

Escalation of Marijuana Use: Application of A General Theory of Deviant Behavior*

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Drawing from a variety of perspectives on deviance, we offer a general theory and specific hypotheses for why some people become regular users of marijuana. We estimate a path model that explains escalation of marijuana use using 23 variables modelled in four stages. Subjects (N = 1,229) are young adults who reported using marijuana at least once. The analysis uses data provided at two points in a panel study: in the seventh grade, by self-administered questionnaire, and as young adults (23-25 years old), by household interview.

Results of the path analysis provide support for many of our theoretical expectations. Demographic controls have significant effects but do not negate a variety of psychosocial effects. Seventh-grade measures of peer acceptance and avoidant defensive tendencies directly predict escalation of marijuana use, while other seventh-grade measures have indirect effects on escalation of use through age of first trying marijuana and through the circumstances and consequences of first trying marijuana. Specifically, the later one tries marijuana, the less likely one is to increase use. Also, trying marijuana at a time of psychological distress and trying it without peer motivation predict escalated use. Moreover, consequences of initial use (i.e., weakening of ties with significant others and adverse physical or psychological outcomes) further affect increased marijuana use.

A great deal of research has focused on the initiation of marijuana use, thus enabling researchers to describe many of the processes and conditions that dispose young people to try marijuana (Becker, 1963; Jessor, 1976; Yamaguchi and Kandel, 1984). However, as our knowledge of the etiology of trying marijuana has increased, its importance has waned. Most young adults have tried marijuana, and experimentation, at least, has become normative. Jessor (1979) concludes that marijuana use has been institutionalized in American culture. Continued use of marijuana, however, has more serious health, economic,

and behavioral implications. Theories of deviance are more appropriately applied to regular use of marijuana than to simply trying marijuana; yet, in the deviance literature, regular use has been less thoroughly addressed than experimentation. Using data from a metropolitan panel study and defining heavy use as daily, or near daily, use of marijuana for at least a month, we focus on the question: Why, among young people who try marijuana, do some escalate to heavy use while others stop using it or only use it occasionally? We consider this question from the perspective of a general theory of deviance and present a multivariate causal model to test aspects of the theory.

BACKGROUND AND THEORY

In the case of marijuana, the distinction between trying marijuana and escalating to reg-

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ular use is important. Many studies observe different psychosocial correlates at different stages of marijuana use (Kandel et al., 1978; Kimlicka and Cross, 1978, Lucas, 1978; Weinstein, 1978). Gorsuch (1980:20) considers the causes of initiating, continuing, and becoming addicted to illicit drug use to be different. And while experimentation with marijuana is acceptable among young people, there appears to be increasing evidence that heavier use is not generally approved. Johnston and his associates (1982), for example, report that in a study of high school seniors, 60 percent of the class of 1982 perceived regular marijuana use 'as posing great risk. Only a minority of those who have ever tried marijuana use it on a daily or more frequent basis (McGlothlin, 1975), and occasional users offer fewer excuses and justifications than habitual users of marijuana (Weinstein, 1978).

This focus on escalation of marijuana use not only permits us to test models of why people become increasingly involved in a pattern of behavior but also identifies a behavior usually considered deviant only when heavily engaged in.

The theory that structures our analyses can be broadly applied to patterns of deviance (Kaplan, 1975). As long as the behaviors fail to conform to the normative expectations of a significant referent (whether or not the behavior violates the norms of one's own socializing agents), the behavior can be defined as deviant and as an appropriate object of causal inquiry.

Strictly speaking, then the theory explains *behavior*, rather than *deviant behavior*, because the definition of the behavior as deviant in the subject's membership or reference groups becomes part of the explanation of the behavior. However, in practice the theory is usually applied to behavior that appreciable segments of the population define as "deviant." Implications of the changing theoretical orientation for our analysis are (1) marijuana use does not necessarily presume a negative evaluation of the pattern by the person's membership/reference groups and, indeed (2) the evaluation of marijuana use in these groups is part of the explanation for the person's escalation of marijuana use.

As a theory of deviant behavior, our perspective is general. It draws from a number of

approaches often presented as competing, rather than complementary, explanations of drug use. These theoretical approaches include structured strain (Cloward and Ohlin, 1960; Merton, 1938), deviant subculture (Akers, 1977; Cohen, 1955; Sutherland and Cressey, 1974), social control and containment (Hirschi, 1969; Voss, 1969), and labeling theory (Becker, 1963; Scheff, 1966). (See Kaplan, 1984 for a more detailed discussion).

Theoretical Overview

We summarize the general theory as it applies in particular to increased use of marijuana (Kaplan, 1984).¹ After trying marijuana, a person is exposed to a number of influences, some of which increase and others of which decrease the probability that marijuana use will escalate. Very generally, marijuana use is likely to increase if (1) increased need satisfaction is associated with the initial use of marijuana; (2) motives that ordinarily act to constrain marijuana use weaken; and (3) opportunities for marijuana use remain readily available (Becker, 1963). Further, marijuana use 'may satisfy a need for positive self-evaluation by (1) permitting the individual to attack or avoid conventional standards that have been the measure of failure, (2) allowing conformity to the expectations of a positive reference group of users, and/or (3) validating the acceptability of earlier marijuana use or its consequent deviant identity.

Motives that ordinarily constrain deviant impulses are reflected in the self-evaluative significance of internal and social controls. Weakening of these controls is accomplished by the absence of visible adverse consequences of earlier marijuana use and by decreased attraction to conventional values resulting from (1) the ongoing processes that influenced disposition to marijuana use in the past and (2) conventional-group rejection of the person's initial marijuana use. In regard to the latter, rejection of and by conventional society increases attraction to and interaction with associates who use marijuana, processes that provide the occasions and opportunities for illicit use. As Becker (1963:78) says, one becomes able to use marijuana regularly "to the degree that he comes to regard conventional

conceptions of it as the uninformed views of outsiders and replaces these conceptions with the 'inside' view he has acquired through his experience with the drug in the company of other users."

Conversely, marijuana use is less likely to increase if (1) marijuana use does not satisfy the needs that stimulated the initial response; (2) its use stimulates threats to the satisfaction of other needs (such as those associated with continuing emotional commitment to conventional morality or fear of formal sanctions); and (3) changes, either in the person's needs or in the available conventional opportunities to satisfy those needs, render marijuana use superfluous.

This general statement is specified in greater detail in the presentation of the model to be estimated and in the description of the independent variables. We seek to operationalize this statement in a multivariate model using data from a longitudinal study to explain **increased** involvement in marijuana use by subjects who tried marijuana at some time in their lives.

METHODS

Sample and Data Collection

Data come from an ongoing longitudinal study of adolescents and young adults. The initial target sample included all seventh grade students in a random half of the junior high schools in the Houston Independent School District as of March, 1971. Students responded to a self-administered questionnaire (Time 1 data). Of the 9,335 students, 7,618 (82%) returned questionnaires that were usable as baseline measures.

In late 1980, follow-up tracing and interviewing of all target respondents from the 1971 study began, including the 1,717 for whom baseline data were not available. The target sample was divided into 99 random subsamples that are being opened sequentially as data collection proceeds. In the present paper we report results from 2,158 respondents in samples 1-50 who completed the 1971 questionnaire and the 1981-83 follow-up study. In most instances, follow-up data were obtained in personal interviews; however, some respondents (e.g., those no longer living in Houston), com-

pleted the follow-up instrument as a mail-back questionnaire. These 2,158 respondents represent 58 percent of the 1971 respondents in samples 1-50, excluding those known to be deceased, imprisoned, or institutionalized. For initial examination of the sample, we use all 2,158 respondents and those who tried marijuana ($N = 1,410$). For the models to be tested, we use respondents who admitted trying marijuana at least once and who first tried it after the 1971 questionnaire ($N = 1,229$).

With the ongoing interviewing, we expect some improvement in the response rate. Nevertheless, we detect few appreciable differences between our panel sample ($N = 2,158$) and the total sample available in 1971 ($N = 7,618$). For the eleven 1971 measures used in our final model, panel respondents are slightly but insignificantly less likely to have friends who use drugs, to value deviant alternatives, or to have problems at school or at home. The correlational structure between the two groups (i.e., panel and total samples) is indistinguishable, with the average absolute difference between correlations .01 and no difference significant.

In terms of marijuana use our sample compares favorably to other surveys. Sixty-five percent of our subjects ($N = 1,410$) indicated that they had used marijuana at some time; of these, 36 percent (24% of the total sample) progressed to daily or near daily use for a period of at least one month at some point during their lives. In comparison, findings from a U.S. national survey on drug abuse (Miller et al., 1983) indicate that 64.1 percent of the population aged 18-25 years have used marijuana at least once, and a longitudinal cohort study representative of New York State adolescents followed to age 25 observed that 30 percent of the marijuana users were using marijuana daily at the height of use (Kandel and Logan, 1984). Further, Johnston and his colleagues (1984) report that 24 percent of an earlier national sample of high school seniors who are now 19 to 25 years of age have used marijuana daily at some time in their lives.

Causal Model

We posit a linear model in which 23 variables are causally ordered in four stages. The causal

ordering of these variables and the labels we use to identify them are presented in Figure 1. Variables modelled at the same stage are considered to be contemporaneous; variables identified at earlier stages are understood to occur prior to those identified at later stages.

First, we describe the variables at each stage, beginning with the dependent measure (Stage IV) obtained in the most recent testing. Second, we describe the exogenous demographic variables (Stage I). Then, third, we describe the endogenous variables (Stages II–III) measured using data from the 1971 questionnaire and from the most recent survey respectively. Stage II measures come from the 1971 questionnaire and refer to attitudes and situations prevalent in the seventh grade. Stage III data are provided at the most recent time; however, they refer to events that occur prior to the dependent variable. Specifically, they refer to the attendant circumstances and consequences of first trying marijuana.

Finally, for each stage we describe the theoretically indicated direct and indirect effects of the constructs on the dependent variable.

Stage IV: Dependent Variable (Escalation of Marijuana Use)

Escalation of marijuana use (ESCM) is indicated by an affirmative response to, “Have you ever used marijuana, hashish, THC daily or almost daily for at least a month?” Of the 1,410 respondents who have tried marijuana, 1,229 report first trying it after April, 1971.² Of these

latter, 32 percent report daily or near daily use for at least one month at some point during their lives. These respondents are our heavy marijuana users. We have chosen to use the dichotomous measure because it best represents our theoretical distinction between experimentation and escalation to regular use of marijuana. This is a somewhat different notion than could be represented in a continuous measure of intensity or length of use. In practice, however, we find little difference. We created a variable that measured months of daily use (from 0 to 12 or more) and substituted it into our analyses. There were no substantial differences in effects from those observed with the dichotomous measure. This was not surprising when we examined the distribution: more than 60 percent of those who had ever used marijuana daily or almost daily for a month used it that often for a year or more. Therefore, although our definition of what constitutes heavy use is somewhat arbitrary, we believe the dichotomous measure best represents the distinction of becoming a heavy marijuana user.

Stage I: Demographic Variables

We include three demographic variables as baseline measures: *parental socioeconomic status* (PSES), *sex*, and *race*. Composition of the parental SES measure and all the subsequent endogenous indices are listed in the Appendix. Sex (male; female) and race (white; black; Hispanic) are dummy classifications, with female and white the excluded category

FIGURE 1. Variable Included at Each of the Four Stages of the Causal Model

STAGE I	STAGE II	STAGE III	STAGE IV
Demographics	All 1971 Measures	All Young Adult Measures	
Parental socioeconomic status (PSES)	Self-Devaluing Experiences	Age at first use of marijuana (AGEF)	Escalation of Marijuana Use
Sex (MALE)	Rejection by peers (RJTP)	Circumstances of Trying Marijuana	
Race: Black (BLCK)	Rejection by family (RJTF)	Psychological distress (DIST)	Heavy Use (ESCM)
Hispanic (HISP)	Rejection by teachers (RJTT)	Conformity to peer norms (CONF)	
	Failure at school (FSCL)	Deviant definition (DDEF)	
	Conventional Values and Controls	Consequences of Trying Marijuana	
	Conventional values (CVAL)	Attenuation of ties to others (ATTN)	
	Normative inconsistency (ICNS)	Self-enhancement (SLFE)	
	Defenses	Adverse consequences (ACSQ)	
	Vulnerability (VULN)		
	Regression (REG)		
	Avoidance (AVDN)		
	Social Definition of Drug Use		
	Kids at school use drugs (KASD)		
	Friends use drugs (FRSD)		

respectively. Our primary reason for introducing these variables into the model is as controls for the relationships between the psychosocial predictors and escalation to regular marijuana use. It has been well documented, however, that sex and race predict marijuana use in multivariate contexts (Bachman et al., 1984; Kandel and Logan, 1984; Robbins et al., 1985), and we expect them to predict escalated use as well. Males are more likely to use marijuana heavily than are females, and whites are more likely to be heavy users than are blacks. We also expect men to report less psychological distress around the time they first try marijuana than women simply because men generally report less distress (c.f., Kessler and McRae, 1981).

Stage II: 1971 Measures (Adolescent Attitudes and Experiences)

These 11 variables from the 1971 questionnaire measure: (1) perceptions of self-devaluing experiences in conventional groups; (2) attitudes toward conventional and deviant value systems; (3) susceptibility to conventional social controls; (4) coping and defensive patterns; and (5) social definitions favorable to marijuana use. The individual items operationalizing these and all subsequent endogenous indices are listed in the appendix.

Self-devaluing experiences. Four variables operationalize self-devaluing experiences. Three of these reflect, respectively, perceptions of being rejected by or having failed to achieve according to the standards of *peers* (RJTP), *parents* (RJTF), and *teachers* (RJTT). The fourth variable is *school failure* (FSCL).

These four variables are expected to be indirectly related to escalating use of marijuana through their effects on circumstances accompanying the initial use of marijuana to (1) reduce feelings of psychological distress and (2) conform to the norms of new and deviant reference groups. Theoretically, using marijuana should assuage self-rejecting feelings by inducing pleasurable pharmacological effects and by conforming to the accepted norms of these groups. Besides these indirect effects, we anticipate that rejection by peers (RJTP) will predict an older age of first use and will directly

and negatively predict escalated marijuana use because rejection by peers restricts opportunities and occasions to use marijuana.

Conventional values and controls. Two variables are used here. The first reflects commitment to the *conventional value system* (CVAL) as indicated by high values placed on parent and teacher attitudes and on such attributes or achievements as kindness, honesty, good grades, and good manners. This commitment should lead to an increased age for first use and lower probability of escalated marijuana use insofar as it measures self-imposed sanctions against acting out deviant dispositions. Individuals who are committed to conventional values are expected to suffer guilt or other emotions that would inhibit escalated substance use, particularly if they do not expect alternative self-enhancing consequences.

The second variable reflects *normative inconsistency* (ICNS) or the absence of clarity of conventional rules. It is expected to be indirectly related to escalated marijuana use through its effect on first using marijuana to conform to peer expectations. To the extent that rules are consistent, the escalation of marijuana use is inhibited by expectations of negative sanctions. Normative inconsistency should also have an indirect effect on escalated use by (1) stimulating attraction to alternative normative systems that countenance marijuana use and (2) leading to a decreased age for first use.

Coping and defensive patterns. Increased marijuana use should be contingent on the ability to either forestall or assuage the distressful effects of self-devaluing experiences. This ability is reflected in the adequacy of an individual's coping and adaptive patterns. Without adequate coping patterns to deal with societal demands, he/she is more likely to adopt alternative and deviant mechanisms. As operationalized in our model, inadequate coping mechanisms are seen in extreme sensitivity to the negative responses of others and in the use of less mature defense mechanisms. The first of the variables reflects *vulnerability* to the disvaluing responses of others (VULN). The other two variables reflect specific defensive responses, namely, *regression* (REGR) and *avoidance* (AVDN).

We expect vulnerability to indirectly affect

escalated marijuana use by predicting psychological distress around the time of initial use of marijuana; however, vulnerability may affect other theoretical constructs as well. Sensitivity to conventional others' opinions makes adverse consequences of initial marijuana use more likely and, hence, inhibits progression to a higher level of use. Thus, vulnerability is expected to be indirectly related to escalated use through the adverse consequences of others' disapproving responses to initial marijuana use. Avoidance and regression also should indirectly affect escalated use through these Stage III variables. Further, since avoidance and regression reflect characteristic ways of meeting environmental demands, they should directly predict escalated use insofar as the effects of marijuana are compatible with these tendencies.

Social definitions of drug use. Two variables indicate opportunity for drug use and affiliations with groups that define marijuana use as socially acceptable. The first of these, *kids at school use drugs* (KASD), reflects awareness of drug availability in the more inclusive peer group. The second, *friends use drugs* (FRDS), reflects definitions and opportunities favorable to drug use among close friends.

These two variables are expected to influence escalated use indirectly through their effects on (1) the need to conform to normative definitions of deviant reference groups, (2) the rewards associated with trying marijuana, and (3) decreasing age of first use.

Stage III: Circumstances and Consequences of Initial Marijuana Use

These seven measures come from respondents' reports as young adults at the most recent test administration. Hence, they temporally follow the demographics and the 1971 variables. One variable is a measure of age at first use; three measures can be described as circumstances of initial use; and three are consequences of initial use.

Age at first using marijuana (AGEF). This variable, the respondent's age in months when he or she first tried marijuana, should predict escalated use of marijuana. Even though we

have excluded those who first used marijuana before 1971, it is still true that those who try it earlier are likely to be more deviant and more likely to become heavy users. Therefore, age at first use should be predicted by Stage II variables reflecting conventional values and controls and peer associations.

Also, those who use marijuana earlier have longer risk periods for escalating use before the follow-up survey. And finally, late users are less at risk in an absolute sense because they are not exposed to marijuana for as long in their adolescence when the age-specific trend in heavy use is most prevalent (Kandel and Logan, 1984). Inclusion of age at first use should attenuate the effects of the circumstances and consequences of trying marijuana that are most prevalent among adolescents.

Circumstances. We model three variables that indicate circumstances surrounding the time marijuana was first tried. The first of these variables refers to the individual's psychological state when trying marijuana (*psychological distress* DIST) and is measured by items indicating the experience of dysphoric affect around the time of initial use of marijuana and by items indicating that initial use was occasioned by a need to get away from troubles or by feelings of anger.³

The second of these variables indicates that one tried marijuana *to conform to peer norms* (CONF). The gratification associated with marijuana use is derived in part from positive responses from other group members regardless of whether or not using marijuana is intrinsically gratifying. The positive responses of group members are evoked because marijuana use reflects shared values that are not necessarily deviant. For example, marijuana use may indicate conventional group values of risk-taking or experimentation and only incidentally reflect deviant activities (Dembo et al., 1976).

The third variable suggests a definition and understanding of marijuana use as a *deviant activity* (DDEF). That is, one tries marijuana knowing that others regard the act as deviant and that negative sanctions will be applied if the marijuana use is detected. Part of the gratification associated with marijuana use may come from the deviant nature of the act expressing rejection of conventional values that the person failed to achieve. Such

gratification may be in addition to any satisfaction that comes from the approval of peers who endorse marijuana use.

These circumstances of initial marijuana use should directly affect escalated use. For those whose initial use was occasioned by psychological distress, marijuana use will likely increase to the extent it reduces distress. Further, peer norms that include endorsement of marijuana use should directly lead to escalated use because they provide increased opportunities to use marijuana. Individuals who define initial use as deviant should increase marijuana use as they learn to discount the negative sanctions ("The user discovers his fears are excessive and unrealistic, as he comes to conceive the practice as one which can be kept secret with relative ease" [Becker, 1963:72]) and, indeed, finds intrinsic gratification from rejecting conventional norms.

Consequences. We measure three consequences of trying marijuana. The first considers responses of significant others to the initial use. *Attenuation of ties* (ATTN) with conventional membership groups is expressed in beliefs that the person's initial use of marijuana caused grief to loved ones and caused the person to be rejected by significant others. This variable should directly affect escalated use. It should increase opportunities for engaging in illicit activities by facilitating attraction to other membership groups that provide the means and occasions for marijuana use. Becker (1963:66) notes that "changes in group participation and membership lead to changes in level of use by affecting the individual's access to marijuana ... available only through illicit outlets."

The remaining two consequences are perceived positive and negative consequences of initial use. These reactions have much to do with whether the individual "learns" to enjoy marijuana (Becker, 1963). The first variable, *self-enhancement* (SLFE), is indicated by belief that initial use of marijuana made the person feel more important or powerful. The second variable, *adverse consequences* (ACSQ) of trying 'marijuana, is indicated by belief that using marijuana the first time was an unpleasant experience and was accompanied by bad psychological or physical effects. The first measure is expected to be positively associated with escalated use on the assumption that

the earlier use was positively reinforcing. By the same reasoning, adverse consequences should inhibit escalation.

ANALYSIS

The model was tested using path analysis with ordinary least squares (OLS) estimation. Table 1 presents the means, standard deviations, and the pairwise present correlation matrix of the 23 variables used to estimate the model.

We first estimated the saturated regression model of heavy marijuana use regressed on the 22 predictor variables. We then regressed each endogenous variable on all variables conceived of as causally prior. The model was reestimated eliminating all standardized paths less than .05 and not significant at $p < .05$.

Although there are potential problems inherent in regression analysis with a dichotomous dependent variable (Goldberger, 1964; Winship and Mare, 1983), we believe that with a large sample and only moderate skew (32%) in the dependent variable, multiple regression remains a robust technique (Hanushek and Jackson, 1977:209). The alternative of a logit model offers no easily interpretable analog to standardized path coefficients, and the probit alternative is limited in the number of independent variables included in estimating structural parameters (Winship and Mare, 1983: 106). However, we do estimate the logistic equation predicting heavy marijuana use to ascertain that the significant OLS paths are reproduced in the logit model. This adds confidence as to the validity of our results.

Table 2 presents results of the trimmed equations, showing successive stages of the path model in each columnar grouping from left to right. The column to the far right shows the direct effects on the ultimate dependent variable, heavy marijuana use.

The results show a modest but meaningful ability to predict those who at some time become heavy marijuana users among those who have tried marijuana ($R = .17$). This trimmed model represents only a .01 reduction in R from the saturated model. When we conduct a logistic analysis that includes all 10 of the predictors that have direct OLS effects on escalated marijuana use (ESCM), we find all 10 are also significant ($p < .05$) in the logit procedure.

TABLE 1. Pairwise-Present Correlations Among 23 Variables Included in the Model*

VAR	PSES	MALE	BLCK	HISP	RJTP	RJTF	RJTT	FSCL	CVAL	ICNS	VULN	REGR	AVDN	KASD	FRSD	AGEF	DIST	CONF	DDEF	ATTN	SLFE	ACSQ	MEAN	STDV
PSES																							.04	.78
MALE	-.07																						.51	.50
BLCK	-.32	.05																					.21	.41
HISP	-.35	.02	-.18																				.10	.30
RJTP	-.13	.04	.06	.02																			1.25	1.28
RJTF	-.12	-.06	.07	-.02	.34																		.96	1.39
RJTT	-.04	.07	.02	.03	.33	.44																	.85	1.18
FSCL	-.21	.13	.04	.12	.17	.28	.39																.75	.92
CVAL	.02	-.05	-.02	.01	-.07	-.41	-.35	-.24															5.45	1.08
ICNS	-.06	-.02	-.04	.04	.30	.39	.31	.16	-.13														1.96	1.28
VULN	-.01	-.08	-.09	.04	.13	.00	-.02	-.12	.24	.14													3.08	1.48
REGR	-.03	-.03	.13	.03	.11	-.02	.00	-.05	.08	.02	.12												.92	.77
AVDN	-.02	-.12	-.01	.00	.31	.27	.21	.06	-.08	.31	.16	.10											1.24	.96
KASD	.10	-.11	-.10	-.04	.04	.13	.16	.11	-.12	.15	.01	-.05	.09										.89	.89
FRSD	-.10	-.03	-.01	.03	.12	.34	.31	.29	-.28	.25	.00	-.06	.18	.34									.46	.83
AGEF	-.10	-.01	.15	.06	.04	-.12	-.10	-.05	.13	-.15	-.03	.09	-.03	-.11	-.15								203.	27.7
DIST	-.06	-.15	-.06	.05	.09	.18	.14	.13	-.06	.11	.06	-.02	.10	.04	.07	-.10							.95	1.75
CONF	-.02	-.01	-.12	.04	.01	.02	.04	.01	.02	.08	.10	.02	.05	.02	.07	-.15	.18						1.75	.98
DDEF	-.01	.09	-.13	.04	-.00	-.01	-.00	.04	.00	.05	.04	-.01	.03	.00	-.01	-.16	.09	.24					1.38	.71
ATTN	-.00	.02	-.06	.01	.00	.06	.07	.04	-.04	.07	.02	-.03	-.01	.04	.04	-.18	.37	.13	.10				.32	.62
SLFE	.01	-.00	-.06	.05	-.02	.10	.10	.06	-.04	.04	.05	-.07	.03	.11	.11	-.19	.22	.29	.10	.21			.34	.65
ACSQ	-.06	-.08	-.07	.03	.02	.01	-.03	.09	-.01	-.01	.05	-.01	.02	.02	.03	.02	.22	.11	.04	.18	.01		.31	.60
ESCM	.10	.11	-.14	-.05	-.04	.07	.07	.03	-.08	.05	-.02	-.02	.06	.04	.02	-.28	.18	-.02	.11	.18	.12	-.09	.32	.47

* Only respondents first trying marijuana after 1971 are included in analyses (N = 1,229).

TABLE 2. Path Coeffkients for the Trimmed Model Predicting Escalation of Marijuana Use Among Subjects Who Have Tried Marijuana (N =1,229)*

	197 1 Measures												Circumstances and Consequences of Trying Marijuana								Escalated Use
	STAGE II												STAGE III								STAGE IV
	RJTP	RJTF	RJTT	FSCL	CVAL	ICNS	VULN	REGR	AVDN	KASD	FRSD	AGEF	DIST	CONF	DDEF	ATTN	SLFE	ACSQ	ESCM		
Demographics																					
Parental SES (PSES)	-.13	-.14	ns	-.19	ns	-.08	ns	ns	ns	ns	-.12	ns	ns	-.07	ns	ns	ns	-.09	ns		
Sex (MALE)	ns	-.07	.07	.11	ns	ns	-.08	ns	-.13	-.10	ns	ns	-.15	ns	.10	ns	ns	-.09	.15		
Race: Black (BLCK)	ns	ns	ns	ns	ns	ns	-.10	.16	ns	-.08	ns	.15	-.06	-.14	-.13	ns	ns	-.10	-.12		
Hispanic (HISP)	ns	-.06	ns	ns	.ns	ns	ns	.07	ns	ns	ns	.09	ns	ns	ns	ns	ns	ns	-.06		
Self-Devaluating Experiences																					
Rejection by peers (RJTP)												.08	ns	ns	ns	ns	.09	ns	-.07		
Rejection by family (RJTF)												ns	.15	ns	ns	ns	.09	ns	ns		
Rejection by teachers (RJTT)												ns	ns	ns	ns	ns	ns	-.07	ns		
Failure at school (FSCL)												ns	.11	ns	ns	ns	ns	.12	ns		
Conventional Values and Controls																					
Conventional values (CVAL)												.09	ns	ns	ns	ns	ns	ns	ns		
Normative inconsistency (ICNS)												-.13	ns	ns	ns	ns	ns	ns	ns		
Defenses																					
Vulnerability (VULN)												ns	ns	.09	ns	ns	ns	ns	ns		
Regression (REGR)												ns	ns	ns	ns	ns	.06	ns	ns		
Avoidance (AVDN)												ns	ns	ns	ns	ns	ns	ns	.08		
Social Definition of Drug Use																					
Kids at school use drugs (KASD)												ns	ns	ns	ns	ns	.07	ns	ns		
Friends use 'drugs (FRSD)												-.11	ns	ns	ns	ns	ns	ns	ns		
Age at First Use of Marijuana (AGEF)																			-.23		
Circumstances of Trying Marijuana																					
Psychological distress (DIST)																			.19		
Conformity to peer norms (CONF)																			-.10		
Deviant definition (DDEF)																			ns		
Consequences of Trying Marijuana																					
Attenuation of ties (ATTN)																			.09		
Self-enhancement (SLFE)																			ns		
Adverse consequences (ACSQ)																			-.13		
R ²	.02	.02	.00	.05	.00	.01	.02	.02	.02	.02	.01	.08	.07	.03	.03	.00	.03	.03	.17		

* Coefficients are beta-weights. Only coefficients where $p > .05$ are estimated in the trimmed model. N = 1,150, an average of the paired N's, was used to judge significance. The coefficients for the exogenous demographic dummies are not readily interpretable since they reflect deviations from the excluded category.

DISCUSSION

The path coefficients listed in Table 2 are diagrammed in Figure 2; however, because the demographic variables are included in the model mainly as controls for the psychosocial effects, we have omitted paths from the demographics to Stage II variables from the Figure. Effects of these demographics on the Stage II variables can be seen in Table 2.⁴

Some of the variables from each stage have direct effects on escalated use. We examine, in turn, the effects of variables beginning with the demographics.

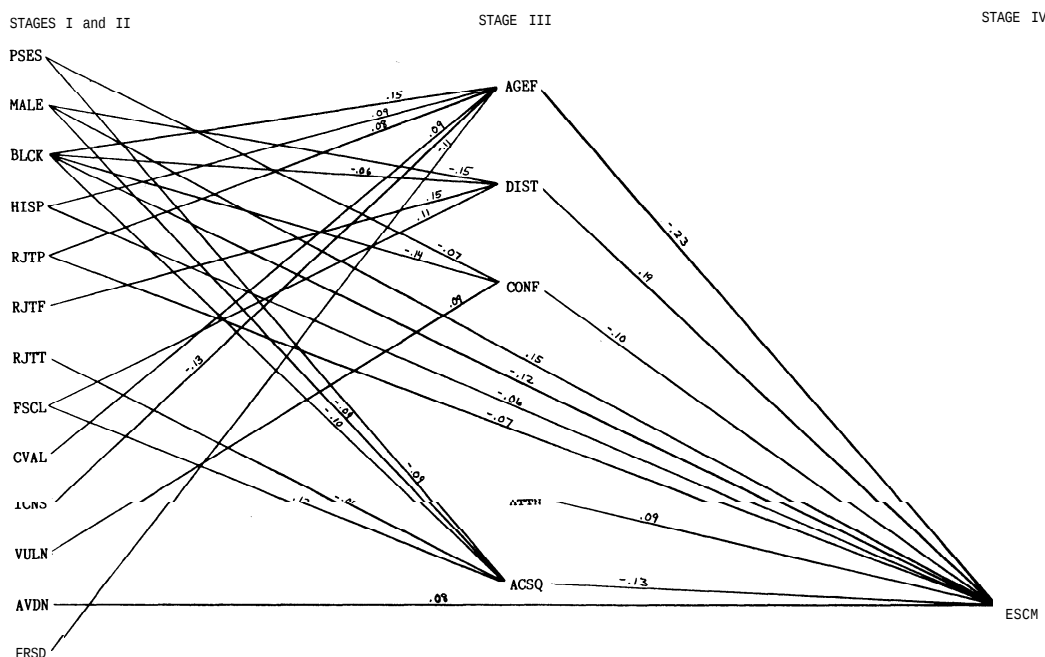
Stage I: Demographic Effects on Stages III and IV

Parental SES has minimal effects in the model beyond Stage II. It does, however, lead to a decrease in trying marijuana to conform to peer pressure (CONF) and to a decrease in adverse effects from trying marijuana (ACSQ). Therefore, both its indirect effects on escalated use of marijuana are positive.

We do find the expected effects of sex. Males are more likely than females to become heavy marijuana users and are less likely to have felt distressed around the first time they tried marijuana (DIST). Males are also less likely to have adverse consequences of trying marijuana (ACSQ). Given that our sample consists only of those who have tried marijuana and that we have excluded early (pre-1971) users, this finding is consistent with what others have found (e.g., Bachman et al., 1984; Kandel and Logan, 1984).

Race, particularly the contrast of blacks with whites, significantly affects most of the Stage III and Stage IV variables. Blacks and Hispanics report first trying marijuana later than whites. Blacks experience less distress around the time they first tried marijuana (DIST), are less likely to try it because of peer circumstances (CONF), and are less likely to see trying marijuana as deviant (DDEF) than whites. Blacks are less likely to experience adverse consequences from trying marijuana (ACSQ). Finally, blacks and Hispanics are less likely than whites to become heavy users. The negative total effect of being black on heavy mari-

FIGURE 2. Path Diagram of Significant Predictors of Escalation of Marijuana Use.



NOTE: The path coefficients for the exogenous demographic dummies are not readily interpretable since they reflect deviation from the excluded category.

juana use has been seen in recent national studies as well (Miller et al., 1983; Bachman et al., 1984), and it is deserving of more attention. Yet there are positive effects through CONF and ACSQ that may suggest race differences in the circumstances of trying marijuana.

Stage II: Adolescent Attitudes and Characteristics

Self-Devaluing Experiences. As expected, perceived parental rejection and school failure (RJTF and FSCL) each predict psychological distress around the time of trying marijuana (DIST). Rejection within a peer group (RJTP) operates differently and has a negative association with increased involvement in marijuana use in two ways. First, it directly affects escalated use, presumably by providing few opportunities and occasions for marijuana use during peer group interaction. Second, rejection by peers also leads to an increased age at first trying marijuana which, in turn, is negatively associated with the escalation of marijuana use.

Rejection by teachers (RJTT) predicts a decrease in adverse consequences of initial marijuana use (ACSQ), suggesting a positive function of marijuana in assuaging feelings of rejection by self and others. Self-report of school-problems (FSCL), however, has both positive and negative indirect effects on escalation of marijuana use: positive through psychological distress (DIST) and negative through adverse consequences (ACSQ). It may be that failure at school is indicative of a general sense of incompetence. Students try marijuana when feeling distressed but get no satisfaction from it.

Conventional Values and Controls. Commitment to conventional values (CVAL) has a significant zero-order negative relationship with escalation of marijuana use. This inverse relationship is consistent with reports from other longitudinal studies that lack of interest in conventional institutions is related to marijuana use (Kandel, 1978), and we expected to find it in the full model. This relationship, however, is not significant in the multivariate context. A reverse stepwise regression analysis shows that including age at first use (AGEF) in the model renders the relationship of con-

ventional values to escalated use nonsignificant. Apparently, conventional values serve to delay trying marijuana and, as such, are indirectly a social control against any disposition to increase use.

The lack of clarity of normative expectations (ICNS) indirectly influences escalation of marijuana use by leading to a decreased age at first using marijuana (AGEF). Parents who do not set rules and who provide inconsistent norms increase the likelihood that their children will perform acts defined as deviant.

Besides social control, ICNS may reflect parental disinterest and accompanying distressful feelings of unimportance: A parent who does not set firm rules and whose normative judgments seem inconsistent may appear uncaring to the adolescent. Apparently, parental disinterest, rather than perceived failure to conform to the expectations of relevant others, leads to early marijuana use, partly as an expression of hostility toward those who seem disinterested. Simultaneously, acting deviantly may elicit some response (albeit negative) from previously disinterested others.

We expected normative inconsistency to behave similarly to the self-devaluing experiences variables. It does not. It may be that two separate manifestations of self-devaluation, each having implications for initial motivation to use marijuana, have been isolated. Rejection by family and failure at school measure consequences of failure to achieve conventional standards; they influence first trying marijuana under circumstances of psychological distress. Normative inconsistency, presumably reflecting feelings of unimportance, predicts a younger age of trying marijuana.

Other researchers have reported the influence of feelings of remoteness from parents and normlessness on heavy marijuana use (Jessor and Jessor, 1977; Kandel, 1978; Johnston et al., 1982). Reilly (1979) found that the absence of consistency and clarity in behavioral norms characterized families with adolescent drug abusers. Mercer et al. (1978) observed that, particularly for adolescent females, the family's disinterest in the child correlates positively with marijuana use. Brook and her associates (1978) report an inverse relationship between adolescent marijuana use and rules enforced by parents as well as parent-child activities. Further, adolescents who rebelled

against parental rules were more likely to use marijuana than those who conformed. In Brook et al.'s study the best predictor of marijuana use, among the parent socialization factors, was the rules set down by the parents.

Defenses. Consistent with our expectations, sensitivity to self-devaluing attitudes of others (VULN) predicts conformity to peer expectations (CONF); however, it does not predict psychological distress (DIST). Vulnerability also positively predicts adverse consequences of initial marijuana use (ACSQ). This effect is compatible with the observation of Kellam and associates (1980) that children rated by teachers as shy in first grade used drugs least often 10 years later while those rated as aggressive used drugs most often.

Although avoidance (AVDN) does not predict any of the motivations, it does, as expected, directly relate to escalated marijuana use. It appears that avoiding distressful interpersonal transactions is a direct means of adapting to environmental demands. Others have observed similar effects reporting that marijuana use facilitates privatization (Rinder, 1978), feelings of decreased involvement (Galanter et al., 1974), and reduced social interactions (Babor et al., 1978; Tinklenberg et al., 1981). Using marijuana to reduce social interaction seems to be a behavioral effect compatible with a preexisting tendency to avoid interaction. This relationship exemplifies the fit frequently observed between personality traits and the adaptive properties of particular classes of drugs (Ausubel, 1980).

Regression (REGR) had no significant effects in the trimmed model.

Social Definitions of Drug Use. As expected, we found exposure to drug-using interpersonal networks (FRDS) predicts a younger age of trying marijuana (AGEF). Peers and peer norms provide the opportunity (access) to use marijuana, serve as valued models to emulate, and provide interpersonal support for an activity that the person may regard ambivalently. Many empirical reports are compatible with these findings (e.g., Ginsberg and Greenley, 1978; Kandel, 1978; Kimlicka and Cross, 1978; Orive and Gerard, 1980).

In general the effects of the Stage II variables are consistent with our expectations, a finding that provides some validation that the Stage III variables indicate circumstances and

consequences of trying marijuana rather than retrospective justifications for initial use

Stage III: Circumstances and Consequences of Trying Marijuana

Age of First Using Marijuana (AGEF). The strongest effect in the model is that increasing age for first trying marijuana (AGEF) leads to a decreased probability that one will escalate use of marijuana (ESCM). This effect in the regression model (- .23) is little reduced from the zero-order correlation (- .28) between the two variables. This suggests that neither the demographic characteristics nor the psychosocial predictors account for most of the effect. Because our study is limited to a particular cohort in a limited time frame, we cannot generalize too far; however, it appears that age at first use may reflect earlier deviant involvement and reckless characteristics of adolescence. The Stage II predictors of AGEF support this interpretation. Also, if we exclude age at first use from the saturated model, the effects of deviant definition (DDEF) and self-enhancing consequences (SLFE) of trying marijuana are significant.

Psychological Distress (DIST). First trying marijuana at a time of psychological distress (DIST) may represent an attempt to reduce such distress. Psychological distress positively affects escalated use as expected. This process is consistent with Greaves' (1980) existential theory of drug dependence in which drug use is represented as one of several alternatives undertaken to reduce the sense of dis-ease and despair stemming from failure to satisfy basic needs and self-enhancing aspirations.

Other studies have suggested that increased involvement in substance abuse is used to cope with, adapt to, or defend against discrete or ongoing life stress or to assuage the experience of psychological distress that accompanies these strains (Duncan, 1977; Kaplan, 1975; Khantzian, 1980; Mellinger, 1978; Wurmser, 1980). Making a similar point, Bachman and Jones (1979) report increased feelings of tension, anger, and restlessness together with insomnia and anorexia when placebos replaced THC pills; however, they consider the possibility such symptoms may come from with-

drawal, reflecting cannabis dependence, and not from the disappearance of the drug's effect. Ginsberg and Greenley (1978) find that, after controlling for other theoretical variables, psychological distress at follow-up is associated with lower levels of marijuana use. This is to be expected if psychological distress is assuaged by initial marijuana use.

Conformity to Peer Group Norms (CONF). We did not expect the observed *negative* direct effect of motivation to conform to peer expectations (CONF) on increased involvement with marijuana. We had anticipated that peer conformity would involve the individual in a marijuana-using network and thereby increase involvement with marijuana; however, the inverse effect may indicate that while peer norms endorse experimental or recreational use of marijuana, they do not condone heavy involvement. This is consistent with Weinstein's (1978) observation that having user friends is conducive to trying cannabis but not to regular use. O'Donnell and his associates (1976) also suggest that the peer group norm promotes experimental rather than regular use. They further compared the frequency of progression to regular use among young men who had ever used a particular drug; defining regular use as at least twice a month, they found that marijuana showed the least progression to regular use.

These findings, suggest that peer groups endorse experimentation rather than heavy use. Thus, individuals who initially use marijuana to conform to peer expectations are less likely to become heavily involved. In the need to gain peer acceptance, individuals may be equally vulnerable to the need to conform to other expectations. Thus, competing norms of conventional culture may counteract any propensity toward increased marijuana use.

Deviant Definition of Marijuana Use (DDEF). The initiation of marijuana use where use was defined as deviant (DDEF) has no direct effect on escalated use. As we noted earlier, this variable is significant when age of first use is excluded from the model. This suggests that it is early involvement with marijuana that is best explained by adolescent deviance and risk-taking. Early involvement reflects a deviant motive to engage in illicit behavior.

Consequences of Attenuation of Interper-

sonal Ties. The disruption of emotional ties with significant others as a result of trying marijuana (ATTN) positively predicts escalated marijuana use. This may reflect the decreased efficacy of social controls that otherwise would inhibit acting out deviant dispositions. Consistent with this interpretation, Dembo and his associates (1976) observe frequency of marijuana use to be associated with a tendency to be disengaged from the family.

Self-Enhancement Consequences (SLFE). We do not find an effect of self-enhancing consequences upon escalated marijuana use. The zero-order correlation between self-enhancing consequences is negative and significant, as expected. Again, when we exclude age of first use from the model, self-enhancement becomes significant. This suggests that the potentially enhancing feelings of importance and power are associated with younger age of first trying marijuana. Hendin and his associates (1981-82) found that feelings of grandiosity produced by marijuana helped adolescents alleviate depression arising from feelings of inadequacy within their own families. They concluded that marijuana use expressed a desire for power or control. We hope in future analyses using conditional logit techniques to examine the consequences of trying marijuana in predicting heavy use for different ages of first use.

Adverse Consequences (ACSQ). Not unexpectedly, the experience of adverse consequences (ACSQ) decreases the prospects of escalated marijuana use. This effect is compatible with the observation by Kimlicka and Cross (1978) that casual users reported a wide range of perceived risks associated with heavy marijuana use. Additionally, Raffoul and Cummins (1980) report that health problems are a cause of changing patterns of marijuana use.

The inverse effect of adverse consequences may not occur when the illicit substances have greater addictive or dependency-producing potential. In fact, we found a direct positive effect of adverse consequences of initial drug use (where drug use is defined in terms of illegal drugs other than marijuana) on escalation of drug use (Kaplan et al., 1985). Apparently, the adverse consequences of initial drug use are obviated by the drug's effects, and addictive use becomes a resource for coping with envi-

ronmental demands as well as with the effects of the drug itself.

CONCLUSION

We posited a model to predict escalation of marijuana use among those who have tried marijuana. Drawing a variety of theoretical perspectives into the model, we expected marijuana use to escalate to the extent that (1) its use satisfies needs, (2) controls inhibiting marijuana use weaken, and (3) opportunities for use are readily available. We observed many of the theoretically indicated relationships while controlling for demographic characteristics and age at first use.

The results support aspects of several theories of deviance in predicting escalation of marijuana use. First, the younger one is when first trying marijuana, the more likely one is to escalate use. This is the strongest effect in the model even after exclusion of those who first tried marijuana before the seventh grade. Age at first use reflects earlier weakening of social control and involvement with delinquent peers, increasing both the opportunity and motivation to try marijuana and then to escalate use. The expectations of deviant subculture theory are also supported by the direct negative effect from Stage II of rejection by the peer subculture. The expectations of control theory are supported by the attenuation of ties at Stage III leading to escalated use by weakening the control of normative associations.

Feelings of distress around the time one first tries marijuana predicts subsequent escalated use. This is in accord with the expectations of rejection theories of deviance. To the extent marijuana use reduces the distress, its use should escalate. This rationale is supported by the direct effect of avoidance at Stage II on escalated use, suggesting a need to avoid distress-inducing circumstances.

Adverse consequences of trying marijuana lead to a decreased likelihood of escalated use. This seems an obvious result as social learning theory predicts, and it is perhaps most surprising that the effect is not stronger. Marijuana may be an acquired taste to be learned, as Becker suggests, when circumstances lead one to continue experimentation.

Not all of the observed relationships are

congruent with the model we started with. Most noteworthy is the negative effect of trying marijuana under peer motivations on escalation of use. This suggests that the peer context ordinarily sets limits on use beyond a pattern of occasional use.

Only a modest proportion of the variance in increased marijuana use is accounted for by the circumstances and consequences of trying marijuana. Much of this limitation may be due to our restricting reports to the very first time. As Becker (1963:46) points out, "the novice does not ordinarily get high the first time he smokes marihuana," and a variety of circumstances may lead him to continue to try or to cease. Negative consequences are more likely to lead to no further attempts, while a lack of positive consequences may still mean one will try again when circumstances seem appropriate. Such a possibility is consistent with our findings.

It is clear that the explanation of escalation of marijuana use depends on integrating what has been presented in the literature as a series of special theories. The explanation depends on recognizing the multiple mutually influential paths through which initial users may become more heavily involved. Part of the answer will come in understanding why men and whites become heavy users. Age at first use of marijuana may be a surrogate for a variety of age-period-cohort effects that must be parcelled out. Part of the answer comes from knowledge of psychosocial predispositions; part also from understanding the circumstances and consequences of trying marijuana. The present study illustrates the complexity of the explanation. In any case more precise measurement, further delineation of causal factors, and statements of moderating circumstances for the influence of these variables are all directions future research must take in order to increase our understanding of why some become regular marijuana users.

NOTES

1. **The** theory can also be applied to trying marijuana in the first place, particularly since our approach does not require that a behavior be deviant from a societal viewpoint.
2. **To** be sure that our 1971 measures precede marijuana use, we excluded approximately 40 respondents who reported first use in 1971 without specifying the month.

3. These retrospective reports may be subject to criticism. We do not suggest that people remember what they felt the week before they first tried marijuana. For most people, however, first trying marijuana is a salient experience, almost something of a rite (Becker, 1963). Most people remember where they were, who they were with, and generally how they were feeling at the time. We believe these measures are reasonable indicators of how people felt around the time of trying marijuana. The alpha for this index suggests a high degree of reliability for the measure.
4. The demographic measures suggest that an increase in parental SES decreases self-devaluing experiences and delinquent involvement. Males are less likely to feel rejected by parents but more likely to have problems at school. Interestingly, women report more awareness of kids at school using drugs.

APPENDIX

Index Compositions

Parental Socioeconomic Status (PSES, alpha = .78) is the respondent's average z-score on four items in the young adult study:

1. How much formal schooling did your father have? (scaled from 0-no formal schooling to 10-postgrad degree)
2. How much formal schooling did your mother have? (same scale)
3. What social class do (did) your parents belong to? (scaled from 1-lower class to 6-upper class)
4. [If father ever worked for pay (mother if no father or father substitute)] What sort of work does he (did he) usually do when he was working? (scaled from 1-laborer to 5-professional with doctoral degree or equivalent)

Rejection by Peers (RJTP, alpha .83) is the sum of four true/false items:

1. More often than not I feel put down by the kids at school.
2. I am not very good at the kind of things the kids at school think are important.
3. The kids at school are usually not very interested in what I say or do.
4. Most of the kids at school do not like me very much.

Rejection by Parents (RJTF, alpha = .92) is the sum of six true/false items:

1. My parents hardly ever trust me to do something on my own.
2. At home I have been more unhappy than happy.
3. I would like to leave home.
4. As long as I can remember my parents have put me down.
5. My parents are not usually very interested in what I say or do.
6. My parents do not like me very much.

Rejection by Teachers (RJTT, alpha = .88) is the sum of four true/false items:

1. My teachers are usually not very interested in what I say or do.
2. By my teachers' standards I am a failure.
3. My teachers do not like me very much.
4. My teachers usually put me down.

Failure at School (FSCL, alpha = .74) is the sum of three items:

1. During the last nine weeks period did you get a failing grade in one or more school subjects? (Yes)
2. Within the last year were you taken to the office for punishment? (Yes)
3. Do you usually get good grades? (No)

Conventional Values (CVL, alpha = .92) is the sum of six true/false items:

1. It is very important to me what my parents think of me.
2. I think it is important to have good manners.
3. I think it is important to get good grades.
4. I think it is important to be kind to others.
5. I think it is important to be honest.
6. I think it is important to obey the teachers.

Normative Inconsistency (ICNS, alpha = .70) is the sum of four true/false items:

1. Sometimes my parents will punish me for doing something that at another time they didn't mind me doing.
2. Very often I do not know whether my parents would approve or not approve of what I am doing.
3. My experiences outside my home make me wonder whether my parents' ideas are right or not.
4. Often I feel that I don't have enough control over the direction my life is taking.

Vulnerability (VULN, alpha = .73) is the sum of five items:

1. Do you become deeply disturbed when someone laughs at you or blames you for something you have done wrong? (Yes)
2. When my parents dislike something I do it bothers me very much. (True)
3. When the kids at school dislike something I do it bothers me very much. (True)
4. It is very important to me what the kids at school think of me. (True)
5. When my teachers dislike something I do it bothers me very much (True).

Regression (REGR, alpha = .45) is the sum of two items:

1. Do you sometimes wish you were a little kid again? (Yes)
2. Do you like to play with children younger than you? (Yes)

Avoidance (AVDN, alpha = .41) is the sum of three items:

1. Do you try to avoid situations in which you have to compete with others? (Yes)
2. Do you like to spend a lot of time by yourself? (Yes)
3. I spend a lot of time daydreaming. (True)

Kids at School Use Drugs (KASD, alpha = .92) is the sum of yes responses to two items:

1. Do many of the kids at school take narcotic drugs?
2. Do many of the kids at school smoke marijuana (grass)?

Friends Use Drugs (FRSD, $\alpha = .89$) is the sum of three items:

1. Do many of your good friends smoke marijuana (grass)? (Yes)
2. Do many of your good friends take narcotic drugs to get high? (Yes)
3. Most of my close friends are the kinds of kids who get into trouble a lot. (True)

Psychological Distress (DIST, $\alpha = .96$) is the sum of yes responses to nine items asked only of those who tried marijuana:

Thinking of the first time you ever tried marijuana, did you ...

1. do it because you were angry at someone or something?

2. do it to get away from your troubles?

During the week before the first time you did it for the first time, did you ...

3. feel particularly nervous or tense much of the time?

4. feel down (emotionally) much of the time?

5. feel like a failure or worthless much of the time?
6. feel bored much of the time?

7. have a serious argument with one or both of your parents or someone else who was very important to you?

8. feel like your troubles were too much to bear?

9. feel like you didn't have any close friends?

Conformity to Peer Norms (CONF, $\alpha = .76$) is the sum of yes responses to three items asked only of those who tried marijuana:

Thinking of the first time you ever tried marijuana, did you ...

1. do it to show you weren't afraid?

2. do it because your friends were doing it?

3. see a close friend do it first?

Deviant Definition (DDEF, $\alpha = .46$) is the sum of yes responses to two items asked only of those who tried marijuana:

Thinking of the first time you ever tried marijuana, did you ...

1. before doing it, think there was a chance of getting into trouble because of it?

2. do it where no one else could see it (rather than in public where others could see it)?

Attenuation of Ties to Others (ATTN, $\alpha = .85$) is the sum of yes responses to two items asked only of those who tried marijuana:

Thinking of the first time you ever tried marijuana, did you ...

1. feel rejected by your boy/girl friend, parents, friends or others who were important to you because of doing it?

2. cause grief to someone you loved by doing it?

Self-Enhancement (SLFE, $\alpha = .87$) is the sum of yes responses to two items asked only of those who tried marijuana:

Thinking of the first time you ever tried marijuana, did you ...

1. feel more important while doing it or for having done it?

2. feel more powerful either while doing it or because you had done it?

Adverse Consequences ACSQ. $\alpha = .80$) is the sum of yes responses to three items asked only of those who tried marijuana:

Thinking of the first time you ever tried marijuana, did you ...

1. get physically injured or sick because of it?

2. experience bad psychological effects?

3. feel that generally it was an unpleasant experience?

NOTE: For dichotomous items, we use tetrachoric correlations in computing alpha. Three of the indices have low alphas. These low alphas result from the minimal number of items and modest correlations in these indices. The component items did load together in a factor analysis of indicators from Stage II and Stage III respectively.

REFERENCES

- Akers, Ronald L. 1977. *Deviant Behavior: A Social Learning Approach*. Belmont, CA: Wadsworth.
- Ausubel, David P. 1980. "An Interactional Approach to Narcotic Addiction." Pp. 4-7 in *Theories on Drug Abuse: Selected Contemporary Perspectives*. Research Monograph 30, edited by D.J. Lettieri, M. Sayers, and H. W. Pearson. Rockville, MD: National Institute on Drug Abuse.
- Babor, Thomas F., Jack H. Mendelson, Dean Galant, and John C. Kuenhle. 1978. "Interpersonal Behavior in Group Discussion during Marijuana Intoxication." *The International Journal of the Addictions* 13:89-102.
- Bachman, Jerald G., Lloyd D. Johnston, and Patrick M. O'Malley. 1984. *Monitoring the Future: Questionnaire Responses from the Nations' High School Seniors* 1982. Ann Arbor, MI: Institute for Social Research.
- Bachman, Jerald G., and Reese T. Jones. 1979. "Personality Correlates of Cannabis Dependence." *Addictive Behaviors: An International Journal* 4:361-71.
- Becker, Howard S. 1963. *Outsiders: Studies in the Sociology of Deviance*. New York: Free Press.
- Brook, Judith S., Irving F. Lukoff, and Martin W. Hiteman. 1978. "Family Socialization and Adolescent Personality and the Association with Adolescent Use of Marijuana." *Journal of Genetic Psychology* 133:261-71.
- Cloward, Richard A., and Lloyd E. Ohlin. 1960. *Delinquency and Opportunity*. New York: Free Press.
- Cohen, Albert K. 1955. *Delinquent Boys*. Glencoe, IL: Free Press.
- Dembo, Richard, James Schmeidler, and Mary Koval. 1976. "Demographic, Value, and Behavior Correlates of Marijuana Use among Middle-Class Youths." *Journal of Health and Social Behavior* 17: 176-86.

- Duncan, David F. 1977. "Life Stress as a Precursor to Adolescent Drug Dependence." *International Journal of the Addictions* 12:1047-56.
- Galanter, Marc, Richard Stillman, Richard J. Wyatt, Tom B. Vaughan, Herbert Weingartner, and Fran L. Nurnberg. 1974. "Marijuana and Social Behavior: A Controlled Study." *Archives of General Psychiatry* 30:518-21.
- Ginsberg, Irving J., and James R. Greenley. 1978. "Competing Theories of Marijuana Use: A Longitudinal Study." *Journal of Health and Social Behavior* 19:22-34.
- Goldberger, Arthur S. 1964. *Econometric Theory*. New York: Wiley.
- Gorsuch, Richard L. 1980. "Interactive Models of Nonmedical Drug Use." Pp. 18-23 in *Theories on Drug Abuse: Selected Contemporary Perspectives*. Research Monograph 30, edited by D.J. Lettieri, M. Sayers, and H.W. Pearson. Rockville, MD: National Institute on Drug Abuse.
- Greaves, George B. 1980. "An Existential Theory of Drug Dependence." Pp. 24-28 in *Theories on Drug Abuse: Selected Contemporary Perspectives*. Research Monograph 30, edited by D.J. Lettieri, M. Sayers, and H.W. Pearson. Rockville, MD: National Institute on Drug Abuse.
- Hanushek, Eric A., and John E. Jackson. 1977. *Statistical Methods for Social Scientists*. New York: Academic Press.
- Hendin, Herbert, Ann Pollinger, Richard B. Ulman, and Ann C. Carr. 1981-82. "The Functions of Marijuana Use for Adolescents." *American Journal of Drug and Alcohol Abuse* 8:441-56.
- Hirschi, Travis. 1969. *Causes of Delinquency*. Berkeley, CA: University of California Press.
- Jessor, Richard. 1976. "Predicting Time of Onset of Marijuana Use: A Developmental Study of High School Youth." *Journal of Consulting and Clinical Psychology* 44: 125-34.
- . 1979. "Marijuana: A Review of Psychosocial Research." Pp. 337-55 in *Handbook on Drug Abuse*, edited by R.L. Dupont, A. Goldstein, and J.A. O'Donnell. Rockville, MD: National Institute on Drug Abuse.
- Jessor, Richard, and Shirley L. Jessor. 1977. *Problem Behavior and Psychosocial Development-A Longitudinal Study of Youth*. New York: Academic Press.
- Johnston, Lloyd D., Jerald G. Bachman, and Patrick M. O'Malley. 1982. *Student Drug Use, Attitudes, and Beliefs: National Trends 1975-1982*. Rockville, MD: National Institute on Drug Abuse.
- Johnston, Lloyd D., Patrick M. O'Malley, Jerald G. Bachman. 1984. *Drugs and American High School Students, 1975-1983*. Rockville, MD: National Institute on Drug Abuse.
- Kandel, Denise B. (ed.). 1978. *Longitudinal Research on Drug Use: Empirical Findings and Methodological Issues*. Washington, D.C.: Hemisphere.
- Kandel, Denise B., Ronald C. Kessler, and Rebecca Z. Margulies. 1978. "Antecedents of Adolescent Initiation into Stages of Drug Use." Pp. 73-99 in *Longitudinal Research in Drug Use: Empirical Findings and Methodological Issues*. Washington, D.C.: Hemisphere.
- Kandel, Denise B., and James A. Logan. 1984. "Patterns of Drug Use from Adolescence to Young Adulthood: 1. Periods of Risk for Initiation, Continued Use, and Discontinuation." *American Journal of Public Health* 74:660-66.
- Kaplan, Howard B. 1975. *Self-Attitudes and Deviant Behavior*. Pacific Palisades, CA: Goodyear.
- . 1984. *Patterns of Juvenile Delinquency: Social Origins, Continuities, and Consequences*. Beverly Hills, CA: Sage.
- Kaplan, Howard B., Steven S. Martin, and Cynthia A. Robbins. 1985. "Toward an Explanation of Increased Involvement in Illicit Drug Use: Application of a General Theory of Deviant Behavior." Pp. 202-52 in *Research in Community and Mental Health*. Vol. 5, edited by J.R. Greenley. Greenwich, CT: JAI Press.
- Kellam, Sheppard G., Margaret E. Ensminger, and Marlene B. Simon. 1980. "Mental Health in First Grade and Teenage Drug, Alcohol, and Cigarette Use." *Drug and Alcohol Dependence* 5:273-304.
- Kessler, Ronald C., and James A. McRae Jr. 1981. "Trends in the Relationship between Sex and Psychological Distress: 1956-1976." *American Sociological Review* 46:443-52.
- Khantzian, Edward J. 1980. "An Ego/Self Theory of Substance Dependence: A Contemporary Psychoanalytic Perspective." Pp. 29-33 in *Theories on Drug Abuse: Selected Contemporary Perspectives*. Research Monograph 30, edited by D.J. Lettieri, M. Sayers, and H.W. Pearson. Rockville, MD: National Institute on Drug Abuse.
- Kimlicka, Thomas M., and Herbert J. Cross. 1978. "A Comparison of Chronic Versus Casual Users on Personal Values and Behavioral Orientations." *International Journal of the Addictions* 13: 1145-56.
- Lucas, Wayne L. 1978. "Predicting Initial Use of Marijuana from Correlates of Marijuana Use: Assessment of Panel and Cross-sectional Data: 1969-1976." *International Journal of the Addictions* 13: 1035-47.
- McGlothlin, William H. 1975. "Subcultural Factors in Marijuana Use in the United States. Pp. 531-47 in *Cannabis and Culture*, edited by Vera Rubin. The Hague: Mouton.
- Mellinger, Glen D. 1978. "Use of Licit Drugs and Other Coping Alternatives: Some Personal Observations on the Hazards of Living." Pp. 249-78 in *Drugs and Suicide: When Other Coping Strategies Fail*, edited by D.J. Lettieri. Beverly Hills, CA: Sage.
- Mercer, G. William, John D. Hundleby, and Richard A. Carpenter. 1978. "Adolescent Drug Use and Attitudes toward the Family." *Canadian Journal of Behavioral Science* 10:79-90.
- Merton, Robert K. 1938. "Social Structure and Anomie." *American Sociological Review* 3:672-82.
- Miller, Judith D., Ira H. Cisin, Hilary Gardner-Keaton, Adele V. Harrell, Philip W. Wirtz, Herbert I. Abelson, and Patricia M. Fishburne. 1983.

- National Survey on Drug Abuse: Main Findings 1982.** Rockville, MD: National Institute on Drug Abuse.
- O'Donnell, John A., Harwin L. Voss, Richard R. Clayton, Gerald T. Slatin, and Robin G.W. Room. 1976. **Young Men and Drugs.** Research Monograph 5. Rockville, MD: National Institute on Drug Abuse.
- Orive, Ruben M., and Harold B. Gerard. 1980. "Personality, Attitudinal, and Social Correlates of Drug Use." *The International Journal of the Addictions* 15:869-81.
- Raffoul, Paul R., and Marvin J. Cummins. 1980. "Voluntary Reduction of Cannabis Use among Graduate Students." *The International Journal of the Addictions* 15:647-56.
- Reilly, D.M. 1979. "Family Factors in the Etiology and Treatment of Youthful Drug Abuse." *Family Therapy* 11: 149-71.
- Rinder, Irwin D. 1978. "The Effects of Marijuana: A Social Psychological Interpretation." *Psychiatry* 41:202-06.
- Robbins, Cynthia A., Steven S. Martin, and Howard B. Kaplan. 1985. "Adolescent Marijuana Use and the Transition to Adulthood: The Case of Work Role Attainment and Performance." Paper presented at the American Sociological Association Meetings, Washington, D.C., August, 1985.
- Scheff, Thomas. 1966. **Being Mentally Ill: A Sociological Theory.** Chicago: Aldine.
- Sutherland, Edwin H., and Donald Cressey. 1974. **Criminology.** 9th ed. Philadelphia: Lippincott.
- Tinklenberg, Jared R., Peggy Murphy, Patricia L. Murphy, and Adolf Pfefferbaum. 1981. "Drugs and Criminal Assaults by Adolescents: A Replication Study." *Journal of Psychoactive Drugs* 13:277-87.
- Voss, Harwin L. 1969. "Differential Association and Containment Theory: A Theoretical Convergence." *Social Forces* 47:381-91.
- Weinstein, Raymond M. 1978. "The Avowal of Motives for Marijuana Behavior." *International Journal of the Addictions* 13:887-910.
- Winship, Christopher, and Robert D. Mare. 1983. "Structural Equations and Path Analysis for Discrete Data." *American Journal of Sociology* 89:54-110.
- Wurmser, Leon. 1980. "Drug Use as a Protective System." Pp. 71-74 in **Theories on Drug Abuse: Selected Contemporary Perspectives.** Research Monograph 30, edited by D.J. Lettieri, M. Sayers, and H. W. Pearson. Rockville, MD: National Institute on Drug Abuse.
- Yamaguchi, Kazuo, and Denise B. Kandel. 1984. "Patterns of Drug Use from Adolescence to Young Adulthood: 3. Predictors of Progression." *American Journal of Public Health* 74:673-81.