

## Chapter 8

# Marijuana Use in High School and College

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The prevalence of marijuana use among youth, in spite of the fact that it is illegal and carries the possibility of harsh legal sanctions, constitutes a phenomenon of substantial social-psychological interest. Studies of marijuana use considered as a transgression should be able to contribute to the social psychology of problem behavior; research on marijuana use from the point of view of its role among youth should contribute to the social psychology of adolescent development; and investigation of marijuana use as a socially learned behavior should reveal something useful about the more general problem of personality-environment interaction. Unfortunately, with a few exceptions, most of the drug use research thus far has remained descriptive or epidemiological with little concern for broader social-psychological implications.

The present research on marijuana use is part of a larger, ongoing study of the socialization of problem behavior in youth. The general orientation we have employed is that of social learning theory (Rotter, 1954; Rotter, Chance, & Phares, 1972) as extended and applied to the area of deviance or problem behavior (Jessor, Carman, & Grossman, 1968a; Jessor, Collins, & Jessor, 1972; Jessor, Graves, Hanson, & Jessor, 1968b; Jessor & Jessor, 1973; Jessor, Young, Young, & Tesi, 1970; Weigel & Jessor, 1973). Conceptualizing marijuana use as problem behavior is useful in several respects. First, treating it as a specific instance of a more general class of behaviors establishes a logical basis for its covariation with other problem behaviors, a basis which would not exist if drug use were approached as a unique phenomenon. Second, such a conceptualization suggests the kinds of explanatory variables that should be brought to bear—namely, those personal and social variables that can logically account for the

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occurrence of behaviors likely to elicit negative sanctions from established agents of social control. Third, since concern with much of youthful problem behavior is not simply with whether or not an individual engages in it but also with whether he engages in it earlier or later than his peers, the utility of Problem Behavior Theory is that it can be applied with equal logic to this issue of differential age of onset.

As with any other class of behavior, problem behavior such as marijuana use is considered to be purposive, goal oriented, or functional. Functions of problem behavior which may be important enough to the actor to counter the likelihood of negative sanctions, or which may derive from the very fact that the behavior is deemed sanctionable by those in authority, include the following: (a) an instrumental effort to achieve otherwise unavailable goals; (b) a learned way of coping with personal frustrations and anticipated failure; (c) an expression of opposition to or rejection of conventional society, including the very norms which define the behavior as a problem; (d) a negotiation for or claim upon status transformation or developmental transition; and (e) a manifestation or demonstration of solidarity with peers or of membership in a subculture. Given the variety and complexity of these possible alternatives, no single personality or situational variable is likely to provide a sufficient explanation of such problem behaviors as marijuana use. What has seemed to us to be required is a multivariate network of both person and situation attributes logically connected with the behavior involved.

The general network we have employed has been described elsewhere (see Jessor, Graves, Hanson, & Jessor, 1968b, especially Chaps. 2–5). The portions of it dealt with in this study include a personality system, a perceived environment system, and a behavior system. The personality system is composed of three related structures (a motivational instigation structure, a belief structure, and a personal control structure), and each structure consists of specific variables linked directly or indirectly to the occurrence of problem behavior. The perceived environment system is composed of a distal and a proximal structure, the former referring to variables in the environment which are only indirectly implicative of the behavior of concern (e.g., value compatibility between parents and peers), and the latter being composed of environmental variables linked quite directly or closely to the behavior (e.g., perceived social support for marijuana use). The behavior system includes the behavior under consideration and the functions or meanings associated with it, other kinds of problem behavior, and, for purposes of establishing discriminant validity, behaviors which are nonproblem, that is, which are conventional or conforming.

Considering such a social-psychological network in relation to a behavior such as drug use makes clear the insufficiency of explanations which emphasize only a small portion of it. For example, attempts to account for the prevalence of marijuana use among students by reference to its normative status in the peer group or in the student culture are logically unable to account for its nonuse by a substantial percentage of students in the same situation, or to account for which of the students are users and which are not. Personality or individual difference variables are obviously necessary to accomplish the latter objectives.

Four general hypotheses were examined in the marijuana use data to be presented in this paper. First, marijuana use should covary with other kinds of problem behaviors since they occupy a similar location in the conceptual network. Second,

variation in marijuana use should be systematically related to variation in the personality and perceived environment variables specified in the network. Third, the onset of marijuana use among nonusers should be predictable, over a time interval, from initial differences on those same personality and social variables measured at the beginning of the interval. And fourth, irrespective of initial differences, those who begin marijuana use during the time interval should manifest greater relative change on the personality and social variables, in the theoretically expected direction, than those who remain nonusers. Examination of the latter two hypotheses is possible because of the longitudinal design of the larger project. Tests of all four hypotheses are replicated at the high school and college levels and, within those levels, among males and females.

By turning now to the specific variables in the network that has been outlined, we can present some of the content of the social psychology of marijuana use. With respect to the variables in the personality portion of the network, both values and expectations are considered to motivate behavior choice. Value for a conventional goal such as academic achievement should be negatively related to marijuana use, whereas value for the goal of independence should relate positively. More critical to explaining actual behavioral directionality should be *the relation between* these two values which have opposite implications—the more independence is valued *relative to* the value placed on achievement, the more likely is involvement with marijuana. Expectation for academic achievement, when low, should conduce to engaging in alternative nonconventional behaviors, including marijuana use. The two belief variables, alienation and social criticism, should be positively related to marijuana use. Alienation, as we measured it, emphasizes a belief about self, including a sense of isolation from others, concern about identity, and role dissatisfaction. Social criticism emphasizes a belief about the larger, American society, especially a conviction about the inadequacy of its policies, its mores, and its institutions. The personal control structure includes a variable of attitudinal tolerance toward transgression and a variable of religiosity—the more tolerant the attitude and the less religious the outlook, the greater the likelihood of involvement with problem behavior such as marijuana use. Thus, the personality system is linked to problem behavior through the interaction of variables reflecting both instigation and controls. It is of interest to note that those variables are all relatively distal from actual marijuana use itself; that is, their connection to the behavior is theoretical rather than immediately obvious. The empirical findings about such distal personality variables are, therefore, of special importance for evaluating the utility of the social-psychological network.

With respect to the perceived social environment, the distal portion consists of two variables related to agents of socialization: parent-peer compatibility, and parent-peer influence. The former variable refers to the degree of consensus between parents and friends in their general expectations and values for the actor, and the latter refers to the relative importance attributed by the actor to parents' and friends' opinions. Insofar as the perceived social environment is relatively peer oriented rather than parent oriented, to that extent there should be greater involvement with marijuana. The environmental variables which are proximal—social support for drug use and friends' approval for drug use—refer to perceived models and pressure in the social environment to engage in drug use and expected criticism or approval

from peers for doing so. Obviously, the greater the social support and approval, the more likely is the use of marijuana.

With respect to the variables in the behavior system, the more the involvement with marijuana, the more likely is involvement with other problem or problem-prone behaviors such as drunkenness, general deviant behavior (lying, stealing, aggression), sexual behavior, and activism and the less likely is involvement with conventional behavior such as church attendance, academic achievement (grades), and participation in school clubs and organizations.

To summarize, the social psychology of the student marijuana user that emerges from this network of variables includes: (a) greater instigation to use (stemming from higher value on independence, lower value on achievement, and lower expectations for achievement); (b) lesser belief controls against use (greater social criticism and alienation); (c) lesser personal controls against use (greater tolerance of transgression and lesser religiosity); (d) greater environmental support for use (greater peer orientation and greater models and supports); and (e) greater experience with other behaviors of a problem or problem-prone nature. From this perspective, marijuana use, like other learned behaviors, is a functional outcome of the interaction of personality, social, and behavioral attributes.

## Method

### *Subjects*

The subjects of this research were drawn from two separate but parallel longitudinal studies, one of junior and senior high school students and one of college students in a large university in the same community in one of the Rocky Mountain states. For the high school study, a random sample of 2,220 students, stratified by sex and grade level, was designated from the enrollment at three junior and three senior high schools. The entire sample was contacted individually by letter and asked to participate in a 4-year study of personality and social development in youth. Parents of each student sampled were also contacted by letter and asked for signed permission for their child's participation in the research. Of the originally designated sample, an initial Year 1 cohort of 949 students agreed to participate, and the Year 1 data were collected in April 1969.<sup>1</sup> Of those who had not graduated in the interim, 81%

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<sup>1</sup>Although persistent follow-up efforts were made to gain the cooperation of the 2220 subjects initially designated, the fact that parental permission was a necessity and the fact that participation required remaining after school for 1½ hours or so on a spring afternoon both contributed to the lower than desirable initial percentage of participation. The fact that only 42% of the originally designated random sample of students ultimately participated in the research means that findings on the starting cohort cannot be generalized back with confidence as descriptive of the school population. While this limitation is unfortunate, it does not in any way preclude the testing of hypotheses nor does it diminish the significance of developmental analyses of the starting cohort itself.

( $N = 692$ ) of the initial cohort were retained in Year 2 (April 1970), and of the latter, 82% ( $N = 605$ ) were subsequently retained in Year 3 (April 1971). The cross-sectional data reported in this paper were drawn from the Year 2 testing, while the data for the analyses of change involved both the Year 2 and the Year 3 testing. In Year 2, subjects were in Grades 8 through 12; in Year 3 subjects were in Grades 9 through 12.

The college study was begun a year after the initiation of the high school study. A random sample of 497 freshmen students, stratified by sex, was drawn from the registration list of the freshman class in the College of Arts and Sciences of the University. Of the designated sample, 276 freshmen agreed to participate, and the Year 1 data in the college study were collected in April 1970. Of the initial cohort of 276 students, 248 (90%) were retained in Year 2 (April 1971). The cross-sectional data reported for the college study were drawn from the Year 1 testing, the same year (1970) used for the high school cross-sectional data, and the college change analyses involved both the Year 1 and Year 2 data. Thus, comparisons between the two studies always are referring to the same point or the same interval in time.

### *Procedure*

Data were collected by means of an elaborate questionnaire approximately 50 pages in length and requiring about 1½–2 hours to complete. The questionnaire consisted largely of psychometrically developed scales or indexes assessing the personality, social, and behavioral variables mentioned earlier, as well as other concepts not dealt with in this paper. Many of the measures had been devised and validated in earlier research and are described in previous publications (Jessor, Graves, Hanson, & Jessor, 1968b). Further details about the content of the questionnaire and the types of measures used may be found in Jessor (1969) and in Jessor et al. (1972). For nearly all of the measures dealt with in this paper, Scott's homogeneity ratios and Cronbach's alphas indicate adequacy of scale properties.

Questionnaires were administered in small group sessions outside of class hours. Although all subjects signed their names to the final page of the questionnaire to permit follow-up over time, a guarantee of complete confidentiality was given. Name sheets were removed from questionnaires and stored in a safe-deposit box in a bank vault, and all data were subsequently analyzed by code number only. Interest in the research was uniformly high, and the quality of the data was generally excellent.

### *Establishment of the Drug User Groups*

A 4-page section of the questionnaire dealt with various aspects of drug use experience including perceived social support for use, positive and negative functions of use, use of LSD and amphetamines as well as marijuana, the nature of the initial experience with drugs, and the frequency of use of the various drugs during the

preceding 6 months. Included in this section were four questions designed as a scale of increasing involvement with marijuana and referred to as the marijuana behavior report (MBR) scale:

1. Have you ever tried marijuana?  
Never \_\_\_\_ Once \_\_\_\_ More than Once \_\_\_\_
2. Have you ever been very high or “stoned” on marijuana to the point where you were pretty sure you had experienced the drug’s effects?  
Never \_\_\_\_ Once \_\_\_\_ More than Once \_\_\_\_
3. Do you or someone very close to you usually keep a supply of marijuana so that it’s available when you want to use it?  
No \_\_\_\_ Yes \_\_\_\_
4. Do you use marijuana a couple of times a week or more when it’s available?  
No \_\_\_\_ Yes \_\_\_\_

Each item was scored from 0 to 2 yielding a scale score ranging from 0 to 8. Since the items were of increasing “difficulty,” the lower end of the scale referred to nonuse or to experimentation without commitment to regular use, whereas the upper end of the scale referred to marijuana involvement based on safeguarding an available supply and engaging in regular use. The utility of a similar scale was initially explored with college students by Sadava (1970, 1972b); he found the MBR scale steps to be associated with a variety of factors such as frequency of use, length of time since initial use, social support for use, and commitment to continued future use. Scores on the MBR scale were used in the present research to establish contrasting marijuana involvement groups. In the junior high sample (Grades 8 and 9), the frequency of any degree of involvement at all was too small to enable more than the establishment of two groups within each sex: those with no involvement (MBR score = 0) and those with any involvement (MBR scores = 2–8). In the senior high sample (Grades 10, 11, and 12), *three* groups were established within *each sex*: those with no involvement (MBR score = 0), those with minimal involvement (MBR score = 2), and those with relatively heavier involvement (MBR score = 4–8). In the college sample, the MBR scale was also used to establish three contrasting groups within each sex, the cutting points being slightly different due to the greater proportion of heavier users (MBR scores = 0–2, 4–6, and 8).

The groups established on the basis of MBR scores were used to examine the relevance of the social-psychological variables described earlier, with the general expectation being that groups differing in MBR score differ significantly in the expected direction on the variables in the explanatory network. Thus, these were the groups employed in the analyses of the cross-sectional data used to test our first two hypotheses.<sup>2</sup>

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<sup>2</sup>An examination was made of the various groups considered in this paper in terms of age and of background or social origin variables, including father’s education, father’s occupation, and fundamentalism of father’s religious group. There were no significant differences on any of these measures for the junior high or the senior high groups, male or female. In the college study, the heavily involved males (MBR score = 8) came from families with fathers significantly higher in education

For testing the latter two hypotheses, those dealing with the shift from nonuse to use of marijuana over a year's interval, another approach to establishing contrasting groups was employed. The aim of this approach was to locate subjects who had never used marijuana in the initial year and who had either remained nonusers or had begun using marijuana by the subsequent year's testing. For this purpose, only Question 1 above was employed. Among the combined junior and senior high school males, there were 158 nonusers who remained nonusers a year later, and 26 nonusers who had become "more-than-once" users by the subsequent year; for the combined high school females, the comparable figures were 215 and 37. For college males, the nonusers who remained nonusers totalled 36, while the number who shifted from nonuser to more-than-once-user status was 14; the comparable figures for the college females were 38 and 12. These contrasting groups were the ones employed to examine whether the measures of the social-psychological variables taken in the initial year were predictive of the shift from nonuser to user status by the subsequent year.

## Results

The presentation of results is organized in two sections, the first dealing with the cross-sectional analyses based on the MBR groups and the initial year data, and the second presenting the longitudinal or change analyses based on the nonuser-to-nonuser and the nonuser-to-user groups and employing both initial- and subsequent-year data.

For purposes of providing context and for comparison with other studies, it is useful at this point to describe the prevalence of marijuana use in the high school and college samples in both years. For reported use of marijuana *more than once*, the rates were as follows in 1970: junior high males ( $n = 159$ ), 7% and junior high females ( $n = 202$ ), 9%; senior high males ( $n = 130$ ), 33% and senior high females ( $n = 200$ ), 20%; college freshmen males ( $n = 132$ ), 52% and college freshmen females ( $n = 143$ ), 55%. For 1971 the comparable rates were: junior high males ( $n = 85$ ), 24% and junior high females ( $n = 108$ ), 23%; senior high males ( $n = 172$ ), 34% and senior high females ( $n = 236$ ), 33%; college sophomore males ( $n = 120$ ), 70% and college sophomore females ( $n = 128$ ), 70%. As can be seen, the rates were, with one exception, quite comparable for both sexes at each school level. They increased substantially as school level (or age) increased, and they showed, also with one exception, a marked increase in rates of marijuana use over the 1970 to 1971 interval.<sup>3</sup>

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and lower in religious fundamentalism; however, they were not higher in occupational level. None of the college female differences were significant. Given the overall commonality of demographic background variables, they were not considered useful for inclusion in any further analyses.

<sup>3</sup> It is of interest to note that a 1968 survey, at the same university, of the entire student body, including graduate students, reported a rate of only 32% of the respondents having used marijuana (Mizner, Barter, & Werme, 1970).

## ***Part I: Cross-Sectional Analyses***

The data relevant to appraising the relationship of the social-psychological variables to variation in marijuana use in the initial year are presented in Tables 8.1, 8.2, and 8.3 for the junior high, senior high, and college freshmen samples, respectively. The separate presentation of the data for these samples, and for both sexes in each sample, enables multiple, independent tests of the hypothesized associations.

The findings in Table 8.1 provide consistent support for the hypothesized relationships between the variables in the social-psychological network and marijuana use. Looking first at the personality system, measures in each structure—motivational instigation, belief, and personal controls—vary as expected between nonusers and any use of marijuana among junior high youth, both male and female. Users value achievement less and independence more than nonusers and also show a greater discrepancy between the two values, in the direction of independence, than do nonusers. They also have lower expectations for achievement, but this is significant only for females. With respect to the belief structure, users tend toward greater alienation and social criticism although only one of the differences reaches significance at the junior high level. In regard to personal controls, the users are substantially more tolerant of deviance and show relatively less religiosity. Turning to the perceived environment, we find that both distal and proximal variables are significantly discriminating, with users perceiving less compatibility between peers and parents, acknowledging greater peer-relative-to-parent influence on their views, and perceiving greater models, pressures, and peer approval for drug use. In terms of theory, the users show greater instigation toward problem behavior and lesser personal controls against transgression; given their greater environmental support for marijuana use, its greater occurrence follows as a logical consequence.

The logic of that consequence is strengthened by the findings for the functions of marijuana use. Despite the fact that their use of marijuana is relatively infrequent, averaging only about once a month, junior high users report substantially less negative functions or meanings (loss of self-control, physical damage) associated with marijuana use, and show a greater discrepancy of positive (self-development, appreciate beauty, being on my own) over negative functions than do nonusers. Other problem or problem-prone behaviors involving alcohol, sex, activism, and general deviant behavior vary directly with marijuana use, and conventional behaviors involving church, school, and clubs and organizations tend to vary inversely.

The data for the senior high sample in Table 8.2 and for the college sample in Table 8.3 are consonant with the findings in Table 8.1, with certain of the variables being even more discriminating among the older groups (for example, the belief measures, especially social criticism) as might be expected.

Considered together, the data from the three samples provide strong and consistent support for the first two hypotheses underlying the research, namely, that marijuana use covaries with other instances of the class of problem or problem-prone behavior and that the personality and social variables in the network are associated as specified with variation in marijuana use. What is especially intriguing about the



**Table 8.1** Mean Scores on Personality, Social, and Behavior Measures for Marijuana Involvement Groups: Junior High Sample—Initial-Year Data

Measures	Marijuana involvement groups			
	Females		Males	
	None ( <i>n</i> = 174)	Some ( <i>n</i> = 28)	None ( <i>n</i> = 138)	Some ( <i>n</i> = 21)
<i>Personality</i>				
<i>Motivational instigators</i>				
Value-achievement	71.1	55.1****	72.9	63.4**
Value-independence	72.9	77.2*	72.6	78.7**
Independence-achievement value discrepancy	91.5	112.1****	89.7	105.3****
Expectations for achievement	55.3	42.6***	55.6	46.5
<i>Beliefs</i>				
Alienation	36.9	38.3	36.3	37.2
Social criticism	29.3	30.6	28.1	30.6*
<i>Personal controls</i>				
Attitude toward deviance	178.8	135.5****	174.8	125.2****
Religiosity	13.4	11.5**	13.0	11.5
<i>Perceived social environment</i>				
<i>Distal</i>				
Parent-peer compatibility	12.2	9.7****	11.9	10.0**
Parent-peer influence	19.0	21.5**	17.2	23.0****
<i>Proximal</i>				
Social support for drug use	8.8	15.1****	8.1	14.4****
Friends' approval for drug use	1.9	3.0****	1.9	3.0****
<i>Behavior</i>				
<i>Marijuana related</i>				
Frequency use/6 months	.0	5.6***	.0	6.7*
Positive functions marijuana	23.9	25.1	21.5	25.0**
Negative functions marijuana	33.8	22.8****	33.7	24.8****
Positive over negative functions discrepancy	19.1	31.2****	16.9	29.1****
<i>Other behavior</i>				
Deviant behavior	35.4	41.2****	36.6	48.9****
Petting experience	.6	1.4****	.5	1.3****
Times drunk/year	1.3	4.7	1.4	8.5
Activism behavior	1.8	3.4***	2.0	3.9**
Church attendance/year	44.2	24.9**	38.3	14.8**
Grade point average	2.9	2.6	2.7	2.5
Involvement in school clubs	2.0	1.6	1.8	1.0***

*Note:* Groups are based on marijuana behavior report score: none = 0; some = 2–8. The asterisks next to the means of the some involvement group refer to the significance level of a two-tailed *t* test between the some and none group means

\**p* < .10  
 \*\**p* < .05  
 \*\*\**p* < .01  
 \*\*\*\* *p* < .001

**Table 8.2** Mean Score on Personality, Social, and Behavior Measures for Marijuana Involvement Groups: Senior High Sample—Initial-Year Data

Measures	Marijuana involvement groups					
	Females			Males		
	None (n = 146)	Mild (n = 22)	Moderate (n = 32)	None (n = 82)	Mild (n = 11)	Moderate (n = 37)
<i>Personality</i>						
<i>Motivational instigators</i>						
Value-achievement	65.1	54.0	52.8****	64.7	62.6	53.5**
Value-independence	74.6	77.8	82.4****	70.7	72.3	78.1****
Independence-achievement value discrepancy	99.5	113.8	119.7****	96.0	99.6	114.6****
Expectations for achievement	57.9	50.7	51.8*	57.7	47.7	51.0*
<i>Beliefs</i>						
Alienation	35.7	36.8	34.1	36.2	36.2	36.9
Social criticism	30.3	32.2	32.6**	29.2	30.5	31.8****
<i>Personal controls</i>						
Attitude toward deviance	173.5	156.6	152.7****	161.2	151.9	145.0**
Religiosity	13.1	11.1	9.8****	11.8	11.0	10.3*
<i>Perceived social environment</i>						
<i>Distal</i>						
Parent-peer compatibility	12.6	11.3	11.6	12.3	11.7	11.2*
Parent-peer influence	21.2	21.9	23.8***	18.9	20.4	22.7****
<i>Proximal</i>						
Social support for drug use	10.7	14.3	18.9****	10.1	14.6	16.6****
Friends' approval for drug use	1.9	2.7	3.3****	2.0	2.6	3.2****
<i>Behavior</i>						
<i>Marijuana related</i>						
Frequency use/6 months	.0	1.1	31.3****	.0	1.6	33.8****
Positive functions marijuana	22.6	24.7	26.9****	20.7	20.9	25.1****
Negative function marijuana	32.3	26.7	22.1****	32.3	28.3	22.3****
Positive over negative functions discrepancy	19.3	27.0	33.5****	17.5	21.5	31.7****
<i>Other behavior</i>						
Deviant behavior	36.4	40.7	42.6****	37.4	40.8	46.4****
Heavy petting experience	.9	1.4	1.8****	.7	1.5	1.6****
Intercourse experience	.2	0.5	.8****	.2	.7	.8****
Times drunk/year	1.2	3.9	11.2**	1.9	7.8	11.6***
Activism behavior	2.0	2.7	3.5***	1.8	1.7	3.1**
Church attendance/year	38.8	22.5	15.4****	33.8	18.1	12.4****
Grade point average	3.1	2.9	2.8*	2.8	2.6	2.4**
Involvement in school clubs	2.9	1.7	1.7****	2.2	2.4	1.6**

Note: Groups are based on marijuana behavior report score: none = 0, mild = 2, moderate = 4–8. The asterisks next to the means of the moderate involvement group refer to the significance level of a two-tailed *t* test between the moderate and the none group means

\* $p < .10$

\*\* $p < .05$

\*\*\* $p < .01$

\*\*\*\* $p < .001$

**Table 8.3** Mean Scores on Personality, Social, and Behavior Measures for Marijuana Involvement Groups: College Sample—Initial-Year Data

Measures	Marijuana involvement groups					
	Females			Males		
	None (n = 73)	Moderate (n = 51)	Heavy (n = 19)	None (n = 68)	Moderate (n = 37)	Heavy (n = 27)
<i>Personality</i>						
<i>Motivational instigators</i>						
Value-achievement	62.9	60.0	54.9*	64.5	62.5	57.6
Value-independence	73.1	76.6	80.2****	69.9	75.6	78.0***
Independence-achievement value discrepancy	100.0	106.6	115.3****	95.4	103.1	110.3***
Expectations for achievement	49.4	48.5	43.8	49.4	49.6	44.6
<i>Beliefs</i>						
Alienation	34.0	35.5	34.6	35.8	37.0	38.5**
Social criticism	34.4	38.3	40.2****	34.7	37.0	41.3****
<i>Personal controls</i>						
Attitude toward deviance	134.0	118.5	111.9****	121.6	118.9	107.2**
Religiosity	11.7	9.3	8.3****	10.7	9.2	8.8**
<i>Perceived social environment</i>						
<i>Distal</i>						
Parent-peer compatibility	13.0	11.9	10.5****	11.7	10.6	10.5**
<i>Proximal</i>						
Social support for drug use	13.6	19.5	21.9****	13.6	16.9	21.3****
Friends' approval for drug use	2.4	3.5	3.9****	2.6	3.4	3.6****
<i>Behavior</i>						
<i>Marijuana related</i>						
Frequency use/6 months	.7	13.0	56.2****	.3	8.9	59.1****
Positive functions marijuana	21.1	23.1	25.4****	21.1	22.8	27.0****
Negative function marijuana	16.6	12.9	11.7****	15.6	13.2	11.6****
Positive over negative functions marijuana	15.5	21.2	24.7****	16.4	20.6	26.4****
<i>Other behavior</i>						
Deviant behavior	27.1	29.2	31.3***	28.1	29.1	32.3****
Intercourse experience	.3	.7	.7****	.3	.6	.6***
Times drunk/year	1.7	2.9	4.3*	4.9	5.5	12.5**
Activism behavior	.3	.8	1.4****	.4	.7	1.3****
Church attendance/year	7.9	2.6	1.5****	7.8	7.3	2.0****
Grade point average	2.8	2.7	2.5	2.6	2.4	2.4

Note: Groups are based on marijuana behavior report score: none = 0–2, moderate = 4–6, heavy = 8. The asterisks next to the means of the heavy involvement group refer to the significance level of a two-tailed *t* test between the heavy and the none group means

\**p* < .10

\*\**p* < .05

\*\*\**p* < .01

\*\*\*\**p* < .001

consistency of these findings across sex, across school levels, across school contexts, and across different intensities of use or involvement with marijuana is that they suggest the existence of a social-psychological constancy, a continuity in the meaning and function of drug use in youthful society. This implication is considered further in the Discussion section.

For purposes of a fuller appraisal of the explanatory utility of the variables in the social-psychological network, multivariate analyses were performed. Stepwise multiple-regression analyses were run separately for selected personality variables (independence-achievement value discrepancy, expectations for achievement, alienation, social criticism, attitude toward deviance), for perceived environment variables (parent-peer influence and social support for drugs), and for both of these sets combined into what we have called a field-theoretical approach.<sup>4</sup> For the set of personality measures, the multiple *R*s with the MBR scale are .42 for the combined high school males, .42 for the combined high school females, .44 for the college males, and .55 for the college females. These *R*s are all significant and account for about 21% of the variance in MBR scores, on the average. For the set of perceived social environment measures, the multiple *R*s are .69 for high school males, .64 for high school females, .67 for college males, and .70 for college females. These *R*s are all substantially higher than those for the personality measures, as might be expected, since they involve more proximal variables; the variance accounted for is about 46%, on the average. Combining personality and environmental measures increases slightly the amount of variance in MBR scores accounted for, to about 47% on the average, with the multiple *R*s reaching the values of .69, .65, .69, and .71 for the four groups in the order given above. For the high school samples, the independence-achievement value discrepancy and the tolerance of deviance variables enter the personality regression first; in the college, the social criticism variable is first to enter. For the perceived environment regression, social support for drugs enters first for both high school and college samples. Where personality and perceived environment variables are used together in a field-theoretical regression, social support enters first, but the second variable to enter is always from the personality set.

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<sup>4</sup>In both the high school and the college studies, the average Pearson intercorrelation among these seven predictors was .20, with the highest correlation being about .45 and the lowest being about .00. In the high school study, the highest correlation of a personality measure with the MBR scale was that for independence-achievement value discrepancy, .38; the highest correlation of a perceived environment measure with the MBR scale was that for social support for drugs, .65. For the college study, the best personality correlation with MBR was for social criticism, .44; the best environmental correlation was again social support for drugs, .66. Since the sets of personality and perceived environment measures are themselves correlated substantially, their combination in a multiple correlation is not likely to increase the correlation with the MBR criterion much above the *R* of the perceived environment measures alone.

## ***Part II: Longitudinal Analyses***

Hypotheses 3 and 4 are at issue in the change analyses: First, among nonusers there are initial differences on the variables described above such that they are predictive of the onset of marijuana use over time. Second, there is greater relative change in the problem-prone direction on the measures of these variables over the year's interval for those who shift to user status than for those who remain nonusers.

In order to examine these hypotheses, comparisons were made between two groups, nonusers in the initial year who remained nonusers by the subsequent year (NU-NU) and nonusers in the initial year who had begun marijuana use by the subsequent year (NU-U). The junior and senior high were combined for these analyses since the pattern of their cross-sectional findings was parallel. The mean initial-year scores on the same set of variables reported earlier for the cross-sectional analyses are presented in Table 8.4 for these groups in the high school study.

The high school data in Table 8.4 provide support for our third hypothesis. On a number of variables measured *prior to* the onset of marijuana use, that is, when all the subjects were nonusers, there are significant differences between those who became users by a year hence and those who remained nonusers. The differences are in the theoretically expected, problem-prone direction; they occur on measures of personality, environment, and behavior, and they obtain for both males and females, although stronger on instigators and beliefs for males. Since the measures antedate the onset of marijuana use, the data indicate that they are predictive of its prospective occurrence. Thus the data enable a stronger, although still inferential, claim on a causal role for these variables than could be based on the cross-sectional associations demonstrated earlier.

Stepwise multiple-regression analyses were carried out to examine the extent of predictability of the shift from nonuser to user status, employing the same seven variables reported for the multivariate analyses of the cross-sectional high school data. The multiple  $R$ s for the personality variables for males and for females were .35 and .17, respectively, with the attitude toward deviance measure the one to enter first in both cases. For the perceived environment measures, the multiple  $R$ s were .36 and .34 for males and females, with peer-versus-parent influence first to enter for the former, and social support for drugs first for the latter. For the personality and environment variables combined, the multiple  $R$ s were .39 for the males and .34 for females. All of these multiple correlations are significant, and even though the amount of variance accounted for is small, about 15% at best, the fact that the criterion being predicted was measured a year later than the predictors does add to our confidence in the utility of the theoretical variables.

Another approach to assessing that utility is to gauge the degree of accuracy that can be achieved by these variables in the correct assignment of the nonuser subjects in the initial year to the nonuser or user categories in the subsequent year. A discriminant function analysis employing the seven initial-year predictors yielded a significant discriminant function which assigned the 184 males with 72% accuracy and the 252 females with 73% accuracy to their actual subsequent-year status as users or nonusers. The mean differences shown in Table 8.4, the significant multiple

**Table 8.4** Initial-Year Mean Scores on Personality, Social, and Behavior Measures for Marijuana Nonusers Who Remain Nonusers and for Nonusers Who Begin Use by the Subsequent Year: High School Combined Sample

Measures	Marijuana change groups			
	Females		Males	
	NU-NU (n = 215)	NU-U (n = 37)	NU-NU (n = 158)	NU-U (n = 26)
<i>Personality</i>				
<i>Motivational instigators</i>				
Value-achievement	69.3	68.2	71.3	66.2
Value-independence	72.7	74.5	70.5	74.5
Independence-achievement value discrepancy	93.4	96.3	89.3	98.2**
Expectations for achievement	57.1	52.4	57.0	52.0
<i>Beliefs</i>				
Alienation	36.4	37.4	36.0	38.4**
Social criticism	29.8	30.6	27.9	31.2***
<i>Personal controls</i>				
Attitude toward deviance	181.4	163.0**	175.7	142.8*****
Religiosity	13.8	11.7***	12.9	11.0*
<i>Perceived social environment</i>				
<i>Distal</i>				
Parent-peer compatibility	12.3	11.8	12.2	11.4
Parent-peer influence	19.4	21.1*	17.3	20.7*****
<i>Proximal</i>				
Social support for drug use	9.1	11.9*****	8.4	10.5**
Friends' approval for drug use	1.7	2.5*****	1.8	2.2**
<i>Behavior</i>				
<i>Marijuana related</i>				
Positive functions marijuana	23.3	24.8	21.2	22.7
Negative function marijuana	34.0	30.7***	34.3	27.6*****
Positive over negative functions discrepancy	18.3	23.1***	16.0	24.4*****
<i>Other behavior</i>				
Deviant behavior	34.5	40.7*****	35.9	43.7*****
Petting experience	.6	1.0**	.4	1.0**
Intercourse experience <sup>a</sup>	.2	.4	.1	.0**
Times drunk/year	.9	1.9	.7	1.7**
Activism behavior	1.7	2.3*	1.7	2.4
Church attendance/year	45.6	24.6*****	38.3	23.4**
Grade point average	2.9	2.7*	2.8	2.5
Involvement in school clubs	2.3	1.9	2.0	2.4

Note: NU-NU = nonusers who remain nonusers; NU-U = nonusers who begin use by the subsequent year. Groups are based on all junior and senior high nonusers in the initial year (1970) and whether or not they begin use by the subsequent year (1971). The asterisks next to the means of the NU-U group refer to the significance level of a two-tailed *t* test between it and the NU-NU group mean.  
<sup>a</sup>The means on intercourse experience are based on senior high subjects only

\**p* < .10

\*\**p* < .05

\*\*\**p* < .01

\*\*\*\**p* < .001

Rs, and the significant discriminant functions combine to strengthen the support for Hypothesis 3 among the high school subjects.

Since Hypothesis 4 is concerned with the differential magnitude of theoretically expected *change* over the year interval on the measures of the variables in the network, it was necessary to control for the initial differences on these measures already shown in Table 8.4 between the NU-NU group and the NU-U group. The procedure employed was to compute residual gain scores for each group based upon the discrepancy between a subject's *actual* subsequent-year score and the score which would be predicted for him from the regression of subsequent-year scores on initial-year scores. Residual gain scores, unlike raw gain scores, are uncorrelated with initial scores on a measure. Separate regressions were computed for the male groups and the female groups in the high school study, and the mean residual gain scores are shown in Table 8.5.

The residual gain score data provide support for Hypothesis 4. Nearly all the differential changes are in the theoretically expected direction, and a number of them reach significance. Among the females, the group that shifts to using marijuana, the NU-U group, decreases over the year in value for achievement relative to the group that remains nonuser, the NU-NU group; the NU-U group, relative to the NU-NU group, increases on the independence-achievement value discrepancy, decreases in intolerance of deviance, decreases in parent-peer compatibility, increases in social support for drugs, increases in positive functions of marijuana use, decreases in negative functions, and increases on deviant behavior, sex, activism, and times drunk, while decreasing in church attendance and grade point average—all of these changes being significant in magnitude in the theoretically expected direction. The data are similar for the males. It is clear from these findings that amount of theoretically expected change on the variables is associated with the shift in behavioral status, in this case from nonuser to user status. Whether change on the variables precedes or follows the behavioral shift cannot be determined from these particular findings since the gain score measures do involve the subsequent-year data.

The college study data are not supportive of the longitudinal hypotheses in the way the high school study data are. Comparisons of the college NU-NU group with the college NU-U group on initial-year mean scores yielded almost no measures that were discriminating and several where the direction was reversed although not significantly. Thus there is no support at all from the college study for Hypothesis 3. With respect to Hypothesis 4, some support is evident, but it is modest. None of the motivational instigator variables show significant change differences; among the belief variables, alienation residual gain scores for the NU-U females and social criticism for the NU-U males do show the relative increase as expected; with respect to personal controls, there is a decrease in intolerance of deviance for both male and female NU-U groups, but it is significant for females only; social support for drugs increases significantly for both sex groups as does the positive-over-negative functions discrepancy score; but none of the behaviors, problem or conventional, show a significant difference in residual gains between the NU-NU group and the NU-U group. The possible reasons for the relative failure of the college study to support the longitudinal hypotheses, while at the same time providing substantial support for the cross-sectional hypotheses, are considered in the Discussion.

**Table 8.5** Mean Residual Gain Scores on Personality, Social, and Behavior Measures for Marijuana Nonusers Who Remain Nonusers and for Nonusers Who Begin Use by the Subsequent Year: High School Combined Sample

Measures	Marijuana change groups			
	Females		Males	
	NU-NU ( <i>n</i> = 215)	NU-U ( <i>n</i> = 37)	NU-NU ( <i>n</i> = 158)	NU-U ( <i>n</i> = 26)
<i>Personality</i>				
<i>Motivational instigators</i>				
Value-achievement	.87	-5.01*	.40	-2.45
Value-independence	-.22	1.30	-.41	2.47
Independence-achievement value discrepancy	-1.10	6.35**	-.72	4.37*
Expectations for achievement	.37	-2.12	.56	-3.39
<i>Beliefs</i>				
Alienation	.14	-.79	.09	-.56
Social criticism	-.03	.20	-.13	.81
<i>Personal controls</i>				
Attitude toward deviance	1.79	-10.39**	.95	-5.76
Religiosity	.14	-.86	.08	-.51
<i>Perceived social environment</i>				
<i>Distal</i>				
Parent-peer compatibility	.26	-1.52****	.15	-.93**
<i>Proximal</i>				
Social support for drug use	-.79	4.54****	-.75	4.71****
<i>Behavior</i>				
<i>Marijuana related</i>				
Positive functions marijuana	-.46	2.71****	-.32	1.90
Negative function marijuana	.71	-4.34****	.56	-3.59****
Positive over negative functions discrepancy	-1.08	6.52****	-.90	5.83****
<i>Other behavior</i>				
Deviant behavior	-.67	3.92****	-.55	3.35****
Petting experience	-.05	.31**	-.06	.36**
Times drunk/year	-1.21	3.85**	-.68	2.40**
Activism behavior	-.07	.42****	-.01	.06
Church attendance/year	.98	-6.12*	.08	-.56
Grade point average	.03	-.21***	.01	-.07
Involvement in school clubs	-.01	.07	.02	-.12

*Note:* NU-NU = nonusers who remain nonusers; NU-U = nonusers who begin use by the subsequent year. Groups are based on all junior and senior high nonusers in the initial year (1970) and whether or not they begin use by the subsequent year (1971). The plus or minus signs indicate the direction of gain for a given group *relative to* the direction of overall gain for the sample as a whole. The asterisks next to the means of the NU-U group refer to the significance level of a two-tailed *t* test between it and the NU-NU group mean

\**p* < .10

\*\**p* < .05

\*\*\**p* < .01

\*\*\*\**p* < .001



## Discussion

The primary concern of this paper has been to establish the relevance of a more general social psychology of problem behavior to the specific behavior of marijuana use in youth. Marijuana use was considered functional and adaptive, like other socially learned behavior, and the outcome of personality instigations and controls and environmental opportunities and supports that constitute an interrelated network. Support for this theoretical approach was sought in both cross-sectional and longitudinal analyses. Cross-sectional differences between nonusers and users, or between youth relatively less involved with marijuana and youth relatively more involved, were demonstrated at the junior high, senior high, and college levels, for both males and females, on a variety of personality, social, and behavioral variables. These same variables were then shown to be predictive, over time, of the onset of marijuana use among previous nonusers, and to evidence greater theoretically expected change over the year interval among those who became users relative to those who remained nonusers. The longitudinal findings are of special importance since they rely upon measures of variables which were made prior to the initial occurrence of marijuana use and, therefore, are predictive of it in a stronger sense than that term is usually used. Taken together, the replicated cross-sectional findings across school levels, sexes, and intensities of use (yielding multiple  $R$ s near .70) and the general consonance of the cross-sectional with the longitudinal findings add up to compelling support for the social-psychological network in which marijuana use was embedded.

That support makes clear that personality as well as environmental factors play a significant role in the variation of social behaviors such as marijuana use. While the perceived environment appears to play a much stronger role than does personality, it should be noted that the personality variables were nearly all distal from marijuana use, that is, only theoretically rather than obviously or immediately implicative of it. Unlike the proximal environmental variable of social support for drug use, for example, which directly implies the behavior (and which empirically turned out to be its most powerful predictor), such distal personality variables as independence-achievement-value discrepancy link up with marijuana use only by conceptualizing the latter as an instance of problem behavior which can, for example, serve to repudiate authority, to lay a claim on a more mature status, or to cope with the frustrations of assigned immaturity. Despite its distal relation to marijuana use, the system of personality variables alone contributed significantly to accounting for the variance in marijuana use and when combined with the environmental variables, added a small increment to the total variance accounted for. This role of the personality variables is important to emphasize because of the tendency in contemporary social behavior theory to give excessive attention to the situation. To make the personality contribution even clearer, the junior, senior, and college samples were split at their own medians on social support for drugs, and multiple regression analyses were run *within* the high- and the low-social-support subgroups using five personality variables. By controlling in this way for social support, the contribution of personality

can be placed in sharper relief. Within the high-social-support subgroups, the multiple *R*s all remained significant. Within the low-social-support subgroups, the range of variation on MBR was severely attenuated by the control on social support. Nevertheless, the personality variables remained significant in three out of the six low-social-support groups. The conclusion to be drawn from this analysis is that personality is, indeed, central to variation in drug use, whether there is high social support for it or not.

The continuity of the patterning of variables in the three different school level samples, for both sexes, is noteworthy. This is especially so when the different intensities of marijuana use at the different school levels are considered; thus the junior high users report an average frequency of use, over the preceding 6 months, of about 6 times, the senior high users report about 30 times, and the college heavy users report about 60 times. Despite this 10-fold difference between junior high and college, the same variables distinguish the nonusers from the users or the moderate from the heavy users. This social-psychological constancy implies that the meaning of marijuana use is quite pervasively shared and that there are in operation processes of socialization and even institutionalization to which youth of all ages are exposed. While the notion of a youth subculture is often invoked to explain such processes, it may not be the only source. The mass media, in their efforts to exploit the youth culture, and even the agencies of social control themselves, in their very efforts to prevent marijuana use, may well contribute to spreading a common definition of its social meaning to society as a whole. When the larger society is emphatic that it opposes marijuana use, it may well teach at the same time that opposition to the larger society can be expressed by using marijuana. It is, of course, possible that the continuity we have found is due to the nature of the particular research community in which the data were collected, a university city where communication probably occurs across the different school levels, junior high to college.

Although the constancy in patterning of the relations of variables in the network with variation in marijuana use is a salient outcome of the cross-sectional analyses, there are at least two differences between the high school and college levels that bear mention. First, the variable of social criticism, while operating similarly at both levels, is substantially more related to marijuana use in college than it is in high school. The Pearson correlation of social criticism with the MBR score is .20 for the combined junior and senior high school sample while it reaches .44 for the combined college sample. Second, low expectations for achievement, while significantly related to marijuana involvement in the junior and senior high samples, shows no such relation at the college level. These two findings suggest a possibly greater ideological role of marijuana use in college and less of a role in coping with failure than may be the case with marijuana use in high school.

The other way in which the college findings diverged from the high school findings may also be related to the preceding point. It is recalled that while the college cross-sectional data neatly paralleled the high school cross-sectional data, this was not the case for the longitudinal findings. Whereas the same variables were strongly predictive in the high school findings of the shift from nonuser to user status, there

was no support for such an outcome in the college findings. How is it that variables which successfully differentiate college students in relation to marijuana use at a given point in time do not serve to predict the onset of use among the college nonusers? Part of the explanation may lie in the relatively high rates of use among our college sample. By the second year (1971), 70% of the students had used marijuana more than once, a percentage high enough to provide a modal norm of use. Under such circumstances of widespread use and availability, the prediction of onset may depend more on factors such as the crowd one happens to find oneself in or the vicissitudes of a particular relationship than on the systematic pattern of variables specified in the Problem Behavior Theory. Other factors which were not measured here, such as a negative orientation toward taking any drugs or medications at all, for example, may also sustain nonuse; but once use is begun, for whatever reason or under whatever situational vagaries, a process of peer socialization may well get started which influences the new user in the direction of other users and away from nonusers on a variety of personality, social, and behavioral attributes.

The present findings, while emerging from a particular orientation, are quite consonant with those reports in the literature which have shown some concern for social-psychological aspects of drug use. Several of the factors stressed by Suchman (1968) in his early paper invoking the "hang-loose ethic" are similar to our results, especially his emphasis on marijuana use as a sign of dissent from conventional society and its Protestant ethic. Goldstein (1971a, 1971b) has shown marijuana use to be related to greater nonconformity, greater rebelliousness toward rules and conventions, and greater insecurity among a cohort of college students currently being followed over time. Sadava's (1972a) recent results with freshmen at a Canadian university measured at the beginning of the freshman year and again near its end, and using several of our measures, are similar to those reported here. A number of our findings are also consonant with the social-psychological factors in alcohol and drug use emphasized by Davis (1972) in his perceptive review and with findings from the pioneering work of Blum (1969) on high school and college students.

Beyond their consonance with the work of others, the present results gain strong support from their similarity to findings in our own analyses in the larger project of other areas of significant social behavior and behavior change. Variables similar to those reported here have been shown to predict the transition from abstainer to drinker among high school youth (Jessor et al., 1972) and to account for the shift from ordinary nonproblem drinking to problem drinking among high school students who drink (Jessor & Jessor, 1973). Current analyses in the area of sex behavior indicate the relevance of several of the variables (e.g., the independence-achievement value discrepancy) to the shift from virginity to nonvirginity among high school seniors.

The utility of the present social psychology of problem behavior is enhanced by the scope of its applicability. Problem Behavior Theory helps to reveal the social-psychological commonalities between marijuana use and other behaviors, rather than following the relatively sterile course of emphasizing its uniqueness.

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