval[1] Mean	Legal Penalty for Possession[2]	Legal Penalty for Sale[2]	Control Schedule[2]	Index of Normative Violation[3]
Alcohol	1.0	1.3	None	None	None	I
Marijuana	2.0	2.3	1 year/$5,000	15 yrs/$25,000	I	II[4]
Hallucinogens	4.0	3.9	"	"	I	IV
Tranquilizers	1.0	1.8	"	3 yrs/$10,000	IV	I
Barbiturates	2.0	2.5	"	5 yrs/$15,000	III	II
Amphetamines	3.0	2.9	"	"	II	III
Cocaine	4.0	3.8	"	"	II	III
Opiates	5.0	4.3	"	15 yrs/$25,000	I	IV

TABLE 10 (Cont'd)

Drug	Social Disapproval[1]		Legal Penalty for Possession[2]	Legal Penalty for Sale[2]	Control Schedule[2]	Index of Normative Violation[3]
	Mode	Mean				
Solvents	5.0	4.1	-	-	-	IV
Nitrous Oxide	5.0	3.8	-	-	-	IV

[1]Ranking by staff of local Drug Education Center ($\underline{n}$ = 43).

[2]Comprehensive Drug Abuse Prevention and Control Act of 1970 (as amended July 1, 1971), maximum penalties.

[3]I = Minimal
II = Moderate
III = High
IV = Severe

[4]Although marijuana use is subject to severe federal penalties, the trend toward decriminalization of marijuana use among many state legislatures, as well as its relatively low ranking in terms of social disapproval justifies its classification as only "moderately" contra-normative.

is another class of penalties which may be of even greater importance: namely, the extent to which use of various drugs is disapproved by members of society. That is, in addition to running a risk of imprisonment, the drug user also is subject to various social penalties such as being ostracized by various significant social groups (e.g., the family, peer groups, etc.). That this class of penalties may be of even greater importance in restricting drug use is indicated by the fact that a substantial number of individuals use marijuana despite its classification as a Schedule I substance. Thus, any measure of normative violation for drug use must also take this significant social factor into account.

In order to assess the degree of social disapproval for use of various psychoactive drugs, a short questionnaire was administered to 43 members of the staff of the local Drug Education Center. These subjects were asked to rate each substance in terms of the extent to which it is disapproved by "society in general" on a five-point Likert scale ranging from "minimal or no social disapproval" (1) to "severe social disapproval" (5). The mean and modal rating for each of the 12 drugs examined are presented in columns 1 and 2 of Table 10. The social disapproval and legal penalties associated with each drug were then combined to yield an overall Index of Normative Violation ranging from minimal to severs (see column 6 of Table 10). When the estimates of the two sources differed, social disapproval was given more weight in determining the score for that drug.

Analyses

The research methodology presented above calls for a variety of statistical procedures to be used in testing the hypotheses, as well as examining sample differences in demographic characteristics and related comparisons. Since it may not always be clear in the discussion which follows which statistical test was utilized in a particular instance, it is appropriate to outline at this point the criteria which determined the use of statistical procedures in various situations.

Briefly, Chi-square tests were used for examining group differences on nominal level variables, unless the expected frequency was equal to or less than five in 20% or more of the cells (or in $\underline{any}$ of the cells if there was only one degree of freedom). In the latter instance, Kendall's Tau statistic was utilized. For group comparisons on variables which were continuously distributed, Students' $\underline{t}$ tests were utilized when the comparison involved only two groups, while three or more groups were compared using Analysis of Variance. In the latter instance where the groups differed significantly, paired-comparisons of the group means were accomplished using Sheffe's exact test. This test was chosen as it minimizes the probability of a Type I error, and is an exact test when the groups differ in size. Basically, throughout the analyses when there was a choice between use of two or more particular tests, the more conservative of the choices was utilized.

Before proceeding, one further point should be discussed. In research designs such as that of the present research (i.e., nonexperimental designs), the investigator is likely to encounter

nonorthogonal designs: i.e., unbalanced designs with unequal
cell frequencies. In addition to the resulting problems of cor-
related effects, such designs also frequently encounter heter-
ogeneity of variance. Since the combination of unequal cell
frequencies and heterogenous variances can greatly distort the
probability of committing a Type I error, the standard signi-
ficance tests were modified in the present research whenever
group variances were significantly different (as assessed by
the Bartlett-Box $\underline{F}$ test; see Myers, 1972). The specific pro-
cedures utilized in such cases may be found in Appendix E.

RESULTS AND DISCUSSION

Presentation of the results will be organized into three sections. In the first section the drug use characteristics of the two samples will be presented. The second section presents the results of a series of univariate analyses of the relation between variables in the sociocultural and personality systems and the use of individual psychoactive drugs. This section presents the results most directly concerned with evaluation of the hypotheses proposed earlier, and thus constitutes the primary analysis of the study. Finally, in the third section the results of multivariate analyses of the patterns of drug use among these samples of subjects, and the relationship of the system of sociocultural and personality variables to these patterns of drug use will be presented.

Drug Use Characteristics of the Two Samples

A summary of the drug use characteristics of the two samples in terms of both use-nonuse and frequency-variability of use may be found in Tables 10 and 11, respectively. As can be seen, the two samples do not differ significantly in their drug use, regardless of whether use-nonuse or frequency-variability of use is considered.

Turning first to use-nonuse of the various psychoactive substances (Table 11), over three-quarters of the subjects in both samples reported current use of alcohol and marijuana.

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TABLE 11

Drug Use-Nonuse Characteristics of the Two Samples

Drug	College Sample (N=51)			Street Sample (N=72)		
	Nonuser n (%)	Past User n (%)	User n (%)	Nonuser n (%)	Past User n (%)	User n (%)
Alcohol	0	1(2)	50(98)	1(1)	0	71(99)
Marijuana	9(18)	3(6)	39(76)	8(11)	6(8)	58(81)
LSD	26(51)	12(24)	13(25)	43(60)	18(25)	11(15)
Other Hall.	24(47)	15(29)	12(24)	41(57)	20(28)	11(15)
Tranquilizers	26(51)	6(12)	19(37)	42(58)	11(15)	19(26)
Barbiturates	30(59)	7(14)	14(27)	49(68)	13(18)	10(14)
Amphetamines	23(45)	12(24)	16(31)	40(56)	11(15)	21(29)
Cocaine	34(67)	7(14)	10(20)	47(65)	7(10)	18(25)
Heroin	49(96)	2(4)	0	65(90)	5(7)	2(3)

TABLE 11 (Cont'd)

Drug	College Sample (N=51)			Street Sample (N=72)		
	Nonuser $\underline{n}$ (%)	Past User $\underline{n}$ (%)	User $\underline{n}$ (%)	Nonuser $\underline{n}$ (%)	Past User $\underline{n}$ (%)	User $\underline{n}$ (%)
Other Opiates	38(75)	9(18)	4(8)	53(74)	12(17)	7(10)
Solvents	47(92)	4(8)	0	70(97)	2(3)	0
Nitrous Oxide	46(90)	4(8)	1(2)	63(88)	5(7)	4(6)

Note: None of the differences are statistically significant.

Approximately one-quarter reported use of tranquilizers, amphetamines, and cocaine, while about one-fifth reportedly use hallucinogens and barbiturates. Opiates, solvents, and nitrous oxide are the drugs least frequently reported as currently used, with 10% or less of the subjects reporting use of opiates and no subject reporting current use of solvents.

These usage rates are considerably above those reported in most previous studies of drug use (cf., National Commission on Marihuana and Drug Abuse, 1973; Goldstein, et al, 1975). For example, while only 9% of the subjects among a recent representative sample of U.S. males between the ages of 20 and 30 reported current use of sedatives (O'Donnell, et al, 1976), approximately 19% of the subjects in the present samples report current use of these substances (i.e., barbiturates), with an additional 14-18% reporting past usage. The usage rates of the present samples are also generally above those reported for college students: the group with the highest rates of use for most psychoactive substances (Blum, 1969). Further, there is a notable absence of abstainers in the present samples. For example, only one subject across both samples reported that s/he had never used alcohol, while all but one other respondent were current users. Since use of alcohol almost invariably precedes use of any other psychoactive drug (National Commission on Marihuana and Drug Abuse, 1973), it is likely that drug users are overrepresented among both the College and Street samples.

A somewhat different picture emerges when frequency-variability of use is considered (Table 12). Although there still

TABLE 12

Frequency-Variability of Drug Use
Characteristics of the Two Samples

Drug	College Sample (N=51)		Street Sample (N=72)	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Alcohol	20.57	12.90	21.96	15.88
Marijuana	14.75	15.19	18.08	19.79
Hallucino-gens	1.16	2.18	1.43	3.55
Tranquili-zers	3.04	6.56	2.03	5.83
Barbitur-ates	1.14	2.71	.97	2.97
Ampheta-mines	2.76	7.85	1.51	3.36
Cocaine	.80	2.09	.83	1.97
Opiates	.57	2.17	.69	3.03
Nitrous Oxide	.08	.27	.17	1.19

Note: None of the differences are statistically significant.

appears to be considerable use of alcohol and marijuana, use
of the other substances is reported as relatively infrequent.
For example, the mean frequency-variability scores for hallu-
cinogens, tranquilizers, barbiturates, and amphetamines indi-
cate that these substances are typically used on less than
half the occasions during which the individual uses drugs,
and with a frequency of once a month or less. Further, use
of cocaine, opiates, and nitrous oxide is even less frequent
(i.e., only about once or twice a year). These results are
in substantial agreement with those of previous studies (e.g.,
O'Donnell, et al, 1976): with the exception of alcohol and
marijuana, use of most psychoactive substances is relatively
infrequent. In particular, the results suggest that opiates,
cocaine, and nitrous oxide are typically used in an "experi-
mental" fashion: i.e., used on one or two occasions with lit-
tle or no intention for continued use. This interpretation
receives support from the results concerning reported inten-
tions for future use of these substances. With the exception
of alcohol and marijuana, respondents typically reported that
they "probably" or "definitely" would not use the substances
in the future. Nonetheless, by-and-large the obtained results
indicate that subjects in the present samples have had more
experience with drugs than those in previous research. Al-
though this use appears to be largely in terms of mere expo-
sure (i.e., use) rather than extent of use (i.e., frequency-
variability), it is still not possible to conclude that the
present samples as a whole are comparable to those of previous
research, or representative of either college students or

similar groups of nonstudents in terms of their drug use. On the other hand, the possibility still exists that the present samples are representative of drug users. That is, considering the extremely low prevalence of abstainers in the present samples, it naturally follows that the usage rates for the substances would be "biased" toward greater use. For example, assuming that the single individual who reported nonuse of alcohol represents the total population of abstainers in the present samples, this corresponds to an abstention rate of less than 1%, as compared to a rate of 2-4% reported in previous studies (cf., O'Donnell, et al, 1976; National Commission on Marihuana and Drug Abuse, 1973). Thus, any final statement about the comparability of the present samples to previous samples of drug users must await examination of the patterns of use among these respondents.

In summary, subjects in the College and Street samples did not differ significantly in their use of psychoactive drugs either in terms of use-nonuse or frequency-variability of use. Across both samples, respondents reported use of a wide range of psychoactive substances. However, with the exception of alcohol and marijuana this use appears to be relatively infrequent, with many subjects reporting that they do not intend to use the drugs in the future.

As noted previously, there is a significantly greater proportion of females in the Street Sample than in the College Sample. Although males and females were shown not to differ extensively in terms of demographic characteristics, the possibility still remains that the sexes may differ substantially

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sion on Marihuana and Drug Abuse, ... tly, the following assignment ... ($n = 123$).

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In summary, subjects in the ... ve drugs. Specifically, these ...

did not differ significantly ... th: (1) a restrictive, detiv...

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As note... plic... or current users; $\underline{r} = -.35$, $\underline{p} < .001$

proporti... e

Sampl... FIGURE 2

e... lation and Extent of Drug Use

in terms of drug use. The results necessary for examination of this possibility are presented in Appendix F. In short, males and females do not differ significantly in either use-nonuse or frequency-variability of use of psychoactive drugs.

Univariate Analyses

Since the College and Street samples do not differ significantly in terms of drug use, nor differ extensively in their demographic characteristics, there would seem to be no objection to combining the two samples for examining the relationship between sociocultural and personality characteristics and drug use. Consequently, the following analyses were performed on the total sample (n = 123).

The Sociocultural System and Drug Use. From the theoretical framework proposed earlier three structures in the sociocultural system were identified which should influence an individual's use of psychoactive drugs. Specifically, drug use was seen as increasing with: (1) a restriction in access to opportunities for attaining valued goals (Hypothesis 2); (2) a lessening in normative constraints on deviant behavior (Hypothesis 3); and (3) opportunities for observing and engaging in drug use (Hypotheses 4, 5, and 6). In addition, the conceptualization of drug use as a deviant social behavior was also seen as having implications concerning the distribution of drug use within the sociocultural system (Hypothesis 1). The results relevant to an evaluation of these hypotheses are presented in the following pages.

Hypothesis One stated that the proportion of individuals using a particular drug would vary inversely with the severity

of normative sanctions against the use of that drug. That is, to the extent that use of a drug is subject to a negative social evaluation, individuals using that drug are likely to incur some form of punishment. Consequently, as the risk and/or severity of punishment increases, fewer and fewer individuals should be willing to use a particular drug.

Figure 2 illustrates the relationship between use of psychoactive drugs and the severity of normative constraints, as measured by the Index of Normative Violation. Figure 3 illustrates this same relationship in terms of social disapproval alone. Clearly both measures of normative violation strongly support the hypothesis. In addition, the inverse relationship between drug use and normative violation is significant for both current users only and for current and past users combined.

While the obtained results strongly support the hypothesis, there are alternative explanations which might account for the relationship. Specifically, the proportion of individuals using the various drugs is also undoubtedly influenced by the availability of the various substances in the user's environment. However, it is unlikely that this factor is relevant in the present instance. For example, barbiturates and amphetamines are equally available, and yet do not have equal usage rates. Likewise, solvents are the most available substances of the ten. Yet, they have the lowest usage rate of all the substances. Thus, it is undoubtedly normative violation which is exerting the major influence here. However, availability may account for the differences in usage rate between substances within the same class of normative violation
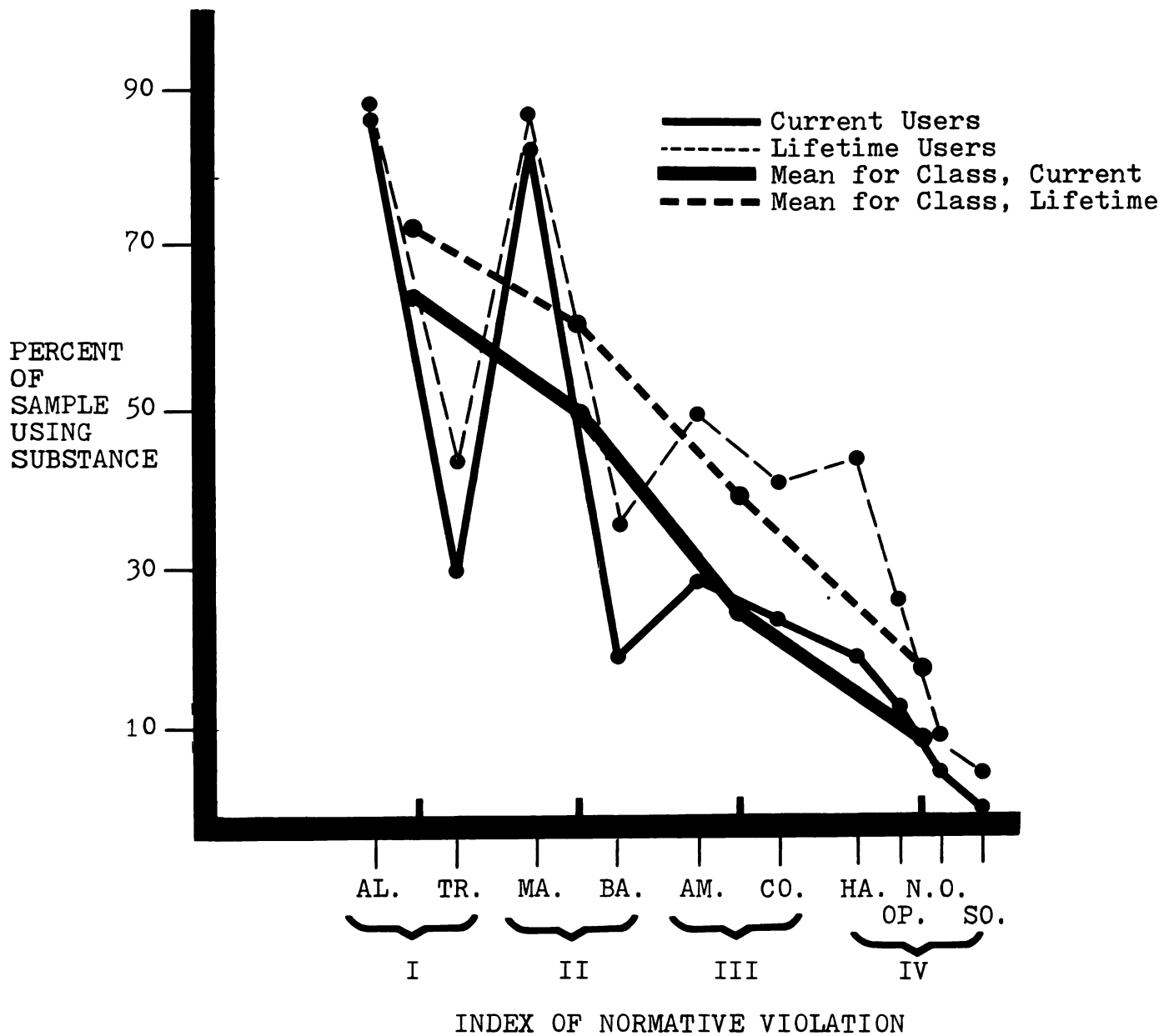
FIGURE 2

Normative Violation and Extent of Drug Use
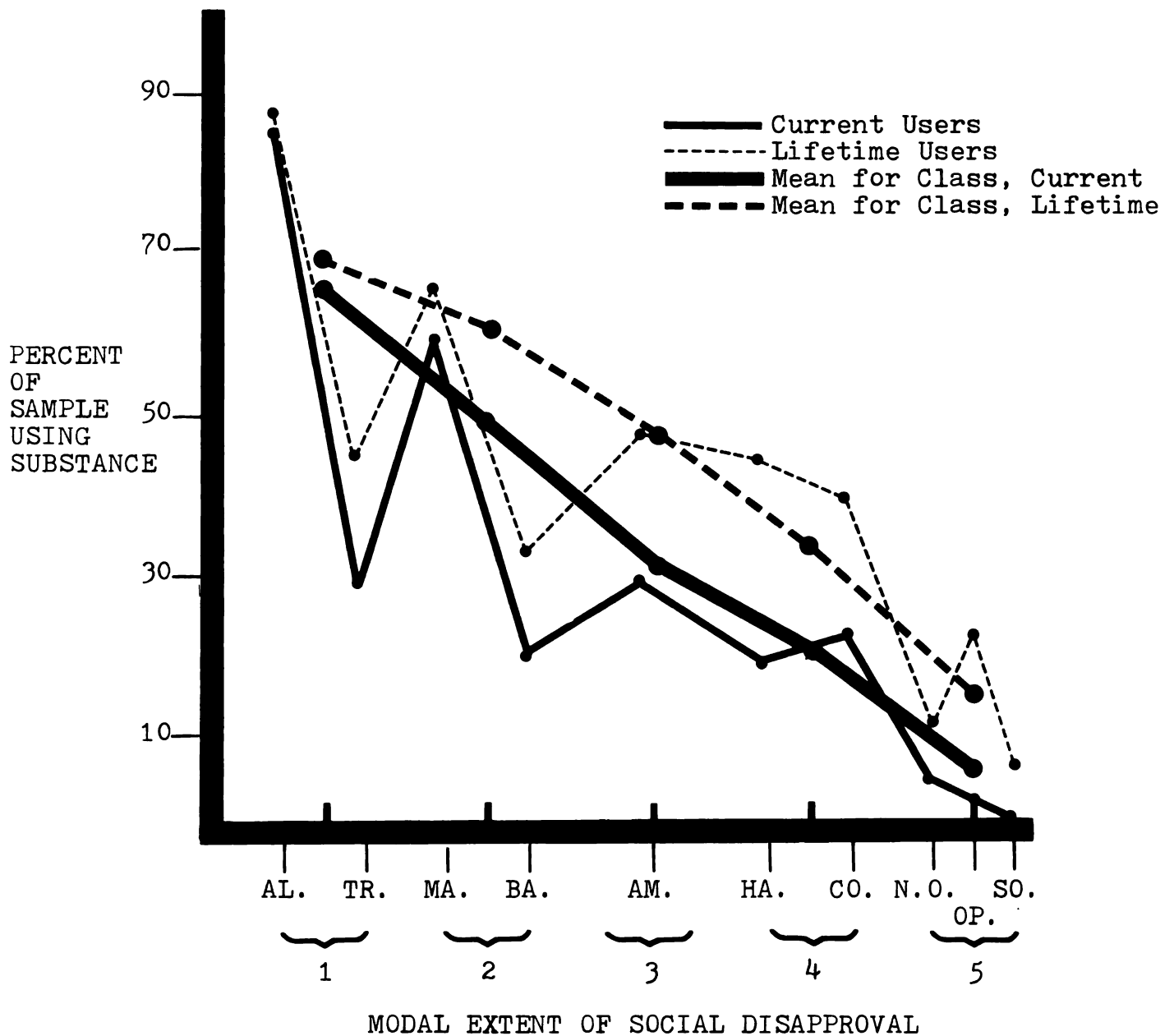
FIGURE 3

Social Disapproval and Extent of Drug Use

(e.g., tranquilizers and alcohol), or certain substances in adjoining classes whose expected usage rates are reversed (i.e., tranquilizers and marijuana).

Restriction of access to opportunities for valued goal attainment was seen as increasing the probability that an individual would use "hard" drugs (i.e., drugs with relatively severe social sanctions against their use), as well as increasing the frequency of use of any substance. Table 13 presents the relationship between drug use-nonuse and the two measures of access to opportunities, while Table 14 presents these relationships for frequency-variability of drug use.[7] As can be seen, the hypothesis receives little support. For Socioeconomic Status, there are no significant differences between users and nonusers of any of the substances, nor between individuals with high and low frequencies of use. Likewise, only four of the use-nonuse groups differ significantly in terms of Objective Access, and two of these differences are for drugs with minimal or moderate social sanctions against their use. Further, Objective Access does not discriminate between any of the frequency-variability groups.

Although only four of the mean differences in Objective Access between users or past users and nonusers are significant, ten of the 11 differences between users and nonusers are in the expected direction ($p < .006$, sign test), and the only reversal is for a drug with only minimal social disapproval (i.e., alcohol). However, there is no significant trend for Objective Access in relation to frequency-variability of use, nor for Socioeconomic Status and either measure of drug

TABLE 13

Access to Opportunities and Drug Use-Nonuse

Socioeconomic Status

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	NU-PU	NU-U	PU-U
Alcohol[2]	14.00	0	10.00	0	10.58	4.15			
Marijuana	10.70	4.03	10.33	3.97	10.61	4.20			
LSD	10.25	4.30	10.53	3.52	11.71	4.30			
Other Hall.	10.21	4.29	11.23	3.23	10.74	4.87			
Tranquilizers	10.82	4.00	10.65	2.40	10.18	4.95			
Barbiturates	10.49	3.93	11.60	4.61	10.12	4.40			
Amphetamines	10.92	3.84	9.87	3.65	10.51	4.87			
Cocaine	10.57	3.93	10.36	4.32	10.82	4.71			
Heroin	10.64	4.21	10.43	3.31	9.00	2.83			
Other Opiates	10.52	3.96	11.71	3.10	9.18	6.55			
Solvents	10.67	4.17	9.33	3.20	-	-			
Nitrous Oxide	10.52	3.98	10.89	4.75	11.80	6.72			

TABLE 13 (Cont'd)

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
			Objective Access						
Alcohol[2]	4.00	0	2.00	0	4.17	.70			
Marijuana*	4.47	.62	3.78	1.09	4.13	.68	*		
LSD	4.20	.81	4.03	.67	4.17	.48			
Other Hall.	4.16	.80	4.14	.69	4.13	.55			
Tranquilizers*	4.29	.69	3.82	.88	4.05	.65	*		
Barbiturates*	4.29	.68	3.80	.83	4.00	.66	*		
Amphetamines	4.25	.76	4.04	.82	4.05	.57			
Cocaine	4.17	.80	4.07	.47	4.14	.59			
Heroin	4.18	.73	3.71	.49	4.00	0			
Other Opiates	4.20	.76	4.05	.67	4.00	.45			
Solvents*	4.18	.72	3.50	.55	-	-	*		
Nitrous Oxide	4.15	.74	4.44	.53	3.80	.45			

* p < .05

1 Sheffe a posteriori comparison.

2 Statistical comparison not possible as n = 1 for nonuser and past user groups.

TABLE 14

Access to Opportunities and Frequency-Variability of Drug Use

| Drug | Frequency-Variability | | | |
| | High | | Low | |
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
	Socioeconomic Status			
Alcohol	10.59	4.10	10.61	4.19
Marijuana	11.36	3.75	10.18	4.29
Hallucinogens	11.54	4.49	10.37	4.02
Tranquilizers	9.71	4.92	10.78	3.95
Barbiturates	10.53	5.24	10.61	3.95
Amphetamines	10.55	5.12	10.61	3.94
Cocaine	10.68	4.82	10.57	3.85
Opiates	10.50	4.88	10.63	3.93
Nitrous Oxide	10.28	7.09	10.62	3.93
	Objective Access			
Alcohol	4.17	.70	4.14	.75
Marijuana	4.18	.58	4.14	.80
Hallucinogens	4.17	.56	4.15	.76
Tranquilizers	3.90	.77	4.20	.71
Barbiturates	3.94	.66	4.19	.73
Amphetamines	4.10	.64	4.16	.74
Cocaine	4.11	.58	4.17	.78
Opiates	4.04	.66	4.18	.74
Nitrous Oxide	4.28	.49	4.15	.74

Note: None of the differences are statistically significant.

use. Thus, the obtained results clearly do not support the hypotheses.

The apparent lack of relationship between access to opportunities and drug use may relate to a number of factors. Most notably, there is little differentiation on these measures for the sample as a whole. It will be recalled that the measure of <u>Objective Access</u> was derived from age, race, occupation, and marital status. Inspection of the demographic characteristics of the two samples presented in Table 1 reveals that only two of the respondents were members of ethnic minorities. Likewise, the vast majority of respondents were students, and most were single and in their twenties. Similar considerations may be applied to the measure of <u>Socioeconomic Status</u>. Consequently, there is some reason to expect that, had the samples differed more extensively in terms of demographic characteristics, (i.e., had there been less restriction in range) the expected relationships would have been supported.

Theoretically, to the extent that the normative constraints upon deviance were lessened, an individual should be more likely to use psychoactive drugs. Since prosocial groups serve to instill and maintain societal norms, individuals who interact with these groups should be less likely to use drugs. That is, they should be more likely to be nonusers or, if users, to have a low frequency of use. Further, since use of various drugs violates norms in differing degrees, an individual who participates in prosocial groups should be more likely to use "soft" drugs than "hard" drugs. Table 15 summarizes the relationship between <u>Participation in Prosocial Groups</u> and drug use-nonuse,

TABLE 15

Participation in Prosocial Groups and Drug Use-Nonuse

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
Alcohol[2]	1.00	0	4.00	0	1.94	1.15			
Marijuana	2.29	1.26	1.67	1.22	1.92	1.13			
LSD***	2.30	1.14	1.37	.96	1.67	1.09	*	*	*
Other Hall.**	2.27	1.14	1.57	1.01	1.61	1.20	*	*	
Tranquilizers*	2.19	1.20	1.70	1.16	1.63	1.00		*	
Barbiturates	2.09	1.17	1.65	1.22	1.75	1.03			
Amphetamines*	2.24	1.13	1.69	1.22	1.62	1.06		*	
Cocaine	2.11	1.18	1.36	1.01	1.78	1.07			
Heroin	1.98	1.17	1.71	.95	1.00	0			
Other Opiates	2.10	1.16	1.57	1.12	1.45	.93			

TABLE 15 (Cont'd)

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	NU-PU	NU-U	PU-U
Solvents	1.94	1.17	2.17	.98	-	-			
Nitrous Oxide	2.02	1.17	1.44	1.13	1.40	.55			

* p < .05
** p < .01
*** p < .001

[1] Sheffe a posteriori comparison.

[2] Statistical comparison not possible as $\underline{n} = 1$ for nonuser and past user groups.

while the relationship between frequency-variability of use and prosocial group participation is summarized in Table 16. In both cases the hypotheses receive only partial support once again. Users and nonusers differ significantly in Participation in Prosocial Groups for only four drugs, while only two of the comparisons between users differing in frequency-variability of use are significant. However, with the exception of the difference between users and nonusers of tranquilizers, all of the other significant differences are for drugs with high to severe normative violation scores. In addition, all nine of the mean differences for frequency-variability of use are in the expected direction ($p < .002$, sign test), as are 10 of the 11 differences for use-nonuse (with the one reversal once again being for alcohol use; $p < .006$, sign test). Thus, the hypotheses regarding normative constraints against deviance and drug use are generally supported.

Of the three sociocultural structures seen as having an influence on drug use, opportunities for observing and engaging in drug use was theoretically the most significant. Individuals who have opportunities for observing and engaging in drug use were hypothesized to be more likely to use drugs themselves and, among users, those with relatively high frequencies of use were expected to have more opportunities than those with a low frequency of use. Further, the higher the frequency of use and the more severe the normative sanctions against use of the drug, the greater should be the participation with other drug users.

TABLE 16

Participation in Prosocial Groups
and Frequency-Variability of Drug Use

Drug	Frequency-Variability			
	High		Low	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Alcohol	1.86	1.15	2.03	1.17
Marijuana	1.84	1.05	2.01	1.21
Hallucinogens*	1.54	1.02	2.05	1.17
Tranquilizers	1.71	1.01	2.00	1.19
Barbiturates	1.53	.94	2.02	1.18
Amphetamines*	1.50	.95	2.04	1.18
Cocaine	1.74	1.09	2.03	1.18
Opiates	1.85	1.08	1.98	1.18
Nitrous Oxide	1.71	1.11	1.96	1.16

* $p < .05$

Tables 17 and 18 summarize the relationship between the three measures of Opportunities for Deviance and use-nonuse and frequency-variability of use, respectively. Across the three measures, the hypotheses receive substantial support. In terms of use-nonuse, seven of the 12 comparisons for Opportunities for Deviance 2: Perceived Drug Use in the Social Environment and eight of the 12 comparisons for Opportunities for Deviance 3: Extent of Use With Friends are highly significant. Likewise, seven of the nine comparisons for Perceived Drug Use in the Social Environment and six of the nine for Extent of Use With Friends are significant for frequency-variability of use. Of the three measures, only Opportunities for Deviance 1: Sociodemographic Factors, clearly the weakest measure of the three, fails to result in significant differences for the majority of comparisons for both use-nonuse and frequency-variability of use. However, all nine of the mean differences in Sociodemographic Factors for frequency-variability of use, and nine of the 11 differences for use-nonuse are in the expected direction ($p < .002$ and $p < .03$, respectively, sign test).

These results clearly support the hypotheses that users of psychoactive drugs have more opportunities for observing and engaging in drug use than nonusers, and that individuals with a relatively high frequency of use have more opportunities for deviance than those with a low frequency of use (Opportunities for Deviance 1 and 2). Likewise, the results for the measure of participation in drug use with other users (Opportunities for Deviance 3) strongly support the hypothesis that

TABLE 17

Opportunity for Deviance and Drug Use-Nonuse

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
			Sociodemographic Factors						
Alcohol[2]	4.00	0	2.00	0	4.27	1.46			
Marijuana*	4.29	1.31	3.11	2.42	4.35	1.35			*
LSD	4.22	1.61	4.00	1.44	4.67	.92			
Other Hall.	4.14	1.66	4.26	1.34	4.56	.99			
Tranquilizers	4.31	1.47	4.00	1.73	4.26	1.35			
Barbiturates	4.13	1.59	4.35	1.18	4.58	1.21			
Amphetamines*	4.33	1.50	3.61	1.70	4.51	1.12			*
Cocaine	4.06	1.58	4.57	1.22	4.64	1.09			
Heroin	4.23	1.47	4.86	1.46	3.50	.71			
Other Opiates	4.19	1.51	4.43	1.50	4.45	.93			
Solvents	4.25	1.47	4.33	1.37	-	-			
Nitrous Oxide	4.21	1.50	4.33	1.12	5.00	1.00			

TABLE 17 (Cont'd)

Drug	Nonuser X̄	Nonuser S.D.	Past User X̄	Past User S.D.	User X̄	User S.D.	NU-PU	NU-U	PU-U
				Perceived Drug Use in the Social Environment					
Alcohol[2]	52.00	0	11.00	0	16.30	8.36			
Marijuana	13.59	12.61	11.33	2.45	17.56	8.29			
LSD***	12.93	6.76	20.60	10.42	21.92	7.61	*	*	
Other Hall.***	12.52	6.19	19.54	10.36	23.39	7.20	*	*	
Tranquilizers**	13.82	8.07	20.88	9.62	19.50	8.50	*	*	
Barbiturates****	13.82	7.68	18.45	7.06	23.96	9.68	*	*	*
Amphetamines***	13.59	8.21	15.52	7.66	22.24	8.23		*	*
Cocaine***	14.13	8.61	15.93	6.11	23.86	6.93		*	*
Heroin	16.39	8.90	17.28	9.98	23.50	4.95			
Other Opiates**	15.01	8.56	19.52	9.25	23.64	6.53	*	*	
Solvents	16.26	8.48	22.33	14.96	-	-			
Nitrous Oxide	16.30	9.08	19.11	8.22	17.40	6.46			

Paired Comparisons[1]

TABLE 17 (Cont'd)

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
			Extent of Use With Friends						
Alcohol[2]	0	0	0	0	32.88	26.96			
Marijuana***	6.53	8.78	26.11	21.11	37.45	27.07		*	
LSD***	24.14	22.68	37.77	27.91	49.17	29.08	*	*	
Other Hall.***	22.43	21.22	38.74	27.04	50.65	30.26	*	*	
Tranquilizers*	26.93	24.81	45.88	27.15	36.00	28.79	*		
Barbiturates**	26.19	22.70	42.55	29.99	44.12	32.08	*	*	
Amphetamines***	25.19	23.44	28.61	23.72	46.86	29.60		*	*
Cocaine***	24.28	21.11	41.71	34.34	51.00	28.62		*	*
Heroin	31.87	27.21	33.43	26.09	56.00	21.21		*	
Other Opiates***	26.56	24.55	44.76	27.98	56.54	25.90	*	*	

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TABLE 17 (Cont'd)

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	NU-PU	NU-U	PU-U
Solvents	32.76	27.01	24.33	29.41	-				
Nitrous Oxide	31.49	26.95	41.78	28.56	34.00	29.49			

* p < .05
** p < .01
*** p < .001

[1] Sheffe a posteriori comparison.

[2] Statistical comparison not possible as $\underline{n}$ = 1 for nonuser and past user groups.

TABLE 18

Opportunity for Deviance
and Frequency-Variability of Drug Use

| Drug | Frequency-Variability | | | |
| | High | | Low | |
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
	Sociodemographic Factors			
Alcohol	4.29	1.44	4.21	1.49
Marijuana*	4.66	1.16	4.02	1.57
Hallucinogens	4.46	1.10	4.20	1.54
Tranquilizers	4.28	1.55	4.24	1.45
Barbiturates	4.47	1.07	4.22	1.52
Amphetamines	4.55	1.15	4.19	1.51
Cocaine*	4.63	1.14	4.10	1.55
Opiates	4.46	1.27	4.19	1.51
Nitrous Oxide	5.00	.82	4.21	1.48
	Perceived Drug Use in Social Environment			
Alcohol	17.27	8.98	15.91	8.86
Marijuana**	19.91	9.08	14.68	8.29
Hallucinogens***	23.50	7.69	14.87	8.38
Tranquilizers*	20.43	9.25	15.75	8.67
Barbiturates***	26.23	7.35	15.00	8.15
Amphetamines***	26.50	7.07	14.62	7.90
Cocaine***	21.88	7.13	14.43	8.69
Opiates***	22.58	8.56	14.94	8.32
Nitrous Oxide	19.00	4.65	16.40	9.09

TABLE 18 (Cont'd)

Drug	Frequency-Variability			
	High		Low	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Extent of Use With Friends				
Alcohol	35.31	27.01	29.71	27.04
Marijuana***	52.98	26.82	20.86	19.37
Hallucinogens***	48.46	30.44	28.44	24.80
Tranquilizers	33.57	29.66	32.09	26.65
Barbiturates*	45.88	35.20	30.18	25.05
Amphetamines***	54.80	29.01	27.99	24.52
Cocaine***	45.80	28.54	27.00	24.63
Opiates***	50.27	29.59	27.55	24.34
Nitrous Oxide	42.71	30.90	31.72	26.84

* $p < .05$
** $p < .01$
*** $p < .001$

individuals with a high frequency of drug use will interact with other users to a greater extent than those with a relatively low frequency of use. However, none of these measures appear to differentiate users of "hard" versus "soft" drugs. Thus, the hypothesis that users of "hard" drugs will interact with other users to a greater extent than users of "soft" drugs is not supported by these results.

Hypothesis Six states that individuals will conform to the type or pattern of drug use characteristic of their friends. That is, they will use only those drugs which their friends use. The results relevant to evaluating this hypothesis are summarized in Tables 19 and 20. These tables contrast individuals on a number of measures of interaction with their five closest friends in terms of use-nonuse and frequency-variability use, respectively. In sum, for both use-nonuse and frequency-variability of use, individuals who are more extensively involved with drugs in general use significantly more drugs with their friends, and spend significantly more time when with their friends engaged in drug use. Since these groups do not differ significantly in terms of the amount of leisure time they spend with their five closest friends, these results support the notion of drug users being involved in a drug-using "subculture" which centers around the use of drugs. However, drug users and users with a high frequency of use also use significantly more drugs that their friends do not, use drugs significantly more often when their friends are not using drugs, and use drugs which their friends disapprove of significantly more often than nonusers or users with a relatively low frequency of use. Thus,

TABLE 19

Interaction with Closest Friends and Drug Use-Nonuse

Variable	Drug	Nonuser		Past User		User		Paired Comparisons[1]		
		X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
X̄ Number of Drugs Used By Both S and Friends	Alcohol[2]	0	0	0	0	2.20	1.60			
	Marijuana***	.86	.28	.84	.52	2.48	1.64		*	*
	LSD***	1.44	.68	2.33	1.28	4.02	2.27	*	*	*
	Other Hall.***	1.50	.82	1.96	.92	4.32	2.45		*	*
	Tranquilizers***	1.72	1.30	2.23	1.26	2.92	1.98		*	
	Barbiturates***	1.52	.80	2.77	1.99	3.82	1.98	*	*	*
	Amphetamines***	1.43	.57	1.61	.99	3.78	1.98		*	*
	Cocaine***	1.50	.74	2.77	2.33	3.71	1.86	*	*	
	Heroin	2.12	1.62	2.47	1.49	3.70	.71			
	Other Opiates***	1.74	1.01	2.35	1.24	5.13	2.73		*	*
	Solvents	2.17	1.64	1.80	.80	-	-			
	Nitrous Oxide	2.00	1.26	3.11	2.80	3.72	3.74			
X̄ Number of Drugs Used By S Only	Alcohol[2]	0	0	0	0	1.28	1.68			
	Marijuana	.14	.37	.82	1.20	1.47	1.76		*	
	LSD***	.67	.78	1.32	1.45	2.89	2.57		*	*

TABLE 19 (Cont'd)

Variable	Drug	Nonuser X̄	Nonuser S.D.	Past User X̄	Past User S.D.	User X̄	User S.D.	NU-PU	NU-U	PU-U
	Other Hallucinogens***	.66	.78	1.18	1.09	3.10	2.72		*	*
	Tranquilizers***	.68	1.34	.70	.66	2.57	1.84		*	*
	Barbiturates***	.68	.79	1.52	2.11	3.04	2.19		*	*
	Amphetamines***	.49	.52	1.08	.99	2.70	2.32		*	*
	Cocaine***	.67	.77	1.93	2.66	2.59	2.07	*	*	
	Heroin	1.21	1.68	1.70	.99	2.80	2.83			
	Other Opiates***	.90	1.05	1.11	.91	4.33	3.23		*	*
	Solvents	1.25	1.69	1.45	1.35	-	-			
	Nitrous Oxide***	1.00	1.12	2.09	3.00	5.28	2.93		*	*
X̄ Number of Drugs Used By Friends Only	Alcohol[2]	2.00	0	1.60	0	.56	.75			
	Marijuana	.90	.99	.73	.69	.52	.72			
	LSD	.53	.75	.88	.92	.34	.36			*
	Other Hall.*	.50	.77	.88	.80	.35	.51			*
	Tranquilizers***	.53	.72	1.19	.95	.39	.57	*		
	Barbiturates	.54	.73	.81	.71	.49	.89			
	Amphetamines	.55	.75	.79	.95	.49	.62			

TABLE 19 (Cont'd)

Variable	Drug	Nonuser		Past User		User		Paired Comparisons[1]		
		X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
	Cocaine	.58	.82	.60	.63	.58	.65			
	Heroin	.56	.75	.77	.96	.90	1.27			
	Other Opiates**	.50	.68	1.05	.95	.27	.57		*	*
	Solvents	.56	.70	1.25	1.79	-	-			
	Nitrous Oxide	.60	.78	.62	.72	.08	.11			
X̄ Amount of Leisure Time Spent With Friends	Alcohol[2]	2.00	0	1.80	0	2.89	1.13			
	Marijuana	2.99	1.42	2.89	1.31	2.86	1.08			
	LSD*	2.93	1.05	2.43	.91	3.30	1.42		*	*
	Other Hall.	2.88	1.08	2.68	.83	3.18	1.58			
	Tranquilizers	2.81	1.01	2.70	.75	3.08	1.44			
	Barbiturates	2.87	1.05	2.66	.75	3.11	1.60			
	Amphetamines	2.94	1.09	2.42	.83	3.08	1.31			
	Cocaine	2.82	1.00	2.77	.89	3.09	1.54			
	Heroin	2.84	1.13	3.10	1.03	4.10	1.27			
	Other Opiates	2.83	1.03	2.73	.78	3.49	2.04			
	Solvents	2.89	1.14	2.50	1.01	-	-			
	Nitrous Oxide	2.87	1.05	2.51	.87	3.72	2.55			

TABLE 19 (Cont'd)

Variable	Drug	Nonuser		Past User		User		Paired Comparisons[1]		
		X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
X̄ Amount S and Friends Both Use Drugs	Alcohol[2]	0	0	0	0	2.46	1.81			
	Marijuana***	.53	.64	2.00	1.37	2.73	1.81	*		
	LSD***	1.72	1.48	3.22	1.90	3.37	1.84	*	*	*
	Other Hall.***	1.69	1.55	2.99	1.81	3.56	1.72	*	*	*
	Tranquilizers*	2.02	1.71	3.41	1.95	2.66	1.79	*	*	
	Barbiturates***	1.97	1.63	3.05	1.58	3.38	2.16	*	*	*
	Amphetamines***	1.92	1.65	2.26	1.72	3.36	1.86	*	*	
	Cocaine***	1.88	1.65	2.86	1.76	3.72	1.66			*
	Heroin	2.39	1.86	2.66	1.59	2.90	.14			
	Other Opiates****	2.06	1.77	3.20	1.73	3.71	1.37	*	*	*
	Solvents	2.40	1.79	3.00	2.83	-	-			
	Nitrous Oxide	2.35	1.83	3.24	1.64	2.28	1.98			
X̄ Amount S Use Drugs When Friends Do Not	Alcohol[2]	0	0	0	0	1.15	1.16			
	Marijuana	.26	.45	1.27	1.53	1.24	1.15			
	LSD***	.75	.99	1.59	1.04	1.63	1.40	*	*	*
	Other Hall.***	.68	.86	1.69	1.28	1.53	1.24	*	*	*

TABLE 19 (Cont'd)

Variable	Drug	Nonuser		Past User		User		Paired Comparisons[1]		
		X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
	Tranquilizers***	.74	.88	1.68	1.21	1.57	1.35		*	*
	Barbiturates****	.80	1.01	1.83	1.19	1.64	1.21		*	*
	Amphetamines**	.81	.95	1.12	1.03	1.68	1.38			*
	Cocaine***	.77	.91	1.43	.97	1.99	1.43			*
	Heroin	1.09	1.18	1.33	.56	2.70	.99			
	Other Opiates***	.89	1.07	1.60	.90	2.13	1.56		*	*
	Solvents	1.11	1.16	1.65	1.37	-	-			
	Nitrous Oxide	1.10	1.19	1.47	1.01	1.20	.85			
X̄ Disapproval By Friends of Drugs Only S Uses	Alcohol[2]	0	0	0	0	-.23	.38			
	Marijuana	.03	.07	-.33	.50	-.25	.39			
	LSD	-.23	.39	-.23	.38	-.19	.39			
	Other Hall.	-.22	.38	-.21	.32	-.23	.48			
	Tranquilizers	-.19	.34	-.10	.26	-.33	.47			
	Barbiturates	-.23	.37	-.14	.25	-.28	.51			
	Amphetamines	-.21	.37	-.21	.34	-.25	.44			
	Cocaine*	-.20	.34	-.04	.20	-.36	.49			

TABLE 19 (Cont'd)

Variable	Drug	Nonuser		Past User		User		Paired Comparisons[1]		
		X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
	Heroin	-.23	.38	-.13	.47	-.10	.14			
	Other Opiates	-.22	.38	-.24	.37	-.22	.45			
	Solvents	-.22	.38	-.40	.49	-	-			
	Nitrous Oxide	-.22	.38	-.27	.28	-.28	.59			
X̄ Amount S Uses Disap- proved	Alcohol[2]	0	0	0	0	1.17	1.56			
	Marijuana	.14	.37	1.45	2.26	1.28	1.54			
	LSD	.99	1.47	1.04	1.45	1.72	1.80			
	Other Hall.*	.81	1.33	1.23	1.61	1.95	1.77		*	
	Tranquilizers***	.80	1.09	.72	1.04	1.94	2.06		*	*
	Barbiturates**	.87	1.25	1.08	1.34	2.17	2.19	*		
	Amphetamines***	.81	1.12	.78	1.21	1.95	2.03		*	*
	Cocaine**	.89	1.26	1.00	1.89	1.96	1.85		*	
	Heroin	1.20	1.59	.50	.56	.60	.28			
	Other Opiates	1.02	1.53	1.15	1.43	2.09	1.72			

TABLE 19 (Cont'd)

| Variable | | Nonuser | | Past User | | User | | Paired Comparisons[1] |
	Drug	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	NU-PU NU-U PU-U
	Solvents	1.12	1.51	2.29	2.98	–	–	
	Nitrous Oxide**	1.00	1.38	1.87	1.87	3.04	2.79	*

* p < .05
** p < .01
*** p < .001

[1] Sheffe a posteriori comparison.

[2] Statistical comparison not possible as $\underline{n}$ = 1 for nonuser and past user groups.

TABLE 20

Interaction With Closest Friends
and Frequency-Variability of Drug Use

Variable	Drug	Frequency-Variability			
		High		Low	
		$\bar{X}$	S.D.	$\bar{X}$	S.D.
$\bar{X}$ Number of Drugs Used By Both S and Friends	Alcohol	2.24	1.42	2.08	1.79
	Marijuana***	3.23	2.11	1.55	.75
	Hallucinogens***	3.17	1.97	1.44	.70
	Tranquilizers**	3.01	2.05	1.87	1.33
	Barbiturates***	3.74	2.09	1.57	.84
	Amphetamines***	4.21	2.17	1.61	.80
	Cocaine***	3.64	2.15	1.56	.76
	Opiates***	3.60	2.43	1.77	1.03
	Nitrous Oxide	4.66	3.84	2.00	1.24
$\bar{X}$ Number of Drugs Used By S Only	Alcohol	1.29	1.34	1.23	1.96
	Marijuana*	1.79	2.23	.96	1.17
	Hallucinogens***	1.99	2.15	.74	.95
	Tranquilizers***	2.49	1.98	.84	1.33
	Barbiturates***	2.51	2.47	.79	.92
	Amphetamines***	2.87	2.57	.83	.98
	Cocaine***	2.50	2.39	.76	.90
	Opiates*	2.29	2.73	.99	1.13
	Nitrous Oxide*	4.63	3.87	1.05	1.19
$\bar{X}$ Number of Drugs Used By Friends	Alcohol	.57	.79	.59	.73
	Marijuana	.61	.83	.56	.72
	Hallucinogens	.66	.77	.52	.75
	Tranquilizers	.43	.60	.63	.80
	Barbiturates	.69	.84	.54	.73
	Amphetamines	.48	.61	.61	.80
	Cocaine	.54	.64	.59	.81
	Opiates	.88	.96	.50	.68
	Nitrous Oxide	.23	.44	.60	.77

TABLE 20 (Cont'd)

Variable	Drug	Frequency-Variability			
		High		Low	
		$\bar{X}$	S.D.	$\bar{X}$	S.D.
$\bar{X}$ Amount of Leisure Time Spent With Friends	Alcohol	2.71	.98	3.03	1.24
	Marijuana*	3.14	1.25	2.72	1.04
	Hallucinogens	3.16	1.50	2.81	1.02
	Tranquilizers	3.16	1.81	2.82	.85
	Barbiturates	3.11	1.73	2.84	1.02
	Amphetamines	3.07	1.59	2.84	1.03
	Cocaine	2.91	1.37	2.87	1.03
	Opiates	3.14	1.51	2.81	1.01
	Nitrous Oxide	3.60	2.16	2.83	1.03
$\bar{X}$ Amount S and Friends Both Use Drugs	Alcohol	2.73	1.93	2.13	1.69
	Marijuana***	3.66	1.81	1.70	1.42
	Hallucinogens**	3.52	1.79	2.15	1.74
	Tranquilizers	2.70	1.81	2.36	1.83
	Barbiturates*	3.66	2.12	2.23	1.71
	Amphetamines***	4.07	1.70	2.10	1.67
	Cocaine***	3.44	1.70	2.00	1.71
	Opiates***	3.59	1.54	2.10	1.77
	Nitrous Oxide	2.66	1.81	2.40	1.83
$\bar{X}$ Amount S Uses Drugs When Friends Do Not	Alcohol	1.28	1.23	.99	1.09
	Marijuana**	1.60	1.40	.86	.91
	Hallucinogens*	1.62	1.40	1.01	1.07
	Tranquilizers	1.56	1.41	1.05	1.10
	Barbiturates*	1.89	1.58	1.02	1.06
	Amphetamines*	1.85	1.51	.99	1.04
	Cocaine***	1.75	1.36	.88	.97
	Opiates***	1.82	1.22	.94	1.08
	Nitrous Oxide	1.14	.67	1.13	1.19

TABLE 20 (Cont'd)

Variable	Drug	Frequency-Variability			
		High $\bar{X}$	S.D.	Low $\bar{X}$	S.D.
X̄ Disapproval By Friends of Drugs Only S Uses	Alcohol	-.21	.39	-.23	.38
	Marijuana	-.24	.40	-.21	.37
	Hallucinogens	-.22	.45	-.22	.37
	Tranquilizers	-.33	.46	-.20	.37
	Barbiturates	-.32	.51	-.21	.36
	Amphetamines	-.30	.49	-.21	.36
	Cocaine	-.29	.48	-.19	.33
	Opiates	-.23	.41	-.22	.38
	Nitrous Oxide	-.28	.38	-.22	.38
X̄ Amount S Uses Disapproved Drugs	Alcohol	1.07	1.51	1.22	1.59
	Marijuana	1.29	1.38	1.07	1.64
	Hallucinogens**	2.31	1.92	.85	1.29
	Tranquilizers**	2.89	2.32	.82	1.10
	Barbiturates**	2.80	1.99	.90	1.31
	Amphetamines***	2.42	1.77	.91	1.39
	Cocaine**	1.86	2.01	.86	1.21
	Opiates*	1.77	1.66	.97	1.48
	Nitrous Oxide*	3.57	2.61	1.01	1.37

   * p < .05
  ** p < .01
*** p < .001

although the results support the notion of involvement in a
drug-using subculture, they do not support the hypothesis that
individuals use only those drugs which are used by their friends.

In summary, four of the six hypotheses concerning the re-
lation between structures in the sociocultural system and drug
use were at least partially supported. The proportion of indi-
viduals using particular drugs was significantly and inversely
related to the severity of normative sanctions against use of
the drug (Hypothesis 1). On the other hand, neither users as
compared to nonusers (Hypothesis 2a) or users with a high fre-
quency of use as compared to those with a low frequency of use
(Hypothesis 2b) were significantly more restricted in access
to opportunities for valued goal attainment. However, the lack
of support for these hypotheses may be related to a relatively
restricted range in sociodemographic characteristics for the
respondents as a whole. Both users as compared to nonusers
(Hypothesis 3a) and users with a high frequency of use (Hypo-
thesis 3c) were less involved with prosocial groups than non-
users or users with a low frequency of use. While not all of
these differences were significant, all but one were in the
expected direction. Thus, these hypotheses were generally sup-
ported. However, these differences were not stronger for use
of "hard" as opposed to "soft" drugs (Hypothesis 3b). Indivi-
duals who use psychoactive drugs and those with a high frequency
of use also had significantly more opportunities for observing
and engaging in drug use (Hypotheses 4a and b), and participa-
ted significantly more often in drug use with their friends
(Hypothesis 5a) than nonusers or users with a low frequency

of use. However, once again these differences were not greater for users of "hard" drugs than users of "soft" drugs (Hypothesis 5b). Finally, an individual's type or pattern of drug use was not found to conform to the pattern of use characteristic of his/her friends (Hypothesis 6).

The overall pattern of these results strongly argue for a "subcultural" theory of psychoactive drug use. Individuals who use psychoactive drugs were found to be less involved in prosocial, non-drug-using groups, and more involved in groups which center around the use of drugs than nonusers. Similarly, these characteristics are also applicable to individuals who have a relatively high frequency of drug use as compared to low frequency users. Thus, the more extensively an individual is involved in the use of drugs, the more his social relationships center around drug use. S/he perceives a greater proportion of individuals in the social environment to be drug users, and participates in drug use with his/her friends who use drugs during most of the time they spend together. Further, the particular type of drugs the individual uses appears to have little effect on these relationships. Users of marijuana or tranquilizers appear to be just as involved in a drug-using subculture as cocaine or heroin users. Thus, it may be that the most significant step is that from total abstainer to drug user, regardless of which drug or drugs are used. However, it should be noted that it was impossible to compare individuals who only used "soft" drugs with those using "hard" drugs in these univariate analyses because of overlapping group membership (i.e., individuals who used opiates and alcohol would be members of

the group of "users" for both of these drugs). Thus, a final evaluation of these hypotheses is not possible until the results of the multivariate analyses are discussed.

The Personality System and Drug Use. The theoretical framework proposed earlier identified two personality variables which were seen as conducive to drug use. To the extent that an individual is tolerant of deviant behavior in general, s/he should be more likely to use psychoactive drugs. Similarly, individuals who use drugs should have more positive expectations for drug use than nonusers. That is, in addition to being more or less predisposed to engaging in drug use by the sociocultural environment, individuals also have personality characteristics which make the probability of their using drugs more or less likely. Even if the sociocultural environment is extremely conducive to deviant behavior, the individual personality still has a decisive influence on the decision to use drugs.

The relationships between Tolerance of Deviance and drug use-nonuse and frequency-variability of use are summarized in Tables 21 and 22, respectively. In three of the comparisons users of psychoactive drugs are significantly more tolerant of deviance than nonusers or past users, while only users with a high frequency of amphetamine use are significantly more tolerant of deviance than low frequency amphetamine-users. However, in both cases all but one of the mean differences are in the expected direction ($p < .006$ and $p < .02$ for use-nonuse and frequency-variability of use, respectively; sign test). Thus, the hypothesis is generally supported. In addition, all of the significant differences are for drugs with high to severe

TABLE 21

Tolerance of Deviance and Drug Use-Nonuse

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
Alcohol[2]	50.00	0	59.00	0	62.91	15.59			
Marijuana	69.47	15.64	62.44	16.49	61.61	15.26			
LSD	65.23	14.26	58.77	14.84	60.61	18.96			
Other Hall.	65.52	14.84	59.83	13.71	59.32	18.99			
Tranquilizers	64.24	14.90	60.00	13.59	61.42	17.38			
Barbiturates	64.14	14.39	61.84	16.80	59.00	17.90			
Amphetamines	62.30	14.20	65.22	13.65	62.03	18.78			
Cocaine*	63.31	15.22	70.69	8.37	57.33	17.35			*
Heroin*	63.01	15.10	67.28	16.81	33.50	3.53		*	*
Other Opiates*	64.16	15.51	62.86	13.98	49.90	13.83		*	
Solvents	62.69	15.67	64.33	13.00	-	-			
Nitrous Oxide	63.16	15.44	62.50	12.93	54.80	21.50			

* p < .05

1 Sheffe a posteriori comparison.

2 Statistical comparison not possible as n = 1 for nonuser and past user groups.

TABLE 22

Tolerance of Deviance and Frequency-Variability of Drug Use

Drug	Frequency-Variability				
	High $\bar{X}$	S.D.	Low $\bar{X}$	S.D.
Alcohol	60.26	14.44	65.05	16.20
Marijuana	60.25	17.74	64.14	14.09
Hallucinogens	58.48	17.12	63.77	15.03
Tranquilizers	57.95	17.18	63.77	15.04
Barbiturates	57.06	18.55	63.69	14.86
Amphetamines*	56.10	16.99	64.00	14.99
Cocaine	60.94	16.82	63.48	15.02
Opiates	61.04	14.42	63.22	15.82
Nitrous Oxide	69.00	9.65	62.45	15.72

* $p < .05$

normative violation scores. This finding provides support for
the hypothesis that the relationship between attitudinal tol-
erance of deviance and drug use will be stronger for use of
"hard" drugs than "soft" drugs.

The personality variable theoretically most proximal to
drug use is expectations about use itself. Individuals who
use psychoactive drugs should have positive expectations and
evaluations of drug use, while non-users theoretically should
perceive use more negatively. The relationships between use-
nonuse, frequency-variability of use and <u>Positive Expectations</u>
<u>for Drug Use</u> are summarized in Tables 23 and 24, respectively.
In all possible comparisons, users have more positive expec-
tations and evaluations of drug use than nonusers. Further,
users with a high frequency of use have more positive expec-
tations than those with a low frequency of drug use for every
substance. That is, users and high frequency users as a group
are more likely to report that they will continue to use drugs
in the future, report more positive experiences with drugs,
and view drug use as less dangerous than nonusers and users
with a low frequency of use, respectively.

In summary, both of the hypothesized relationships between
drug use and the personality variables included in the theore-
tical framework were supported. The more extensively an indi-
vidual is involved in drug use, the more tolerant of deviant
behavior in general s/he is, and the more positively s/he eval-
uates drug use in particular.

TABLE 23

Positive Expectations for Drug Use and Use-Nonuse

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	X̄	S.D.	X̄	S.D.	X̄	S.D.	NU-PU	NU-U	PU-U
Alcohol[2]	41.00	0	20.00	0	53.16	18.32			
Marijuana***	33.82	10.32	45.22	13.66	56.82	17.71		*	
LSD**	44.64	15.11	60.80	17.91	66.25	15.90	*	*	
Other Hall.***	43.71	14.71	56.77	13.86	72.43	16.99	*	*	*
Tranquilizers***	45.79	14.91	56.76	21.75	63.55	17.28	*	*	
Barbiturates***	45.58	14.38	58.65	15.79	71.67	17.83	*	*	*
Amphetamines***	44.03	13.87	52.13	14.97	68.13	17.56	*	*	*
Cocaine***	45.15	13.91	55.50	10.91	73.57	16.72	*	*	*
Heroin**	52.10	18.16	51.71	8.67	96.00	1.41		*	*
Other Opiates***	47.39	14.98	59.33	13.51	85.00	16.42	*	*	*

TABLE 23 (Cont'd)

Drug	Nonuser		Past User		User		Paired Comparisons[1]		
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	NU-PU	NU-U	PU-U
Solvents	52.61	18.74	56.50	11.76	-	-			
Nitrous Oxide**	51.10	17.76	60.78	12.60	75.40	26.16		*	

* p < .05
** p < .01
*** p < .001

1 Sheffe a posteriori comparison.

2 Statistical comparison not possible as $\underline{n}$ = 1 for nonuser and past user groups.

TABLE 24

Positive Expectations for Drug Use
and Frequency-Variability of Use

Drug	Frequency-Variability			
	High		Low	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Alcohol*	56.26	18.23	49.71	18.22
Marijuana**	64.82	17.77	46.10	15.20
Hallucinogens**	71.37	16.49	48.29	15.96
Tranquilizers**	66.14	18.68	50.05	17.24
Barbiturates**	76.35	15.19	49.02	15.60
Amphetamines**	76.75	14.96	48.14	15.20
Cocaine*	69.14	16.86	46.29	14.69
Opiates**	71.15	17.78	47.88	15.31
Nitrous Oxide*	69.28	15.04	51.80	18.21

  * $p < .05$
** $p < .001$

Multivariate Analyses

Although the univariate analyses presented above constitute the primary tests of the hypotheses, it is the multivariate approach to understanding drug use which is of the greatest theoretical significance. That is, although each of the personality and sociocultural variables included in the theoretical framework are seen as having a significant influence on drug use, the relation of any of these variables in isolation to drug use may be minimal or even nonexistant. Rather, it is the overall pattern of relationships resulting from the interaction of these variables within the individual which is decisive. For example, although an individual may be highly tolerant of deviance and participate very infrequently in prosocial groups, s/he is not likely to use drugs unless the social environment provides opportunities for observing and engaging in drug use. Conversely, no matter what the extent of drug use in the social environment, the individual is unlikely to become a user if s/he is convinced that the use of drugs invariably leads to negative consequences. Thus, any evaluation of the theoretical framework must include an examination of the relationship between the system of sociocultural and personality variables and drug use--i.e., a multivariate analysis.

The idea of a "pattern" may also be applied to drug use itself. That is, individuals may differ in terms of the particular drug(s) they use, the frequency with which they use them, and, if multiple-drug users, in the relative frequencies with which they use the various drugs (i.e., variability). None of these differences are taken into account in any simple

classification of "user-nonuser" for individual substances.
Likewise, even the comparison of individuals in terms of "fre-
quency-variability" of use leaves out much useful information
so long as it is applied solely to individual drugs. In each
case, individuals who differ extensively in their use of drugs
as well as their personality and sociocultural characteristics
may be grouped into a single category. Consequently, the best
means of comparing individuals who differ in their drug use is
one which utilizes the maximum amount of information in forming
the drug-use comparison groups: that is, one which forms groups
on the basis of the members' overall pattern of drug use. Such
a procedure should theoretically maximize intra-group homogeneity
on relevant characteristics, thereby increasing the probability
of finding significant differences between groups. In statis-
tical terminology, the procedure should decrease the probability
of committing a Type II error.

The Patterns of Psychoactive Drug Use. As a first step in
attempting to group individuals on the basis of their overall
pattern of drug use, some measure of the interrelationships be-
tween use of the various drugs must be derived. Table 25 pre-
sents the intercorrelations among the nine substances currently
used by respondents, based on frequency-variability scores. In
terms of the matrix as a whole, there is clearly a substantial
amount of interrelationship among the various drugs: the aver-
age off-diagonal correlation is .30 (p < .01), indicating that
use of any of the psychoactive drugs tends to be positively re-
lated to use of any or all other substances. However, the pat-
tern of correlations within the matrix suggests that certain

TABLE 25

Drug Use Intercorrelations

	Frequency-Variability								
	AL.	MA.	HA.	TR.	BA.	AM.	CO.	OP.	N.O.
Alcohol									
Marijuana	28**								
Hallucinogens	20*	41**							
Tranquilizers	28**	08	31**						
Barbiturates	18*	39**	66**	49**					
Amphetamines	11	38**	34**	26**	51**				
Cocaine	12	43**	49**	20*	38**	32**			
Opiates	19*	44**	45**	24*	56**	30**	43**		
Nitrous Oxide	-10	26**	29**	09	28**	11	37**	28**	

  * $p < .05$
** $p < .01$

TABLE 26

Cluster Analysis of Drug Use Frequency-Variability Scores

Drug	Cluster Membership	Cluster Score Coefficients	
		1	2
Alcohol	2	.140	.301
Marijuana	1	.385	.000
Hallucinogens	1	.440	.150
Tranquilizers	2	.239	.470
Barbiturates	1	.450	.255
Amphetamines	1	.327	.125
Cocaine	1	.403	.105
Opiates	1	.410	.115
Nitrous Oxide	1	.265	.035

Minimum correlation for cluster inclusion = .25.

Minimum B-coefficient[1] for cluster inclusion = 1.30.

[1] Ratio of average correlation of variables in cluster to average correlation of variables not in cluster.

substances tend to be more highly interrelated than others. There is thus sufficient rationale for attempting to derive subsets or clusters of substances within the matrix as a whole.

The intercorrelation matrix presented in Table 25 was subjected to a cluster analysis (Fruchter, 1954). In brief, cluster analyses attempt to group variables into discrete subsets, such that the correlation between elements within clusters is maximized and the correlation of elements across clusters is minimized. The results of this analysis are summarized in Table 26. Using a minimum within-cluster correlation of .25, two discrete clusters were output. Cluster 2 contained alcohol and tranquilizers, while Cluster 1 contained all other substances.[8] The clustering of alcohol and tranquilizers probably results from the fact that, although alcohol was correlated with almost all other substances, certain individuals with a high frequency of alcohol use were unlikely to use any other substance except tranquilizers.

In order to form drug-use groups, the cluster score coefficients contained in Table 26 were used to compute cluster scores for each subject (analogous to factor scores; Harman, 1960). The distributions of these cluster scores were then split at the median, forming "high" and "low" groups for each cluster. The four possible combinations of these groups defined the drug-use groups for the multivariate analysis. Group 1 was composed of all respondents who had high scores on both clusters (n = 53). Group 2 contained all respondents who were high on Cluster 1 and low on Cluster 2 (n = 9), while all respondents who were low on Cluster 1 and high on Cluster 2 formed

Group 3 ($\underline{n}$ = 14). Finally, Group 4 was composed of all respondents who had low scores on both of the clusters ($\underline{n}$ = 47). It should be noted here that the relative sizes of the groups are as would be expected from the degree of intercorrelation among the various drugs. That is, respondents either tended to use all of the drugs, or not to use any of them. Individuals who made extensive use of drugs in one of the clusters but minimal use of drugs in the other cluster were relatively rare.

In order to test the validity of this grouping, as well as clarify the relationship between drug use and group membership, the four drug-use groups were subjected to a multiple discriminant analysis using frequency-variability scores as the predictors. This analysis locates the best reduced-rank model for parsimoniously but effectively describing the measured differences among groups located in different areas of a multivariate measurement space. Thus, it may be interpreted as a special type of factor analysis that extracts orthogonal factors from the measurement battery for the task of displaying and capitalizing upon differences among the criterion groups (Cooley & Lohnes, 1971). As a first step, a multivariate analysis of variance is performed to determine if the groups can be significantly differentiated on the basis of the predictor variables. If this is the case, the analysis proceeds to derive the components which best separate the groups in the multivariate measurement space.

The results of the discriminant analysis are summarized in Table 27. Rao's $\underline{F}$ for the equality of group centroids was highly significant, indicating that the four groups could be

TABLE 27

Discriminant Analysis of Group Differences in Frequency-Variability of Drug Use

Variable	Group 1 (N=53) Means	Group 2 (N=9) Means	Group 3 (N=14) Means	Group 4 (N=47) Means	Pooled Groups S.D.'s	Univariate $F(3,119)$	$\underline{N}$	Significance
Alcohol	29.09	11.55	31.78	11.46	14.68	24.98	.79	< .0001
Marijuana	27.38	34.00	5.36	4.72	18.03	30.59	.88	< .0001
Hallucinogens	2.87	.78	0	.04	3.04	9.98	.50	< .0001
Tranquilizers	5.34	.22	.93	.06	6.14	8.19	.45	< .0001
Barbiturates	2.36	.22	0	.02	2.86	7.70	.44	< .0001
Amphetamines	4.15	.44	.14	.21	5.67	6.18	.39	< .001
Cocaine	1.87	.22	0	.22	2.01	10.37	.51	< .0001
Opiates	1.43	0	0	.44	2.70	2.80	.26	.043
Nitrous Oxide	.28	0	0	.14	.92	.88	.15	.468

For Equality of Centroids, Rao's $\underline{F}(30,323) = 33.82$; $\underline{\boldsymbol{n}} = .71$; $\underline{p} < .001$

Roots Removed	Eigenvalue	Canonical Correlation	Percent of Trace	Wilks Lambda	Chi Square	D.F.	Significance
0	1.496	.774	70.9	.241	164.85	30	< .0001
1	.533	.591	25.2	.603	58.74	18	< .0001
2	.082	.276	3.9	.924	9.17	8	.328

TABLE 27 (Cont'd)

Standardized Discriminant Function Coefficients

Variable	1	2
Alcohol	-.5538	1.1233
Marijuana	-.9541	-1.1830
Hallucinogens	-.2391	-.1008
Tranquilizers	-.4873	-.2105
Barbiturates	.0501	.1082
Amphetamines	-.1018	.2789
Cocaine	-.3498	.2354
Opiates	.3875	.1075
Nitrous Oxide	.0555	.3274

Group Centroids in Discriminant Space

Group	1	2
1	-1.2869	.0934
2	-.2624	-2.0187
3	.4935	1.3523
4	1.3545	-.1216

significantly discriminated on the basis of their frequency-variability scores. Examination of the univariate $\underline{F}$ ratios shows that the groups differed significantly on frequency-variability of use of every substance except nitrous oxide. Further, the pattern of mean frequency-variability scores, as expected, is consistent with the results of the cluster analysis. That is, respondents in Group 1 are characterized by extensive use of all of the substances, relative to the other groups. Likewise, respondents in Group 4 are characterized by the lowest frequency-variability of use for all the substances, with virtually no use of any substances except alcohol and marijuana. Groups 3 and 4 differ primarily in terms of alcohol and marijuana use. Subjects in Group 2 have the highest marijuana use of any of the groups, but show relatively little use of alcohol. Conversely, respondents in Group 3 use alcohol more extensively than any of the other groups, but only occasionally use marijuana. The relationship between group membership and use-nonuse of the substances is summarized in Table 28. As can be seen, the majority of respondents in all four groups use alcohol and marijuana. However, users of all the other substances are concentrated in Group 1, with the exception of the substantial proportion of subjects in Group 3 who use tranquilizers.

Turning back to Table 27 it can be seen that the discriminant analysis extracted two significant discriminant functions, accounting for 71% and 25% of the discriminating information available in the frequency-variability scores, respectively. Examination of the standardized discriminant function

TABLE 28

Differences in Drug Use-Nonuse Between Groups

Drug	Group 1 n (%)	Group 2 n (%)	Group 3 n (%)	Group 4 n (%)
Alcohol				
Nonuser	0	0	0	1(2)
Past User	0	0	0	1(2)
User	53(100)	9(100)	14(100)	45(96)
Marijuana*				
Nonuser	1(2)	0	1(7)	15(32)
Past User	3(6)	0	1(7)	5(11)
User	49(92)	9(100)	12(86)	27(57)
LSD**				
Nonuser	12(23)	4(45)	13(93)	40(85)
Past User	22(41)	2(22)	1(7)	5(11)
User	19(36)	3(33)	0	2(4)
Other Hallucinogens**				
Nonuser	9(17)	6(67)	12(86)	38(81)
Past User	25(47)	1(11)	2(14)	7(15)
User	19(36)	2(22)	0	2(4)
Tranquilizers**				
Nonuser	14(26)	7(78)	8(57)	39(83)
Past User	10(19)	0	2(14)	5(11)
User	29(55)	2(22)	4(29)	3(6)
Barbiturates**				
Nonuser	18(34)	7(78)	14(100)	40(85)
Past User	14(26)	1(11)	0	5(11)
User	21(40)	1(11)	0	2(4)
Amphetamines**				
Nonuser	9(17)	6(67)	12(86)	36(77)
Past User	14(26)	1(11)	1(7)	7(15)
User	30(57)	2(22)	1(7)	4(8)

TABLE 28 (Cont'd)

Drug	Group 1 n (%)	Group 2 n (%)	Group 3 n (%)	Group 4 n (%)
Cocaine**				
Nonuser	18(34)	6(67)	13(93)	44(94)
Past User	10(19)	2(22)	1(7)	1(2)
User	25(47)	1(11)	0	2(4)
Heroin				
Nonuser	46(87)	9(100)	14(100)	45(96)
Past User	6(11)	0	0	1(2)
User	1(2)	0	0	1(2)
Other Opiates*				
Nonuser	28(53)	7(78)	12(86)	44(94)
Past User	16(30)	2(22)	1(7)	2(4)
User	9(17)	0	1(7)	1(2)
Solvents				
Nonuser	48(91)	9(100)	14(100)	46(98)
Past User	5(9)	0	0	1(2)
User	0	0	0	0
Nitrous Oxide				
Nonuser	43(81)	9(100)	14(100)	43(92)
Past User	6(11)	0	0	3(6)
User	4(8)	0	0	1(2)

* p < .001
** p < .0001
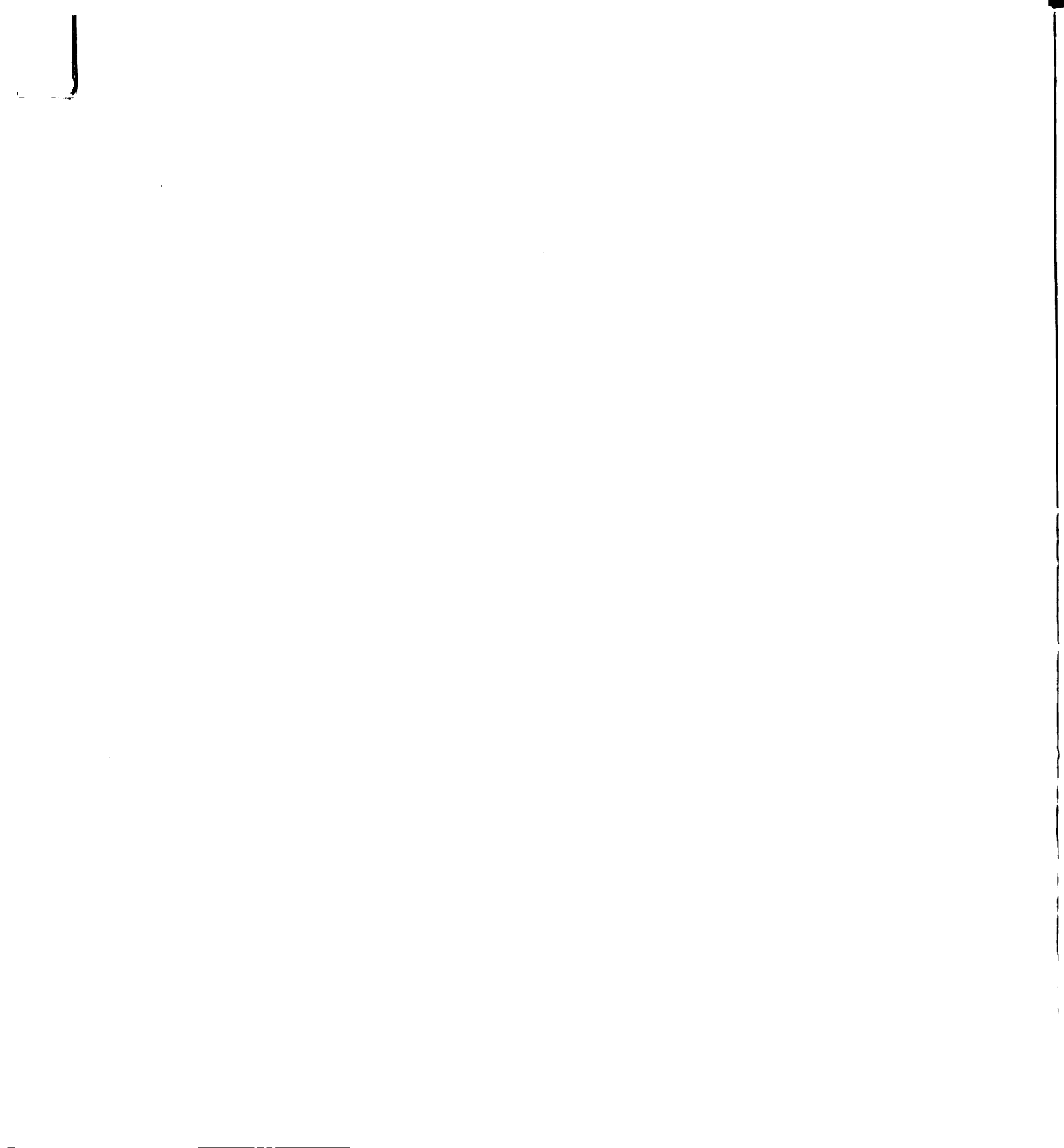
coefficients (analogous to beta-weights in a multiple regression; Cooley & Lohnes, 1971) reveals that the first function discriminates on the basis of hallucinogen, tranquilizer, cocaine, and opiate use, while the second function discriminates on the basis of alcohol, marijuana, amphetamine, and nitrous oxide use. From examination of the group centroids in the discriminant space (bottom of Table 27) it can be seen that the first function primarily differentiates Group 1 from Group 4, while the second differentiates Group 2 from Group 3. A spatial representation of the location of the group centroids in the discriminant space is included in Figure 4.

Finally, to determine the accuracy with which the discriminant functions are able to discriminate the four groups, a classification procedure was performed in which the discriminant functions were used to predict group membership. The results of this procedure are summarized in Table 29. As can be seen, over 80% of the subjects were correctly classified in their respective groups on the basis of their discriminant function scores. Thus, on all counts the four drug-use groups may be said to be "valid" in the sense that there are significant, demonstrable differences between the groups in terms of both use-nonuse and frequency-variability of drug use, and that the group membership of individuals can be predicted with a high degree of accuracy from information about the frequency-variability of their use of various drugs.

Although the four groups differ in terms of their drug use, there is little evidence for a number of discrete types or patterns of use among these respondents. That is, Groups 2, 3,

High Alcohol
High Marijuana
High Hallucinogens
High Tranquilizers
High Cocaine
High Opiates
High Amphetamines

High Alcohol
Low Marijuana
Low Hallucinogens
Moderate Tranquilizers
Low Cocaine
Low Opiates
Low Amphetamines

3⚑

2.0

1.0

-2.0   1⚑   -1.0   1.0   2.0

DISCRIMINANT
FUNCTION I

4⚑

Low Alcohol
High Marijuana
Moderate Hallucino-
    gens
Low Tranquilizers
Low Cocaine
Low Opiates
Moderate Ampheta-
    mines

Low Alcohol
Low Marijuana
Low Hallucinogens
Low Tranquilizers
Low Cocaine
Low Opiates
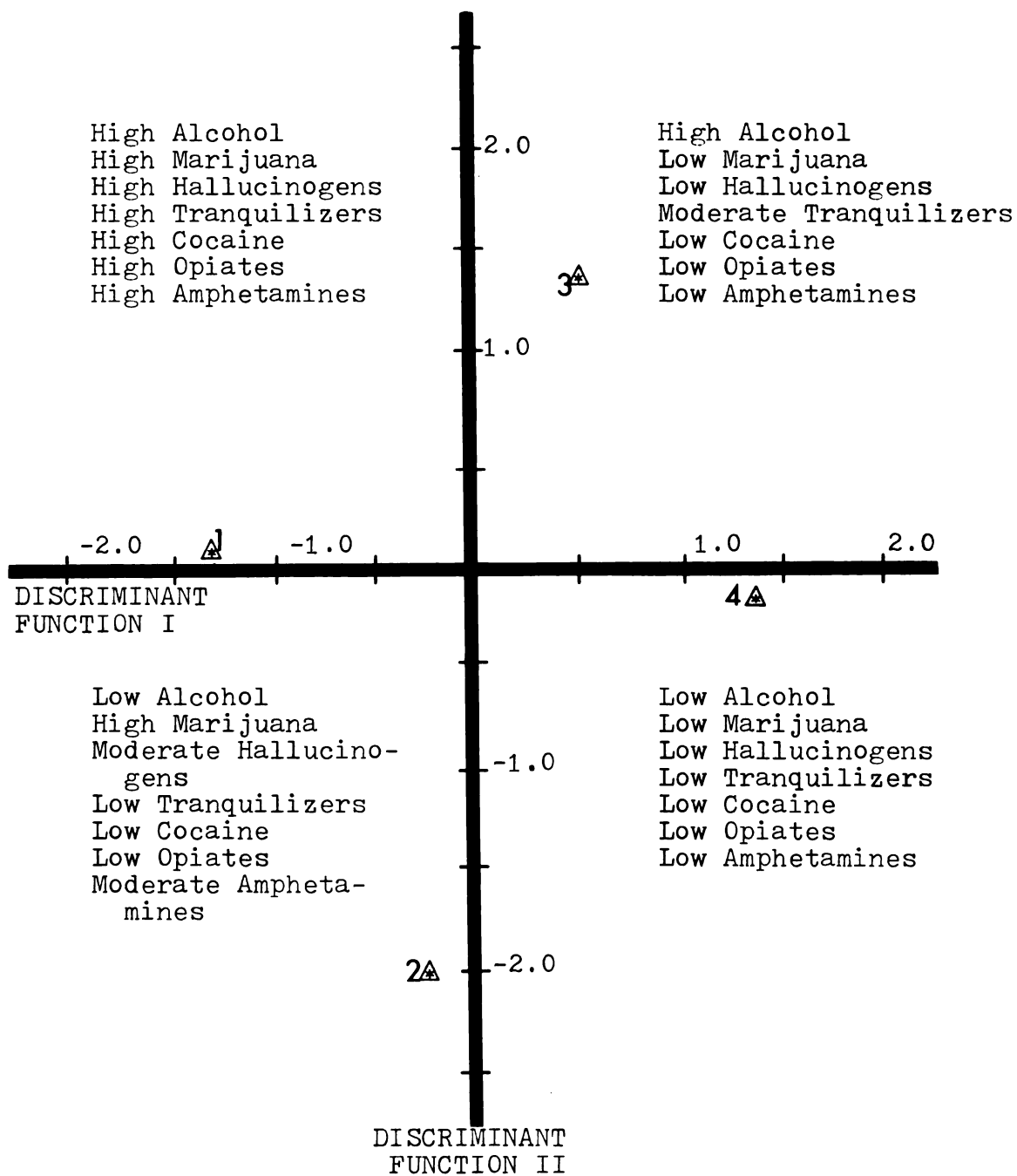Low Amphetamines

-1.0

2⚑   -2.0

DISCRIMINANT
FUNCTION II

FIGURE 4

Location of Group Centroids in Discriminant Space

TABLE 29

Accuracy of Prediction of Group Membership
From Drug Use Discriminant Functions

Actual Group	$\underline{N}$	Predicted Group Membership							
		1		2		3		4	
		$\underline{n}$	(%)	$\underline{n}$	(%)	$\underline{n}$	(%)	$\underline{n}$	(%)
1	53	39	(73)	1	(2)	4	(8)	9	(17)
2	9	0		5	(55)	0		4	(45)
3	14	0		0		10	(71)	4	(29)
4	47	0		0		2	(4)	45	(96)

Total percentage correctly classified = 80.5; $\underline{x}^2$ = 201.98;
df = 9; p < .0001.

and 4 are differentiated from each other primarily on the basis
of the _frequency_ with which they use alcohol and marijuana,
rather than the use of different drugs. Thus, Group 2 might
be said to represent "potheads" as their primary drug is mari-
juana, while Group 3 are predominantly "heavy drinkers." Like-
wise, Group 4 may be said to represent "light drinkers and ab-
stainers." Only subjects in Group 1 use a wide variety of sub-
stances, and may thus be called "multiple drug users." However,
there was apparently not enough differentiation _among_ these
respondents to discriminate two or more groups which differ in
their type or pattern of multiple drug use. Whether this is
due to various sampling problems such as insufficient size and/or
diversity of the sample, or accurately reflects the dominant
patterns of drug use in this culture (i.e., alcohol, alcohol
and marijuana, and multiple drug use) cannot be determined at

present. However, the patterns of use in the other three groups (i.e., 2, 3, and 4) are generally consistent with those reported in previous studies of drug use. For example, O'Donnell, et al (1976) reported that the most prevalent patterns of drug use were alcohol only and alcohol plus marijuana (cf., Goldstein, et al, 1975). Examining the frequency-variability scores in Table 27, it can be seen that Groups 1 and 2 are predominantly alcohol and marijuana users while Groups 3 and 4 are predominantly alcohol users. Considering that the present patterns are based on frequency of use while previous studies classified groups solely on the basis of use-nonuse, the obtained patterns of use are comparable to those previously reported. In addition, since use of drugs other than alcohol and marijuana is relatively infrequent in both the present sample and previous studies, it seems probable that the lack of several discrete groups of multiple drug users is related to the relatively small size of the present sample. Nonetheless, the obtained groupings are diverse enough to attempt to discriminate them on the basis of their sociocultural and personality characteristics.

The Theoretical Framework and Patterns of Drug Use. The final step in the analysis of drug use is to attempt to discriminate the various drug-use groups derived above on the basis of the theoretical framework involving the system of sociocultural and personality variables. To accomplish this end a second multiple discriminant analysis was performed. However, in this instance the aim of the analysis was to discriminate the four drug-use groups on the basis of the eight measures of sociocultural and personality variables previously constructed.

Thus, this multivariate analysis constitutes a second test of the hypotheses, as well as a means of assessing the validity of the theoretical framework.

The results of the discriminant analysis are summarized in Table 30. Once again Rao's F for the equality of group centroids was highly significant, indicating that the four groups can indeed be significantly discriminated on the basis of the system of sociocultural and personality variables. However, examination of the univariate F ratios shows that the four drug-use groups only differ significantly on four of the eight measures. Specifically, the groups differ significantly on Perceived Drug Use in the Social Environment and Extent of Use With Friends (Opportunities for Deviance 2 and 3), Tolerance of Deviance, and Positive Expectations for Drug Use. The group means for Socioeconomic Status, Objective Access, Involvement with Prosocial Groups, and Opportunities for Deviance 1: Sociodemographic Factors do not differ significantly. Moreover, with the exception of the measure of Involvement with Prosocial Groups, the pattern of group means does not conform to that which would be expected on the basis of the theoretical framework and the drug-use characteristics of the groups. Thus, once again the obtained results only partially support the hypothesized relationships.

Further examination of Table 30 reveals that only one significant discriminant function accounting for approximately 84% of the discriminating information available in the set of predictor variables was derived. As can be seen, maximum discrimination of the four groups was accomplished primarily on

TABLE 30

Discriminant Analysis of Group Differences in Sociocultural
and Personality Characteristics

Variable	Group 1 (N=53) Means	Group 2 (N=9) Means	Group 3 (N=14) Means	Group 4 (N=47) Means	Pooled Groups S.D.'s	Univariate $F_{(3,119)}$	N	Significance
Socioeconomic Status	10.98	12.33	9.21	10.49	4.03	1.26	.18	.352
Objective Access	4.11	4.22	4.28	4.15	.73	.22	.01	.873
Involvement With Prosocial Groups	1.71	1.78	2.00	2.25	1.16	1.93	.22	.111
Opportunities for Deviance 1	4.46	4.44	3.86	4.11	1.47	.89	.15	.455
Opportunities for Deviance 2	20.02	15.89	13.00	13.92	8.94	5.21	.36	.002
Opportunities for Deviance 3	43.17	45.22	26.28	18.59	26.74	9.59	.49	<.0001
Tolerance of Deviance	60.48	76.11	61.21	63.21	15.51	2.77	.26	.045
Positive Expectations for Drug Use	64.88	55.11	44.21	41.25	18.48	22.25	.75	<.0001

TABLE 30 (Cont'd)

For Equality of Centroids, Rao's $F_{(24,306)}$ = 12.73; n = .99; p <.0001

Roots Removed	Eigenvalue	Canonical Correlation	Percent of Trace	Wilks Lambda	Chi Square	D.F.	Significance
0	.747	.654	84.2	.500	80.33	24	<.0001
1	.099	.300	11.2	.874	15.59	14	.339
2	.040	.197	4.6	.961	4.61	6	.594

Standardized Discriminant Function Coefficients

Variable	1
Socioeconomic Status	11.95
Objective Access	-.0841
Involvement With Prosocial Groups	-.1610
Opportunities for Deviance 1	.1728
Opportunities for Deviance 2	.0331
Opportunities for Deviance 3	.3238
Tolerance of Deviance	.3757
Positive Expectations for Drug Use	1.0698

TABLE 30 (Cont'd)

Group Centroids in Discriminant Space

Group	1
1	.8716
2	.7105
3	-.7207
4	-.8857

the basis of the measures of <u>Opportunities</u> <u>for</u> <u>Deviance</u> <u>3</u>: <u>Ex</u>-<u>tent</u> <u>of</u> <u>Use</u> <u>With</u> <u>Friends</u> and the two personality variables: particularly <u>Positive</u> <u>Expectations</u> <u>for</u> <u>Drug</u> <u>Use</u>. The fact that <u>Opportunities</u> <u>for</u> <u>Deviance</u> <u>2</u>: <u>Perceived</u> <u>Drug</u> <u>Use</u> <u>in</u> <u>the</u> <u>Social</u> <u>Environment</u> does not contribute to the discriminant function, even though the four groups do differ significantly on this measure, undoubtedly reflects the high correlation between this measure and <u>Opportunities</u> <u>for</u> <u>Deviance</u> <u>3</u> (see Table 9). Further, examination of the group centroids reveals that the discriminant function primarily discriminates Groups 1 and 2 from Groups 3 and 4. That is, the function discriminates respondents who are relatively high in their frequency of use of marijuana and other illicit substances (i.e., those substances in Drug Cluster 1) from subjects whose frequency of use of these substances is relatively low.

Table 31 presents the results of <u>a</u> <u>posteriori</u> comparisons (Sheffe exact test) of the group means on the four measures on which they differed significantly. With the exception of the measure of <u>Tolerance</u> <u>of</u> <u>Deviance</u>, all of the means are in the theoretically expected direction, and the measures significantly discriminate Groups 1 and 2 from Groups 3 and 4. However, only Group 2 differs significantly from the other groups on <u>Tolerance</u> <u>of</u> <u>Deviance</u>, and this difference is in the opposite direction of what would be expected. That is, Group 2 is significantly <u>less</u> tolerant of deviance than Group 1, but Groups 1, 3, and 4 do not differ significantly from each other. However, the pattern of group means on this measure for Groups 1, 3, and 4 is in the expected direction, with Group 1 the most tolerant of

TABLE 31

Sheffe A Posteriori Comparisons of Group Differences in
Sociocultural and Personality Characteristics

Variable	Group 1 (N=53)		Group 2 (N=9)		Group 3 (N=14)		Group 4 (N=47)		Paired Comparisons[1]					
	X̄	S.D.	X̄	S.D.	X̄	S.D.	X̄	S.D.	1-2	1-3	1-4	2-3	2-4	3-4
Opportunities for Deviance 2	20.02	8.34	15.89	5.30	13.00	5.11	13.92	9.82			*			
Opportunities for Deviance 3	43.17	27.89	45.22	34.58	26.28	14.49	18.59	19.57			*		*	
Tolerance of Deviance	60.48	15.96	76.11	16.76	61.21	7.82	63.21	15.78	*					
Positive Expectations for Drug Use	64.88	16.76	55.11	7.15	44.21	7.86	41.25	15.37		*	*		*	

* $p < .05$

deviance and Group 4 the least tolerant. Thus, overall the pattern of relationships conforms to that expected on the basis of the theoretical framework.

The extent to which respondents could be correctly assigned to their respective drug-use groups on the basis of the discriminant function is summarized in Table 32. Overall, approximately 59% of the subjects were correctly classified. Thus, the single discriminant function based on the single sociocultural variable and both of the personality variables was extremely effective in differentiating the respondents in terms of their characteristic patterns of drug use.

Finally, the relationship of drug-use group membership to interaction with the subjects' five closest friends is summarized in Table 33. In general, these results parallel those of the univariate analyses. The more extensively a respondent is involved with drugs (as indicated by group membership), the more s/he uses drugs with his/her friends, the more s/he uses drugs when his/her friends are not using drugs, and the more s/he uses drugs which his/her friends disapprove of using. Thus, once again the results support the idea of involvement in a drug-using subculture, but do not support the hypothesis that individuals will conform to the pattern of drug use characteristic of their friends.

In terms of the other specific hypotheses, the results of the multivariate analysis strongly support the hypothesis that individuals who use psychoactive drugs with a relatively high frequency will participate in drug use with other drug users (i.e., Opportunities for Deviance 3) to a greater extent than

TABLE 32

Accuracy of Prediction of Group Membership From
Sociocultural-Personality Discriminant Function

Actual Group	$\underline{N}$	Predicted Group Membership							
		$\underline{n}$ 1	(%)	$\underline{n}$ 2	(%)	$\underline{n}$ 3	(%)	$\underline{n}$ 4	(%)
1	53	31	(58)	11	(21)	7	(13)	4	(8)
2	9	1	(11)	6	(67)	2	(22)	0	
3	14	0		1	(7)	10	(71)	3	(22)
4	47	3	(6)	4	(8)	14	(30)	26	(56)

Total percentage correctly classified = 59.3; $\underline{X}^2$ = 75.29;
df = 3; $\underline{p}$ < .001

individuals with a low frequency of use (Hypothesis 5a). Like-
wise, the results support the hypotheses that drug users will
be more tolerant of deviance (Hypothesis 7a) and will have more
positive expectations and evaluations of drug use than nonusers
(Hypothesis 8). Moreover, the obtained results also support
the hypothesis that the relationship between drug use and Oppor-
tunities for Deviance 3: Extent of Use With Friends will be
stronger for users of "hard" drugs than users of "soft" drugs
(Hypothesis 5b). On the other hand, neither of the hypotheses
concerning drug use and access to opportunities were supported.
Thus, neither the univariate nor the multivariate analyses con-
firm these expectations. Likewise, the hypotheses concerning
participation in prosocial groups were not supported to a sta-
tistically significant degree, although the pattern of group
means was in the expected direction. Finally, although the

TABLE 33

Group Differences in Interaction With Closest Friends

Variable	Group 1 (N=53)		Group 2 (N=9)		Group 3 (N=14)		Group 4 (N=47)		Paired Comparisons[1]					
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	1-2	1-3	1-4	2-3	2-4	3-4
$\bar{X}$ Number of Drugs Used By Both S and Friends	3.07	1.98	2.11	.66	1.50	.56	1.32	.70						
$\bar{X}$ Number of Drugs Used By S Only	3.30	8.63	.89	.82	.78	.85	.58	.91						
$\bar{X}$ Number of Drugs Used By Friends Only	.65	.79	.51	.65	.27	.46	.60	.82						
$\bar{X}$ Amount of Leisure Time Spent With Friends	2.91	1.23	2.82	1.03	2.98	1.18	2.83	1.05						
$\bar{X}$ Amount S and Friends Use Drugs***	3.28	1.75	2.91	2.05	2.37	1.73	1.33	1.31			*			

TABLE 33 (Cont'd)

Variable	Group 1 (N=53)		Group 2 (N=9)		Group 3 (N=14)		Group 4 (N=47)		Paired Comparisons[1]					
	X̄	S.D.	X̄	S.D.	X̄	S.D.	X̄	S.D.	1-2	1-3	1-4	2-3	2-4	3-4
X̄ Amount S Uses Drugs When Friends Do Not***	1.67	1.29	1.11	1.04	1.07	1.23	.52	.60			*			
X̄ Disapproval By Friends of Drugs Only S Uses	-.24	.42	-.40	.37	-.18	.31	-.18	.35						
X̄ Amount S Uses Disapproved Drugs**	1.67	1.92	1.09	1.12	.92	1.41	.63	.90				*		

* p < .05
** p < .01
*** p < .0001

1 Sheffe a posteriori comparison.

measure did not contribute to discrimination of the groups, they did differ significantly in terms of <u>Opportunities</u> <u>for</u> <u>Deviance 2</u>: <u>Perceived</u> <u>Drug</u> <u>Use</u> <u>in</u> <u>the</u> <u>Social</u> <u>Environment</u>. Thus, the results support the hypotheses relating to opportunities for observing and interacting with drug users (Hypotheses 4a and b).

GENERAL DISCUSSION AND APPRAISAL OF THE THEORETICAL FRAMEWORK

The primary focus of this research was on the development and testing of a comprehensive theoretical system which was capable of accounting for individual differences in the use of psychoactive drugs. In this final section, discussion will center around the factors which influenced the development of the theory, its utility in regard to the prediction of drug use, and any modifications or additions to the theoretical framework which seem warranted in light of the results of the present research.

Two basic assumptions guided development of the theoretical system. First, it was assumed that drug use was best conceptualized as a deviant social behavior. That is, the use of most psychoactive drugs is contra-normative in this society, and drug use typically takes place in social settings. Each of these characteristics had a significant impact on the focus of the resultant theory. Viewing drug use as a <u>deviant</u> behavior focuses attention on those factors which inhibit or counteract the influence of various forces of social control. If an individual is going to engage in the use of drugs or any other form of deviant behavior, s/he must be willing to violate societal norms. Consequently, one would expect that the individual's environment would be accepting of or otherwise favorable to the occurrence of deviant behavior, and/or the individual would personally be tolerant or accepting of such

transgressions. Second, the conceptualization of drug use as a _social_ behavior directs attention on the interpersonal factors which serve to initiate and maintain an individual's use of psychoactive drugs. If individuals use drugs in social settings, they must interact with other individuals who are accepting of drug use. Thus, the variables selected for inclusion in the theoretical system were those which were seen as influencing the effectiveness of social controls, and which focused on the perception of and interaction with persons in the individual's social environment.

The second assumption which influenced the theoretical framework was that neither sociocultural or intrapersonal variables were capable, individually, of accounting for psychoactive drug use. That is, what was needed was a multivariate framework which utilized both sociocultural and personality variables as part of a _system_ of interacting forces. With this in mind, Rotter's (1954) social learning theory of personality was selected as an initial framework on which the theoretical system could be constructed. Since this theory deals with personality variables which are cognitive in nature and result from patterned interaction with the sociocultural environment, it allowed for a relatively direct linkage between the two classes of variables. In addition, the structure and focus of the resulting framework was greatly influenced by the general theory of deviance developed by Richard Jessor and his colleagues (Jessor, _et al_, 1968, 1973).

The final theoretical framework consisted of three sociocultural variables and two personality variables which should

significantly influence an individual's use of psychoactive drugs. In brief, it was hypothesized that an individual would be more extensively involved in the use of psychoactive drugs to the extent that: (1) s/he is restricted in access to opportunities for attaining valued goals; (2) there is a lessening of normative constraints against his/her engaging in deviant behavior; (3) s/he has opportunities for observing and interacting with drug users; (4) s/he is tolerant of deviant behavior in general; and (5) s/he has positive expectations about the consequences of drug use.

These hypotheses were examined individually through a series of univariate analyses, while the efficacy of the system of variables in accounting for drug use was examined by means of a multiple discriminant analysis. In overview, the results of these two sets of analyses were complementary and generally supported the hypotheses. Regardless of whether the focus was on use-nonuse, frequency-variability of use, or overall patterns of drug use, the more extensively an individual was involved with drugs: (1) the less his/her participation in prosocial groups (and hence theoretically the less the normative constraints against deviant behavior); (2) the more opportunities for observing and engaging in drug use s/he perceived in the social environment; (3) the greater the amount of time spent using drugs with his/her closest friends; (4) the more attitudinally tolerant of deviance s/he was; and (5) the more positive were his/her expectations concerning the consequences of drug use. Although these results were not statistically significant in all of the comparisons, virtually all

of those comparisons which failed to achieve statistical significance were in the theoretically predicted direction. In addition, the statistical analyses generally utilized relatively conservative tests of significance to minimize the possibility of committing a Type I error. Thus, the overall pattern of results provides substantial support for the theoretical system.

Although the results generally supported the hypotheses, a number of the findings need to be considered before any statement can be made regarding the efficacy of the theoretical framework. In particular, neither of the two measures of access to opportunities (i.e., Socioeconomic Status and Objective Access) showed any consistent, much less significant relation to psychoactive drug use. Further, although the relationships between drug use and the measure of normative constraints against deviance (i.e., Involvement With Prosocial Groups) were almost invariably in accord with theoretical expectations, they only rarely were statistically significant. Thus, the only measures of sociocultural variables which significantly and consistently discriminated the various drug-use groups were those involving opportunities for observing and engaging in drug use (i.e., Opportunities for Deviance 2: Perceived Drug Use in the Social Environment, and Opportunities for Deviance 3: Extent of Use With Friends). However, even here one of the measures (i.e., Opportunities for Deviance 1: Sociodemographic Factors) demonstrated only weak relationships to drug use.

It seems significant to note that all three of the sociocultural measures which showed sporadic relationships with drug

use were measures of demographic characteristics of the sub-
jects (e.g., age, sex, parental education and income), whereas
the best sociocultural predictors of drug use were measures of
the immediate social environment (e.g., perceived drug use among
friends and amount of time spent using drugs with friends).
These results provide substantial support for Kandel, et al's
(1974) conclusion that drug use is the result of attitudinal
and interpersonal influences rather than sociodemographic fac-
tors, as well as the notion of a "subculture" which revolves
around the use of drugs. That is, individuals who use drugs
interact predominantly with other drug users, and the majority
of this interaction involves the use of drugs.

Although both the present research and previous investi-
gations point to the paramount importance of interpersonal in-
fluences in accounting for psychoactive drug use, it neverthe-
less seems unlikely that sociodemographic factors have no role
in the process. In particular, a number of previous studies
(Jessor, et al, 1968, 1973; Sadava, 1973) have shown a signi-
ficant relationship between access to opportunities for valued
goal attainment and the use of psychoactive drugs (e.g., alco-
hol and marijuana). Further, there a number of alternative
explanations for the sporadic relationship of these sociodemo-
graphic variables to drug use in the present study.

Socioeconomic status has consistently been shown to be sig-
nificantly related to the use of psychoactive drugs (Blum, 1969;
National Commission on Marihuana and Drug Abuse, 1972; O'Donnell,
et al, 1976). However, the nature of this relationship appears
to vary extensively depending on such factors as the type of

drug used and the race of the individual. For example, use of such drugs as alcohol and marijuana is consistently found to be more prevalent in the higher socioeconomic strata, while use of harder drugs is generally found to be concentrated among lower socioeconomic classes (National Commission on Marihuana and Drug Abuse, 1972). However, these findings appear only applicable to whites: socioeconomic status shows no consistent relationship with drug use among blacks (O'Donnell, et al, 1976). Thus, whether or not this variable will show a significant relationship to drug use seems dependent upon both the patterns of drug use and the range of sociodemographic characteristics among the particular sample.

As noted earlier, examination of the demographic characteristics of the sample utilized in the present research shows that there is little variation among subjects in terms of such factors as socioeconomic status, age, race, and marital status. Consequently, the lack of relationship between socioeconomic status and drug use may be accounted for by the relative homogeneity of the sample in terms of this factor (i.e., a restriction in the range of values of the variable). Further, this same explanation may account for the sporadic relationship between drug use and the other two measures constructed from sociodemographic variables (i.e., Objective Access and Opportunities for Deviance 1: Sociodemographic Factors). Thus, any conclusion about the relationship between these variables and drug use must await the opportunity for this factor to be examined among a more diversified sample.

Aside from these sampling considerations, the measures of Objective Access and Opportunities for Deviance 1: Sociodemographic Factors were methodologically the weakest of the six scales constructed for the study. For example, while the reliability coefficients (Cronbach's Alpha) ranged from .63 to .87 for the other measures, they were less than .40 for Objective Access and Opportunities for Deviance 1. Thus, there are a number of possible explanations for the lack of relationship between these measures and drug use in the present study.

A second factor which needs to be considered when examining the adequacy of the theoretical framework is the patterns of drug use among respondents. As noted earlier, the majority of subjects in the sample used only alcohol and marijuana with any frequency. With the exception of subjects in Group 1, there was virtually no use of the other substances. Although this pattern generally corresponds to the reported patterns of use in previous studies (e.g., O'Donnell, et al, 1976), it has some important implications for the conceptualization of drug use as a deviant behavior. That is, examination of the results concerning social disapproval for use of the various psychoactive substances shows that alcohol and marijuana use were not regarded as particularly deviant behaviors. The use of alcohol is a normative behavior in this society, while marijuana is so widely used that it is no longer subject to the social (or even legal) disapproval directed against the other psychoactive substances. Consequently, one would expect that the relationship between measures of normative constraints against deviance and drug use would be substantially weakened. Even among subjects

in Group 1, the majority of drug use was use of alcohol and marijuana. Nonetheless, although the differences were not substantial, subjects in this group were the most tolerant of deviance and showed the lowest level of involvement with prosocial groups, as expected. Thus it seems probable that, had the sample been more diverse in their patterns of drug use (i.e., had there been a greater proportion of abstainers and a sufficiently large sample to differentiate a number of different patterns of multiple drug use), the relationships between drug use and measures of constraints against deviance would have been substantially greater.

With the above considerations and their implications for the interpretation and generality of the present findings in mind, we can turn to the primary test of the theoretical system: the multivariate analyses. These results once again point to the importance of attitudinal and interpersonal factors in accounting for the use of psychoactive drugs, and the relative lack of relationship between sociodemographic factors and drug use. The multiple discriminant analysis using the system of sociocultural and personality variables yielded a single discriminant function accounting for approximately 84% of the discriminating information contained in the set of variables. Consistent with the results of the univariate analyses, the measures which contributed significantly to this dimension were <u>Tolerance of Deviance</u>, <u>Opportunities for Deviance</u>, and <u>Positive Expectations for Drug Use</u>. Using these three variables, it was possible to successfully predict the correct group membership of approximately 60% of the subjects. Thus, although

the prediction of drug use may have been substantially improved with better measures of access to opportunities and involvement with prosocial groups and a more diversified sample, these attitudinal and interpersonal variables alone were able to predict drug use with a high degree of statistical significance.

The obtained results are thus in substantial agreement with those of previous studies in pointing out the importance of peer influences on psychoactive drug use. Of the variables in the sociocultural system, those concerning opportunities for observing and engaging in drug use with one's friends were consistently the most predictive of drug use. To the extent that an individual was involved in the use of psychoactive drugs, s/he reported that a greater proportion of individuals in the social environment were drug users, and spent a greater amount of time using drugs with his/her closest friends. In addition, the individual spent less time interacting with prosocial groups. Thus, these findings provide considerable support for the hypothesis of a "subculture" which centers around the use of drugs. In addition, they are in agreement with the assumption that drug use is best conceived as a deviant social behavior. The interaction with other drug users provides a supportive social environment for the use of drugs, and "insulates" the individual from the social disapproval s/he would be subject to from nonusers. However, it is significant that this sociocultural factor is not sufficient in itself to account for the use of drugs. That is, aside from a supportive environment, the results of the present study suggest that the individual personality must be conducive to the use of drugs.

Indeed, the single most predictive variable involved expectations concerning drug use. This suggests that, regardless of the nature of the social environment, if an individual is to use psychoactive drugs s/he must believe that drug use will lead to positive outcomes. If drug use is perceived as a dangerous activity, the individual is unlikely to use drugs regardless of the number of drug-using peers. Thus, both the sociocultural and personality systems are necessary to adequately account for drug use.

Although the theoretical system was able to successfully predict drug use, it is equally clear that there is room for substantial improvement. In particular, a number of the measures of sociocultural variables were inadequate. Thus, the measure of Objective Access might be considerably improved if a number of additional variables were taken into account. For example, the degree of educational attainment, between-generation occupational mobility, the amount of participation in community organizations and other formal social groups, visits with friends and relatives, and such factors as whether or not English is spoken in the home can all be seen as having a significant effect on an individual's chances of attaining valued goals. In addition, the measure of involvement with prosocial groups could be substantially improved by considering groups other than traditional religious denominations. For example, participation in such groups as the YMCA, CYO, or other youth groups, or various community organizations should theoretically serve to decrease the probability of an individual engaging in deviant behaviors such as drug use.

In terms of the personality system, it seems probable that some measure of _perceived_ opportunities for attaining valued goals would substantially improve prediction. In the present study, the only measure of access to opportunities was based on sociodemographic factors. Consequently, it was assumed that individuals in the lower socioeconomic strata or who are otherwise socially disadvantaged were aware of these obstacles to success _and_ that this disadvantage was _personally_ distressing. However, it is apparent that this need not necessarily be the case. If an individual is not concerned about attaining dominant goals in this society, or perceives alternative means of attaining them such as utilizing illegitimate means such as crime, there is little reason to suspect that the individual will turn to drugs. Thus, it seems that better prediction could be attained through some measure of the individual's subjective probability of achieving valued goals.

Finally, the present study has a number of implications regarding future research in the area. In particular, the theoretical system has yet to be completely developed. That is, one of the primary assumptions underlying the development of the system was that maximum prediction of drug use and other deviant social behaviors could only be attained by considering both the sociocultural environment and the individual personality. In addition, these two structures were seen as interrelated: the personality variables selected were those which were seen as resulting from patterned interaction with the sociocultural environment. However, the system as developed at this time contains no direct measure of the socialization

system. Yet, it is socialization practices which theoretically mediate between the individual personality and the sociocultural environment. In this regard, there is a great deal of evidence suggesting that parental beliefs and behaviors have a significant impact on the use of drugs by their offspring, both as adolescents and later as adults (see Zucker, 1976). For example, adolescent problem drinkers and marijuana users consistently report more family tension and conflict, higher rates of parental absence, and more negative child-rearing practices such as the use of social isolation as the dominant disciplinary practice (Zucker & Devoe, 1975; Zucker & Barron, 1973; Jessor, et al, 1968). In addition, the relationship between sociocultural factors and drug use may be due to differences in parental rearing practices among families in different sociocultural locations. For example, Jessor, et al (1968) reported that lower socioeconomic status was associated with low mother's responsiveness to her child's needs, greater maternal alienation, and greater exposure of the child to deviant models within the family. Thus, there is substantial reason to expect that such factors as the extent and nature of parent-child interactions, parental disciplinary practices, and attitudes and expectations concerning opportunities for goal attainment and deviant behaviors, as well as direct parental modeling of deviant behaviors would all have a significant impact on the child's later use of psychoactive drugs. While the availability of deviant role models among the individual's peer group may be the crucial factor in accounting for drug use (Kandel, 1973), the family can potentially lead

the individual toward deviant behavior either because parents engage in deviant behavior themselves, or because they create a hostile environment from which the individual desires to escape (Sutherland & Cressey, 1970). Thus, consideration of such factors as these should considerably improve the predictive power of the theoretical system.

In addition to modifying and expanding the theoretical framework, understanding of the nature of the relationship between these variables and drug use could be significantly improved if examined within the context of a longitudinal study. For example, if the system of sociocultural and personality factors operates as predicted from the theory, it should be possible to identify a "high risk" group of individuals on the basis of their personality characteristics and the socialization practices of their parents, before they have begun to use drugs. Likewise, an analogous group of "low risk" subjects could be identified. These two groups could then be observed over the course of time, and their subsequent involvement with psychoactive drugs measured. In this manner, the interaction of personality and sociocultural variables, especially peer influences, could be observed and assessed in light of the theoretical framework. If the theory is substantially correct, one should be able to predict not only the individual's subsequent drug use, but the corresponding changes in personality, interpersonal, and sociocultural variables. Likewise, it should be possible to identify a number of alternative "paths" leading to the use of psychoactive drugs, as well as determine the causal relationship between these variables. In the more

general sense, such an undertaking would also allow examination of such significant questions regarding the etiology of drug use as whether the individual's use of drugs precedes or follows his/her interaction with drug-using peers. Thus, future research using the theoretical system appears promising in regard to significantly improving understanding of the nature of the complex processes underlying such deviant social behaviors as psychoactive drug use.

FOOTNOTES

1. The term "psychoactive" is used to refer to those substances which significantly affect the individual's typical mode of perceiving and responding to stimuli from the internal and external environments. That is, these drugs are seen as producing an altered "state of consciousness." For the purposes of this discussion, the following substances are considered psychoactive drugs: Alcohol--liquor, beer, wine; Marijuana and its derivatives--marijuana, hashish, THC; Hallucinogens--LSD, mescaline (peyote), psilocybin, DMT, DOM (STP), others; Tranquilizers and Mood Modifiers--Thorazine, meprobamate (Miltown, Equanil). Librium, Valium, others; Barbiturates--phenobarbital, amobarbital (amytal), pentobarbital (Nembutal), secobarbital (Seconal); Stimulants--cocaine, amphetamines, Ritalin; Opiates--heroin, opium, morphine, codeine, methodone; Solvents--glue (toulene), gasoline, paint thinner, others; Inhalants--nitrous oxide, freon, others. (Assembled from Healy & Manak, 1971, with modifications by the author.)

2. Of course, there is also a pharmacological basis for drug use. That is, an individual may use drugs because of their physiological effects (e.g., central nervous system stimulation or depression, addiction, etc). However, pharmacological factors are seen as generally less important than social influences for a number of reasons. First,

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initiation into drug use typically is a social process, and drug use generally takes place in social settings. Second, drug users generally report that their motivations for use are social in nature. Third, the most potent pharmacological basis for drug use, addiction, only occurs for a few psychoactive substances. And fourth, many of the physiological and psychological effects of these substances may be obtained through alternative procedures (e.g., mediation) or use of other substances (e.g., caffeine).

3. Pharmacological and psychological bases for drug use such as physiological and psychological distress reduction would fall under this class of goals.

4. Although offering a lottery ticket as an incentive for completing the questionnaire was considered for the College Sample as well, the Research Committee of the Counseling Center felt that such a procedure would be undesirable.

5. Ideally, the quantity of the drug typically consumed would be taken into account. However, these drugs differ in the manner in which they are consumed (i.e., drinking, smoking, eating, or injection) and the amount considered an effective dose. Thus, there is no scale of quantity which could be easily constructed and which would allow comparison across the various drugs. On the other hand, frequency and variability scales are comparable across all the substances, and thus allow comparison of the use of different drugs by the same individual (see Cahalan, Cisin, & Crossley, 1969).

6. Only two subjects reported use of heroin within the past year. Consequently, use of heroin and other opiates were combined. Similarly, virtually all users of LSD also used other hallucinogens. Thus, these two categories were also combined. Consequently, in terms of the opportunities for observing and engaging in deviance scales 2 and 3 and the frequency-variability comparisons, only 10 classes of drugs were considered.

7. High and low frequency-variability groups were formed by splitting frequency-variability scores at the median.

8. When the minimum correlation for cluster inclusion was varied by more than .05 from .25, all of the substances were either collapsed into a single cluster or some of the substances were not grouped. Thus, two clusters were the maximum that could be derived from the matrix.

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APPENDIX A

The Questionnaire

Are you currently using the facilities of the Drug Education Center? _____

1. Age _____.

2. Sex:

    a. _____ male
    b. _____ female

3. Marital Status:

    a. _____ single
    b. _____ married
    c. _____ divorced or separated
    d. _____ widowed

4. Religion in which you were reared:

    a. _____ Protestant
    b. _____ Catholic
    c. _____ Jewish
    d. _____ Other
    e. _____ None

5. Present religious preference:

    a. _____ Protestant
    b. _____ Catholic
    c. _____ Jewish
    d. _____ Other
    e. _____ None

6. Present attendance at religious services:

    a. _____ Regular
    b. _____ Infrequent
    c. _____ Not at all

7. Ethnic origin:

    a. _____ Black
    b. _____ Spanish/Mexican-American
    c. _____ Asian
    d. _____ American Indian
    e. _____ White
    f. _____ Other

8. Parent's education:

Father   Mother

_____   _____ grammer school or less
_____   _____ some high school
_____   _____ high school graduate
_____   _____ some college
_____   _____ college degree
_____   _____ post-graduate degree

9. Parent's approximate annual income:

a. _____ under $5,000
b. _____ $5,000-10,000
c. _____ $10,000-15,000
d. _____ $15,000-25,000
e. _____ over $25,000

10. Type of community in which you were raised:

a. _____ farm or rural
b. _____ small town (under 10,000)
c. _____ average town (10,000-99,999)
d. _____ suburb of a city
e. _____ city (100,000-500,000)
f. _____ large city (over 500,000)

11. Occupation _____. (If you are a student, complete questions 12, 13, 14, and 15. If you are not a student, go on to the next page.)

(To be completed by students only)

12. Academic Major _____.

13. Grade Point Average (cumulative):

a. _____ below 1.99
b. _____ 2.00-2.49
c. _____ 2.50-2.99
d. _____ 3.00-3.49
e. _____ 3.50-4.00

14. Year in school:

a. _____ high school
b. _____ college freshman
c. _____ college sophomore
d. _____ college junior
e. _____ college senior
f. _____ college graduate

M.S.U. _____
L.C.C. _____
Other _____

15. Expected occupation _____.

The next few questions are concerned with how wrong you think different kinds of actions are. Most people think that something like murder is very wrong, while something like bragging may be considered only slightly wrong. For the following questions, indicate how wrong you think something is by circling a number from 0 to 9.

Not Wrong	Slightly Wrong	Wrong	Extremely Wrong
0	1 2 3	4 5 6	7 8 9

If you think an action is Not Wrong, circle 0. If you think an action is Slightly Wrong, circle 1, 2, or 3. If you think an action is Wrong but not extremely wrong, circle 4, 5, or 6. If you think an action is Extremely Wrong, circle 7, 8, or 9. In each case, circle the one number that indicates exactly how wrong you think an action is.

1. To take little things that do not belong to you.

   0   1   2   3   4   5   6   7   8   9

2. To break something that belongs to another person out of spite.

   0   1   2   3   4   5   6   7   8   9

3. To break into a place that is locked just to look around.

   0   1   2   3   4   5   6   7   8   9

4. To take something from another person without asking them.

   0   1   2   3   4   5   6   7   8   9

5. To do things on the spur of the moment.

   0   1   2   3   4   5   6   7   8   9

6. To borrow $5 or so from a friend without really expecting to pay it back.

   0   1   2   3   4   5   6   7   8   9

7. To damage public or private property that does not belong to you.

   0   1   2   3   4   5   6   7   8   9

8. To lie when applying for a license or job.

   0   1   2   3   4   5   6   7   8   9

9. To go to a movie when you have some work to do.

    0   1   2   3   4   5   6   7   8   9

10. To take something of value from a store without paying for it.

    0   1   2   3   4   5   6   7   8   9

11. To drive over the speed limit on a city street.

    0   1   2   3   4   5   6   7   8   9

12. To cheat on an examination.

    0   1   2   3   4   5   6   7   8   9

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE COMPLETING THE
REMAINDER OF THE QUESTIONNAIRE.

On the following pages you will find a series of questions relating to
your use of a number of drugs. In all, there are 20 questions about such
factors as how often you use certain drugs, how long you have been using
them, and your feelings about the use of such substances. On the next
page of the questionnaire you will find an answer sheet listing the 13
specific drugs or drug classes we are interested in. Following each drug
or drug class there is a row of 20 boxes numbered consecutively from 1 to
20. These box numbers correspond to the question numbers. Each question
is followed by a number of possible answers. In answering the questions,
place the letter corresponding to your answer in the appropriate box. Thus,
if your answer to question 1 is alternative a, you would place the letter
a in box number 1.

For EACH drug you have used, please answer ALL 20 questions. If you have
not used a particular drug, you should skip questions 4-14 FOR THAT DRUG.
Thus, if you have used every drug, you will answer each question 13 times –
once for each drug or drug class. If you have only used some of the drugs
or drug classes, you will skip questions 4-14 for the drugs you have not
used, and answer all 20 questions for those drugs which you have used.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ALCOHOL (beer, wine, liquor)																				
MARIJUANA (grass, hash)																				
LSD (acid)																				
OTHER HALLUCINOGENS (mescaline, DMT, etc.)																				
TRANQUILIZERS (Miltown, Librium, etc.)																				
BARBITURATES (reds, downs) (Nembutal, Seconal, etc.)																				
AMPHETAMINES (speed)																				
HEROIN																				
COCAINE																				
OTHER OPIATES (opium, morphine, etc.)																				
SALAZONE (glue, gasoline, etc.)																				
SOLVENTS (glue, gasoline, etc.)																				
NITROUS OXIDE																				

Please answer the following questions for EACH OF THE SUBSTANCES LISTED on the answer sheet.

1. Have you ever used this substance?

    a. no
    b. yes

2. Have you used this substance within the last year or so?

    a. no
    b. yes

3. Assuming that it is readily available, what is the probability of your using this substance within the next year or so?

    a. definitely will use it
    b. probably will use it
    c. don't know
    d. probably will not use it
    e. definitely will not use it

For each substance for which you've chosen answer a for both questions 1 and 2, go to question 15. If you've chosen answer b for either question 1 or 2, go on to the next question (4).

4. When you are using drugs, what proportion of the time are you likely to use this substance?

    a. every or nearly every time (over 90%)
    b. most of the time (75-90%)
    c. more than half the time (60-75%)
    d. about half the time (40-60%)
    e. less than half the time (25-40%)
    f. some of the time (10-25%)
    g. hardly ever (less than 10%)

5. Within the last year or so, how often do you usually use this substance?

    a. 3 or more times a day
    b. 2 times a day
    c. once a day
    d. nearly every day
    e. 3 or 4 times a week
    f. once or twice a week
    g. 3 or 4 times a month
    h. about once a month
    i. a few times a year
    j. about once a year or less

6. When you are using this substance, do you <u>usually</u> use this substance only, or do you <u>usually</u> use other drugs also?

    a. use substance only
    b. use other drugs along with substance

7. When you are using this substance, what proportion of the time is your use <u>intravenous</u>?

    a. all or nearly all (over 90%)
    b. most (75-90%)
    c. more than half (60-75%)
    d. about half (40-60%)
    e. less than half (25-40%)
    f. some (10-25%)
    g. hardly any (less than 10%)
    h. none

8. How long have you been using this substance?

    a. 5 years or longer
    b. 3-5 years
    c. 2-3 years
    d. 1-2 years
    e. 6 months to 1 year
    f. 3-6 months
    g. less than 3 months

9. When you are using this substance, what proportion of the time are you likely to use it when you are <u>alone</u>?

    a. every or nearly every time (over 90%)
    b. most of the time (75-90%)
    c. more than half the time (60-75%)
    d. about half the time (40-60%)
    e. less than half the time (25-40%)
    f. some of the time (10-25%)
    g. hardly ever (less than 10%)
    h. never

10. When you are with a group of people who <u>are</u> using this substance, what proportion of the time are <u>you</u> likely to use this substance?

    a. every or nearly every time (over 90%)
    b. most of the time (75-90%)
    c. more than half the time (60-75%)
    d. about half the time (40-60%)
    e. less than half the time (25-40%)
    f. some of the time (10-25%)
    g. hardly ever (less than 10%)
    h. never

11. When you are with a group of people who are not using this substance, what proportion of the time are you likely to use this substance?

    a. every or nearly every time (over 90%)
    b. most of the time (75-90%)
    c. more than half the time (60-75%)
    d. about half the time (40-60%)
    e. less than half the time (25-40%)
    f. some of the time (10-25%)
    g. hardly ever (less than 10%)
    h. never

12. The first time you used this substance, was your experience pleasant or unpleasant?

    a. unpleasant
    b. pleasant

13. Out of all the times you have used this substance, what proportion of the time has your experience been pleasant?

    a. all or nearly all (over 90%)
    b. most (75-90%)
    c. more than half (60-75%)
    d. about half (40-60%)
    e. less than half (25-40%)
    f. some (10-25%)
    g. hardly any (less than 10%)
    h. none

14. Who first suggested that you use this substance?

    a. a close friend
    b. husband/wife
    c. acquaintance
    d. parent
    e. brother or sister
    f. other relative
    g. physician or clinic
    h. nobody (self-sought)
    i. other

15. What percentage of your friends and acquaintances use this substance?

    a. all or nearly all (over 90%)
    b. most (75-90%)
    c. more than half (60-75%)
    d. about half (40-60%)
    e. less than half (25-40%)
    f. some (10-25%)
    g. none

16. Of your friends and acquaintances who do <u>not</u> use this substance, what proportion disapprove of <u>your</u> using this substance?

   a. all or nearly all (over 90%)
   b. most (75-90%)
   c. more than half (60-75%)
   d. about half (40-60%)
   e. less than half (25-40%)
   f. some (10-25%)
   g. hardly any (less than 10%)
   h. none

17. To what extent do you think this substance should be legally available?

   a. not available at all
   b. available only for medical and scientific research
   c. available by prescription only
   d. as available as alcohol
   e. totally available (no restrictions at all)

18. To what extent do you think this substance is a danger to the psychological or physical health of an individual who uses it <u>without</u> medical supervision?

   a. extreme danger
   b. moderate danger
   c. slight danger
   d. no danger at all

19. For which of the following reasons do you use this substance? (Indicate as many as apply.)

   a. feeling under pressure
   b. makes the future seem brighter
   c. eases aches and pains
   d. to be part of the group
   e. gives you more confidence in yourself
   f. feeling tired
   g. it is a pleasant way to celebrate
   h. helps you relax
   i. helps you sleep at night
   j. makes you feel happier
   k. makes get-togethers fun
   l. helps you forget you are not the kind of person you would like to be
   m. feeling lonely, sad
   n. adds a certain warmth to social occasions
   o. makes you less shy
   p. helps you feel better
   q. makes you worry less about what others think of you
   r. feeling under pressure, tense
   s. makes colors, sounds, etc., seem more vibrant
   t. makes food taste better
   u. other
   v. have never used this substance

20. Please rank-order the substances you have used from the first substance you used to the substance you began to use most recently. Place the number 1 in the space for the substance you used first, the number 2 in the space for the substance you used second, and so on, until you have numbered the substance you began to use most recently. If you have not used a particular substance, place a 0 in the space for that substance.

In order to answer the last few questions, please place the <u>initials</u> of the 5 people who are <u>closest to you</u> in the appropriate spaces below. <u>Do not enter any names</u> - <u>only initials</u>. Place the initials of the person who is <u>closest to you</u> (e.g., "best" or "special" friend, girlfriend/boyfriend, husband/wife, etc.) in space number 1, the person who is <u>next closest</u> to you in space number 2, and so on, until you have placed the initials of the fifth closest person to you in space number 5. In addition, for each person please indicate the type of relationship they have with you and the length of the relationship by selecting the appropriate letters from the lists below and placing them in the spaces provided. When you have done this for all 5 friends, go on to the next page.

<u>PERSON</u>	<u>Type of Relationship</u>	<u>Length of Relationship</u>
1. _____	1. _____	1. _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____
4. _____	4. _____	4. _____
5. _____	5. _____	5. _____

Type of Relationship

a. brother/sister
b. other relative
c. friend from school
d. friend from work
e. childhood friend
f. girlfriend/boyfriend
g. husband/wife
h. other (specify)

Length of Relationship

a. 5 years or longer
b. 3-5 years
c. 1-3 years
d. 6 months to 1 year
e. 3-6 months
f. less than 3 months

Please answer the following questions by placing the <u>letter or letters</u> corresponding to your answer in the appropriate box in the matrix on the next page. The numbers above each column in the matrix correspond to the number assigned to each <u>friend</u> on the preceding page. The row numbers correspond to the question numbers.

1. Which of the following substances does this person use? Indicate as many as apply.)

   a. alcohol
   b. marijuana
   c. LSD
   d. other hallucinogens (DMT, etc.)
   e. tranquilizers
   f. barbiturates '
   g. amphetamines

   h. cocaine
   i. heroin
   j. other opiates (opium, morphine, etc.)
   k. salazone
   l. solvents (glue, gasoline, etc.)
   m. nitrous oxide

2. How much of your leisure time (i.e., time other than when you are working) do you spend with this person?

   a. all or nearly all (over 90%)
   b. most (75-90%)
   c. more than half (60-75%)
   d. about half (40-60%)
   e. less than half (25-40%)
   f. some (10-25%)
   g. hardly any (less than 10%)
   h. none

3. When you are with this person, how often do you <u>both</u> use drugs?

   a. all or nearly all of the time (over 90%)
   b. most of the time (75-90%)
   c. more than half the time (60-75%)
   d. about half the time (40-60%)
   e. less than half the time (25-40%)
   f. some of the time (10-25%)
   g. hardly ever (less than 10%)
   h. never

4. When you are with this person and he/she is <u>not</u> using drugs, how often do <u>you</u> use drugs?

   a. all or nearly all of the time (over 90%)
   b. most of the time (75-90%)
   c. more than half the time (60-75%)
   d. about half the time (40-60%)
   e. less than half the time (25-40%)
   f. some of the time (10-25%)
   g. hardly ever (less than 10%)
   h. never

5. Do you use any drugs that this person does not use?

    a. no
    b. yes

If you've checked answer b, go on to questions 6 and 7. If you've checked answer a, you have completed the questionnaire.

6. How does this person feel about your use of drugs which they do not use?

    a. strongly approves
    b. approves
    c. neutral
    d. disapproves
    e. strongly disapproves

7. When you are using drugs, how often do you use drugs which this person either feels neutral about or disapproves of your using?

    a. all or nearly all of the time (over 90%)
    b. most of the time (75-90%)
    c. more than half the time (60-75%)
    d. about half the time (40-60%)
    e. less than half the time (25-40%)
    f. some of the time (10-25%)
    g. hardly ever (less than 10%)
    h. never

THIS IS THE END OF THE QUESTIONNAIRE. THANK YOU FOR YOUR TIME AND COOPERATION.

FRIEND

QUESTION

APPENDIX B

Cover Letter

Dear Respondent:

In the past few years the use of psychoactive drugs by individuals through-
out the country has received increasing publicity in newspapers, magazines,
and television. Unfortunately, much of this publicity has been based on
insufficient or misleading information. Although it is clear that large
numbers of people use drugs, there is remarkably little accurate informa-
tion about which drugs are being used, how frequently they are used, and
the reasons underlying their use. Since this type of information is
continually being used in making policy decision, it is extremely important
that we have an accurate and unbiased picture of drug use.

This questionnaire is a first step toward obtaining such information. In
the following pages you will be asked a number of questions relating to
your own use of various drugs. Since the use of many of these substances
is currently illegal, this questionnaire is completely anonymous. To help
us in protecting your privacy, please do not place your name or any other
personally identifying information on the questionnaire. Since you cannot
be identified, it is hoped that you will feel free to answer the questions
as candidly and accurately as possible.

Since the questionnaire takes some time to complete, you may take it with
you and complete it at your convenience. However, please complete the
questionnaire at a time and place where you can be alone and free from
distractions. When you have completed the questionnaire, please return it
to the place where it was given to you. If for any reason you decide not
to complete the suvey, merely return the blank questionnaire.

Since no questionnaire allows everyone to express their views to their
complete satisfaction, I invite you to communicate with me more fully if
you desire. You may do this by either enclosing a separate note along with
your questionnaire, or by writing to me at some later date at the address
listed below. In either event, do not include any identifying information.

Due to the large number of questionnaires, it will take some time before
the results are completely analyzed. If you would like to see the results,
copies will be abailable at the Drug Education Center, 405 Grove Street, in
late October. In addition, copies will be available upon request by
writing to me at the address listed below. Thank you for your time and
cooperation.

Sincerely,

Victor A. Battistich
Department of Psychology
Michigan State University
East Lansing, Michigan 48824

Messages: 353-9166 (9 a.m. - 4 p.m.)
           349-1778 (evenings)

APPENDIX C

Demographic Characteristics of "Incentive" and No-Incentive"

Subjects in the "Street Sample"

TABLE 34

Demographic Characteristics of "Incentive" and "No-Incentive"
Subjects in the "Street Sample"

| Variable | Group | | | | | |
| | Incentive ($\underline{n}$ = 56) | | | No-Incentive ($\underline{n}$ = 15) | | |
	$\underline{n}$(%)	$\overline{X}$	S.D.	$\underline{n}$(%)	$\overline{X}$	S.D.
<u>Age</u>		21.33	4.02		22.60	3.64
<u>Sex</u>						
Male	11(12)			4(27)		
Female	49(88)			7(73)		
<u>Marital Status</u>						
Single	51(91)			10(66)		
Married	4(7)			4(27)		
Div./Separ.	1(2)			1(7)		
<u>Religious Back-</u> <u>ground</u>						
Protestant	24(43)			7(47)		
Catholic	17(30)			5(33)		
Jewish	6(11)			2(13)		
Other	3(5)			0		
None	6(11)			1(7)		
<u>Religious Prefer-</u> <u>ence</u>						
Protestant	13(23)			1(7)		
Catholic	10(18)			2(13)		
Jewish	3(5)			2(13)		
Other	11(20)			2(13)		
None	19(34)			8(53)		
<u>Church Attendance</u>						
Frequent	5(9)			1(7)		
Infrequent	24(44)			3(20)		
None	26(47)			11(73)		
<u>Father's Education</u>						
(1) Grammer school or less	5(10)			1(7)		
(2) Some high school	4(8)			0		
(3) High school grad.	11(21)	4.11	1.65	0	4.53	1.30

TABLE 34 (Cont'd)

Variable	Incentive (n = 56)			No-Incentive (n = 15)		
	n(%)	X̄	S.D.	n(%)	X̄	S.D.
(4) Some college	6(11)			7(47)		
(5) College grad.	12(23)			3(20)		
(6) Post grad.	14(27)			4(27)		
Mother's Education						
(1) Grammer school or less	3(6)			0		
(2) Some high school	3(6)			1(7)		
(3) High school grad.	18(34)	3.69	1.20	4(27)	4.20	1.21
(4) Some college	15(28)			3(20)		
(5) College grad.	11(21)			5(33)		
(6) Post grad.	3(6)			2(13)		
Annual Family Income						
(1) $5,000	4(8)			0		
(2) $5-9,999	4(8)			2(14)		
(3) $10-14,999	11(22)	3.80	1.28	4(29)	3.57	.94
(4) $15-24,999	11(22)			6(43)		
(5) $25,000	21(41)			2(14)		
Size of Home Community						
Farm/Rural	11(21)			4(27)		
Sm. town (10,000)	4(7)			0		
Avg. town (10-99,999)	9(17)			2(13)		
Suburb	11(21)			5(33)		
City (100-500,000)	7(13)			3(20)		
Lg. city (500,000)	11(21)			1(7)		
Occupation						
Student	40(77)			9(60)		
Unemployed	2(4)			0		
Unskilled	2(4)			3(20)		
Semiskilled	3(6)			1(7)		
Skilled/Foreman	4(8)			0		
Clerk, etc.	1(2)			1(7)		
Proprietor, manager	0			0		
Professional	0			1(7)		

TABLE 34 (Cont'd)

Variable	Group					
	Incentive ($\underline{n}$ = 56)			No-Incentive ($\underline{n}$ = 15)		
	$\underline{n}$(%)	$\bar{X}$	S.D.	$\underline{n}$(%)	$\bar{X}$	S.D.

STUDENTS ONLY

Major
Social Science	11(31)	1(11)
Natural Science	2(6)	2(22)
Humanities	5(14)	1(11)
Education	4(11)	2(22)
Business	5(14)	0
Engineering	0	0
Ag. & Nat. Res.	0	0
Medicine	2(6)	3(33)
Other	2(6)	0
No Preference	5(14)	0

GPA
(1) _ 1.99	1(2)			0		
(2) 2.00-2.49	5(12)			1(11)		
(3) 2.50-2.99	15(37)	3.42	.96	2(22)	3.78	.97
(4) 3.00-3.49	14(35)			4(44)		
(5) 3.50-4.00	5(12)			2(22)		

Class*
High school	1(2)	1(11)
College freshman	11(27)	1(11)
College sophomore	9(22)	1(11)
College junior	9(22)	0
College senior	8(20)	3(33)
Graduate	2(5)	3(33)

Expected Occupation
Semiskilled or lower	0	0
Skilled/Foreman	7(25)	2(25)
Clerk, etc.	0	0
Proprietor, manager	5(18)	0
Professional	16(57)	6(75)

* $p < .05$

APPENDIX D

Statement of Procedures for Insuring the

Confidentiality of Respondents

Statement of Procedures For Insuring The
Confidentiality of Respondents

Since the proposed study concerns aspects of behavior which are currently illegal (specifically, the use of illicit psychoactive drugs), it is necessary to guarantee the confidentiality of information supplied by respondents. The following procedures are considered adequate for insuring such privacy:

1. Respondents are instructed in the cover letter not to place names or any other identifying marks on the questionnaire. All questionnaires will be examined before scoring and any identifying marks will be removed. In the event that it is not feasible to remove such marks, the author will personally record responses and subsequently destroy the questionnaire.

2. Since it is desirable that respondents have the option to communicate more fully with the author if they wish, the cover letter instructs respondents desiring such supplementary input to either enclose a note with their questionnaire, or mail additional correspondence to the author. All such information will be personally kept by the author under lock and key, and identifying information will be removed whenever possible.

3. In one segment of the questionnaire, respondents are required to list the initials of the five persons who are closest to them. Although this information allows for the possibility of identification, the use of initials minimizes this possibility. In addition, this information is recorded on a single page separate from other sections of the questionnaire. Once the data associated with these questions has been tabulated, this page will be removed and destroyed.

4. All questionnaires, score sheets, and other relevant information will be kept in a locked file cabinet to which the author has the only key.

5. Finally, since completion of the questionnaire is voluntary and no incentives are offered, respondents are free to decline to participate in the study without loss or penalty.

It is felt that the above procedures adequately insure the confidentiality of the respondents. In the event that unforseen circumstances arise which place the confidence of respondents in jeopardy, appropriate corrective actions will be taken.

Victor A. Battistich
Department of Psychology

APPENDIX E

Statistical Procedures for Dealing With

Heterogeneity of Variance

STATISTICAL PROCEDURES FOR DEALING
WITH HETEROGENEITY OF VARIANCE

In research designs such as the present study where it is
not possible to randomly assign subjects to conditions (i.e.,
nonexperimental designs), nonorthogonal designs with hetero-
genous variances across conditions are not infrequent. Since
virtually all parametric statistical tests assume that the var-
iance on the dependent measure(s) is equal for all treatment
populations, these tests are not appropriate for evaluating
hypotheses in such instances. That is, the true probability
of obtaining a significant result by chance alone will not be
equal to the alpha level selected if this assumption is viola-
ted. In general, heterogenous variances result in an inflation
of the alpha level (Box, 1954). In cases where the treatment
populations are approximately normally distributed and all
groups are of the same size the inflation in alpha is slight,
and conventional parametric tests may be used without undue
concern. However, in cases such as the present research where
there is both unequal cell frequencies and heterogenous vari-
ances the distortion in Type I error rates may be considerably
greater (see Myers, 1972, for a thorough discussion of this
problem). Further, the exact nature of the distortion in alpha
in such cases depends upon the relationship between group size
and variance on the dependent measure. In general, where var-
iance and group size are negatively correlated Type I error

rates are increased; if the correlation is positive, hetero-geneity of variance will typically decrease the probability of a Type I error (Boneau, 1960). Clearly, such conditions pose a serious problem for statistical inference based on the results of conventional parametric tests. However, it is still possible to carry out the significance test at the desired al-pha level by modifying the computational formula for the vari-ous tests to take account of heterogenous variances and sample sizes. In the present research, two procedures were utilized in such cases. For comparisons involving only two groups, an approximation of the $\underline{t}$ statistic was computed following the formula proposed by Welch (1937):

$$t' = \frac{\bar{Y}_1 - \bar{Y}_2}{\sqrt{s_1^2/n_1 + s_2^2/n_2}}$$

with

$$df = \frac{(n_1 - 1)(n_2 - 1)}{(n_2 - 1)c^2 + (n_1 - 1)(1-c)^2}$$

where

$$c = \frac{s_1^2/n_1}{s_1^2/n_1 + s_2^2/n_2}$$

Where the number of groups was greater than two, Box's (1954)
technique using the usual ratio of mean squares but adjusting
the df and $\underline{F}$ statistic was utilized:

$$b = \frac{(N - a) \; \Sigma_j (N - n_j) \; s_j^2}{N(a-1) \; \Sigma_j (n_j -1) \; s_j^2}$$

$$h' = \frac{\left[\Sigma_j (N - n_j) \; s_j^2 \right]^2}{(\Sigma_j \; n_j \; s_j^2)^2 + N\left[\Sigma_j (N - 2n_j) \; s_j^2 \right]^2}$$

$$h = \frac{\left[\Sigma_j (n_j -1) \; s_j^2 \right]^2}{\Sigma_j (n_j -1) \; (s_j^2)^2}$$

The $\underline{F}$ value required for significance with df equal to $\underline{h'}$ and
$\underline{h}$ was then obtained and multiplied by the factor $\underline{b}$. If the
obtained mean ratio exceeded this computed value the group dif-
ferences were significant.

APPENDIX F

Sex Differences in Drug Use

TABLE 35

Sex Differences in Drug Use

Drug	Males[1]		Females[1]		Males[2]			Females[2]		
	X̄	S.D.	X̄	S.D.	Non-User n(%)	Past User n(%)	User n(%)	Non-User n(%)	Past User n(%)	User n(%)
Alcohol	24.91	12.45	19.84	15.28	0	0	34(100)	1(1)	1(1)	85(98)
Marijuana	17.03	14.86	16.84	19.32	3(9)	2(6)	29(85)	14(16)	7(8)	66(76)
LSD ⎤	1.53	3.68	1.25	2.82	15(44)	12(35)	7(21)	54(62)	16(18)	17(20)
Other Hall. ⎦					16(47)	11(32)	7(21)	49(56)	22(25)	16(19)
Tranquilizers	2.15	6.27	2.50	6.13	17(50)	7(21)	10(29)	51(59)	9(10)	27(31)
Barbiturates	.73	1.73	1.17	3.22	21(62)	6(18)	7(21)	57(66)	14(16)	16(18)
Amphetamines	1.59	2.95	2.24	6.49	18(53)	7(21)	9(26)	45(52)	15(17)	27(31)
Cocaine	.82	1.75	.84	2.13	20(59)	6(18)	8(23)	59(68)	8(9)	20(23)
Heroin ⎤	.70	2.58	.63	2.79	32(94)	2(6)	0	80(92)	5(6)	2(2)
Other Opiates ⎦					23(68)	7(21)	4(11)	67(77)	13(15)	7(8)
Solvents	0	0	0	0	31(91)	3(9)	0	84(97)	3(3)	0
Nitrous Oxide	.03	.17	.17	1.09	29(85)	4(12)	1(3)	78(90)	5(6)	4(4)

Note: None of the differences are significant.

[1] Frequency-Variability

[2] Use-Nonuse