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Differential Associations and Definitions:

A Panel Study of Youthful Drinking Behavior[*]

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Abstract

This article reports on a test of selected elements of social learning theory, using a panel of public school students residing in a small southwestern city. Specifically, the drinking habits of 373 middle school and 282 high school students were examined at Time 1 and Time 2, as were changes in their attitudes, orientations and patterns of drinking. We evaluated the assertions of social learning theory's proponents concerning its processual aspects. The results were largely consistent with the principles of social learning, although the drug-related messages conveyed by both parents and significant other adults played only minor roles in the process for either group. We found support for the notion that the process of learning to drink is not uniform throughout the secondary school experience. The implications of these findings for social learning theory and drug intervention programs are addressed in the article.

INTRODUCTION

Drug researchers, in their repeated probing of the links between the drug attitudes, orientations, and behaviors of youth and those of their close friends, intimates, and relatives, have moved beyond such simplistic and self-proving statements as "birds of a feather flock together" and "like father, like son" to theory-based explanations, including those that emphasize social learning and social bonding (Jensen and Brownfield, 1983; Matsueda, 1982; Winfree, 1985). Social learning theory, in particular, has emerged as a powerful explanatory device in recent tests of the linkages between deviant associations and definitions (Akers et al., 1979; Johnson et al., 1987; Matsueda and Heimer, 1987; Winfree et al., 1989).

Sutherland's (1947) belief that criminal behavior is learned through a process of interaction with others who provide definitions that are favorable

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or unfavorable to law violations, is central to social learning theory. In spite of its inclusion of operant conditioning principles (Burgess and Akers 1966), differential associations and definitions are at the heart of the theory. This contention is born out by recent statements in which the theory's Skinnerian heritage has been down played (Akers, 1985). As Johnson et al. (1987:325) observe, the central theme of social learning theory is that "deviant or criminal behavior (including teenage drug use) is primarily influenced by the associations one has with definitions or behavior patterns that either promote ('reinforce') or proscribe ('punish') such behavior."

Tests of the full social learning model have supported the primacy of definitions and differential peer associations, regardless of the behavior examined (Akers et al., 1979; Krohn et al., 1984; Krohn et al., 1985). Attempts to integrate social learning theory with other theoretical perspectives have also defined definitions and differential associations as the primary components (Elliott et al., 1985; Massey and Krohn, 1986; Marcos et al., 1986). Most such studies have focussed on adolescent drug use, particularly teenage drinking (Dembo et al., 1986; Krohn et al., 1982; Raskin-White et al., 1986; Strickland and Pittman, 1984). The considerable base of empirical support not withstanding, there are few tests of social learning theory as the processual theory it claims to be (Akers et al., 1979; Krohn et al., 1985). There is one longitudinal study of the full social learning model (Krohn et al., 1985), and that analysis focused on a relatively minor form of adolescent misbehavior: tobacco initiation and maintenance.

There are many excellent longitudinal studies that purport to test theories of adolescent deviance other than the full social learning model. For example, several longitudinal studies combine definitions and differential associations with social control and social strain constructs (Burkett and Warren, 1987; Massey and Krohn, 1986). There is also the work of the Jessors which applies problem behavior theory to explain marijuana use (Jessor and

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Jessor, 1977; Jessor et al., 1973), the study by Huba et al. (1980) of peer and adult influences on drug use, and, of course, the research by Kandel and associates on the "stepping-stone thesis" and the links between drug attitudes and behavior (Andrews and Kandel, 1979; Kandel and Logan, 1984). Social control theory has also been examined longitudinally (Agnew, 1985; Krohn et al., 1983). Indeed, the use of change scores by Krohn et al. (1983) supports the general position that longitudinal strategies are necessary to examine fully any theory which claims to be processual in nature.

The current study tests the process assertions inherent in social learning by probing the predictive efficacy of its associational and definitional elements over time. This task is accomplished by using a two-wave panel-design to study adolescent alcohol use. We assessed the ability of the social learning constructs to predict Time 1 drinking and, with the use of change scores, Time 2 drinking, as well as the change in drinking over time. As for social learning constructs, we used differential associations, which focuses on the extent to which one interacts with people or groups that provide alternative role models, reinforcements, and definitions. We also employed several measures of definitions, a construct which implies that an individual learns, through close, intimate interactions with others, evaluations of orientations and behavior as appropriate or inappropriate, good or bad. Criminal behavior is more likely when people develop, on balance, definitions favorable rather than unfavorable to that behavior. Consider too that one's personal definitions tend to be consistent with one's behavior (Acock and DeFleur, 1972; Andrews and Kandel, 1979). Without addressing personal values, the influences of the other factors on behavior may be distorted.

SAMPLE AND DATA

In September of 1981 the public school administrators for a southwestern city of nearly 15,000 residents, a community split between commuters to a nearby major metropolitan area and employees of large agribusiness concerns,

asked one of the authors to conduct a student drug-use study. We designed a twelve-page, eighty-item questionnaire that allowed respondents to indicate their drug attitudes, orientations, or behaviors by simply checking or circling appropriate responses. In pre-tests, grade school students finished the questionnaire in as little as 15 minutes, with the average being about 40 minutes. In the field, all students were given up to one hour to complete the instrument. We established its readability at the fourth grade level. The students were further instructed that they should not answer questions they did not understand; judging by the completion rate, missing-data rate, and internal validity checks, the instrument was very reliable. With respect to both validity and reliability, this same instrument was used in four research settings over a period of seven years (Winfree, 1985; Winfree et al., 1981a,b; Winfree et al. 1983a;b; Winfree et al., 1989).

In October, students in grades 6 through 12 were polled in their home rooms by an independent surveyor. The surveyor instructed the students that they did not have to participate if they felt that their privacy was being invaded or if they felt threatened. The 1,328 students that returned correctly completed questionnaires represented 95% of the attending students. Six months latter, a second census was less successful. Due to questionable coding of relevant information by some respondents (i.e., day, month and year of birth, sex, race, grade level), all of which had to match perfectly, a five percent absentee rate that was more than twice that of the fall administration day, and a 10% school dropout rate, the spring census was only 81% of the size of the fall census, which was again 95% of the students in attendance.

A total of 62.8%, or 675, of the 1,075 Time 2 subjects were successfully matched with their Time 1 responses. The median age of the students in the panel was 14 years, with a range of 11 to 18. The panel consisted of 276 males (40.9%) and 399 females (59.1%). The panel, like the community which it represented, was largely Caucasian (86.2%), with few Mexican-Americans (8.3%),

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Black-Americans (4.9%), or Native Americans (.6%).

MEASUREMENT

We employed five measures of differential definitions. Personal defini-
tions were measured by the respondent's level of personal approval or disap-
proval of alcohol, marijuana, and drugs other than alcohol and marijuana.
Three separate questions followed the same basic format: "How do you feel
about the use of _____? Possible responses formed a five point scale ranging
from "strongly disapprove" to "strongly approve," with the midpoint response
of "don't know." The scale appeared reliable. The Time 1 alpha coefficient
was .739; the Spearman-Brown coefficient was .784. At time 2, the alpha coef-
ficient was .705, and the Spearman-Brown coefficient was .767. The higher the
scale score, the higher the level of approval of a greater variety of drugs.

Peer approval and significant other adult approval were constructed in
identical fashion to that used for personal definitions. For peer approval,
the following prefatory statement was used: "How do most of the young people
whose opinions you value feel about the use of _____?" Significant other
adult approval was tapped by the following introductory statement: "How do
most of the adults whose opinions you value feel about the use of _____?" In
both instances, the drugs mentioned included alcohol, marijuana, and drugs
other than alcohol and marijuana. For one's peers, the alpha coefficient at
Time 1 was .773; the Spearman-Brown was .765. The Time 2 scale analysis
yielded similar results: the alpha coefficient was .756 and the Spearman-Brown
was .768. In terms of significant-other adult approval, the alpha coefficient
at Time 1 was .793, with a Spearman-Brown of .808. At Time 2, the alpha coef-
ficient was .718, and the Spearman-Brown was .765. The higher the score,
the higher the perceived approval of a greater variety of drugs ascribed to
one's peers or the higher the perceived level of approval of a greater variety
of drugs ascribed to significant-other adults.

The excess of definitions that favor violation of the law as compared to

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those definitions which call for compliance is a key social learning variable. Two ratio measures of this construct were created, both of which were modelled after a technique reported by Johnson et al. (1987), who contend that friends and parents are possible sources of pro-drug and anti-drug use definitions. However, our ratio scales are not identical to those reported by Johnson et al. (1987). The drug discussions they cited were drug-specific (e.g., occasional use of alcohol was harmless or that too many people use marijuana). Our items were more general and lack specific drug-referents. Also, Johnson et al. created their ratios by dividing the sum of pro-drug topics by the sum of anti-drug topics. In the present case, it was the frequency of such discussions and not their variety which provided the basis of the ratio measures.

Regardless of the source anti-drug definitions are stimuli whose primary purpose is to extinguish or prevent drug use. Conversely, positive or pro-drug definitions are portrayed as stimuli whose raison d'etre is to continue or increase the behavior in question. As proposed by Johnson et al., then, these measures do more than simply assume that parents are anti-drug and peers are pro-drug. Rather, they allow for the measurement of both the frequency and content of drug-oriented discussion with either group.

The frequency of the drug-related discussions each youth had with his or her friends and parents was determined by a screen question, with the following categories as possible responses: (1) never, (2) rarely, (3) occasionally, and (4) often. After it was determined that such discussions occurred the specific content of these discussions was broached. The topics were collapsed into those subject expounding on either the dangers of drug use or the enjoyments that drugs bring. These same questions were asked about parents and peers. When youths that had both types of discussions with parents or peers, it was not known whether pro-drug topics outnumbered anti-drug topics, or vice versa. Grouping all youths that had no such discussions with those youths that had both types of discussions, and giving them uniformly the value of

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"1," seemed a prudent and conservative approach to this shortcoming in the data. As a result, only those youths that decidedly had either pro-drug or anti-drug discussions received a value other than "1."

The frequency of discussions about the enjoyments of drug use with either parents or peers was subsequently divided by the frequency of source-specific discussions about the dangers associated with the use of drugs, thus creating ratios of both peer pro-drug discussions and parental pro-drug discussions. For each measure, this process created seven separate values. A value of "1" suggested that both pro-drug and anti-drug topics were discussed equally or that they never discussed drugs with the respective source. If they never discussed anti-drug topics but discussed pro-drug topics, they could receive a ratio of between 2 (rarely) to 4 (often), signifying a condition conducive to the learning of pro-drug definitions. If they never discussed pro-drug topics but did discuss anti-drug topics, then they could receive a ratio score of from .5 (rarely) to .25 (often), signifying a condition not conducive to the learning of pro-drug definitions.

Originally, Akers et al. (1979:655) define differential peer associations as "use of" alcohol or marijuana by one's best friends, friends with whom they associate most often and friends whom they have known for the longest time. We used a single indicator of differential associations: the perceived proportion of one's best friends who drink alcohol. Respondents were asked to select one of the following answers: (1) I don't know, (2) none (3) less than half, (4) about one-half, (5) more than half. We collapsed the first two responses were collapsed together; it is assumed that no greater differential associations are derived from one's peers that are not known to use than those that are known not to use drugs. For learning to occur, definitions must be forthcoming, one of which is knowledge about peer drug use.

The dependent variable was the frequency of alcohol use within the past 12 months. The students could respond with one of the following: (1) no use,

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(2) 1-2 times, (3) 3-5 times, (4) 6-9 times, (5) 10-19 times, (6) 20-39 times, and (7) 40 times or more.

Change is central to the current study. Social learning theory assumes that process and change are a part of the natural order, even where aberrant behavior is concerned. In order to provide change scores for the present study, then, the Time 1 (Fall) score is subtracted from the Time 2 (Spring) score on each of the six key independent variables and alcohol use. For example, if a student reported a Time 2 drinking response of 3, or 6-9 times in the past year, but at Time 1 he or she had checked a 2, signifying 3-5 times, the +1 change score suggests that this person is simply moving in the direction of increased use. Similarly, if a student reported that at Time 2 the ratio of the frequency of pro-drug to anti-drug discussions was 2:1, or a value of 2, but at Time 1 had reported a ratio of 4:1, or a value of 4, then the change score would be -2, which suggests a movement away from a situation conducive to learning deviant behavior. Thus, positive change scores for use would be suggestive of increased involvement with alcohol; negative change scores would be indicative of decreased self-reported use over the past year. Positive change scores for differential association and differential definitions variables suggest movement in concert with the principles of social learning; negative change scores suggest that forces within the social environment are not receptive to the learning of deviant behavior.

RESULTS

Drinking Attitudes and Behavior: An Overview

The data analysis provided, first, a test of the ability of selected Time 1 social learning variables to predict Time 1 alcohol use. A second test involved the ability of both Time 1 social learning variables and "change scores" to predict Time 2 drinking patterns. Finally, we focussed on the ability of Time 1 social learning variables, "change scores" and Time 1 alcohol use to predict Time 2 drinking. As Krohn et al. (1983) and Kessler and

Greenberg (1981) suggest, the use of actual change scores in regression analysis is equivalent to using algebraic manipulations to estimate change. Krohn et al. (1983:341) report using both methods and opted to report only change scores as they are easier to interpret. We utilized this latter strategy.

Table 1 contains the means and standard deviations for each of the variables; these values are presented separately for both the middle school and high school students. While alcohol use was a fairly rare event at Time 1, occurring on average less than once or twice a year for the middle school students and about three to four times a year for high school students, by Time 2 this average had more than doubled for middle school students and increased by fifty percent for high school students. As for Time 1 drug discussions, the ratio of pro-drug discussions with one's peers was higher than that of pro-drug discussions with one's parents for both middle and high school students. The frequency of pro-drug discussions with parents was lower than the frequency of anti-drug discussions by roughly 2 to 3; among best friends, the frequency of anti-drug to pro-drug discussions was roughly equal. In either case such discussions were infrequent.

Personal approval of drugs and perceived approval levels by peers and significant other adults provide an interesting contrast between the two subgroups. On average, among middle school students, Time 1 personal approval of drugs was lower than perceived approval for both peers and significant other adults. In any event, average approval for both sources was low. High school students on average scored higher on the personal approval scale than was the case for middle school students. However, they gave themselves, on average, higher approval levels than they did significant other adults, but lower approval levels than they perceived as existing among peers. Finally, less than half of the best friends of the average middle school respondents drank alcohol. High school students, on average, perceived about one half of their best friends drank alcohol. The spread of high school student responses to this

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question was also greater than that observed for middle school students.

<u>Table 1 about here</u>

The change score means suggested little movement over time (a score of zero suggests no change), although there were subgroup variations. Among middle school students, four of the six -- five of seven if we include frequency of alcohol consumption -- are positive (higher scores at Time 2 than at Time 1). The ratios for both sets of differential definitions were lower at Time 2 than Time 1, resulting in the only two negative change score means. Only changes in self-reported drinking patterns, proportion of close friends' drinking, and personal approval experienced more than nominal increases, all of which are in a direction supportive of social learning theory.

The high school students exhibited a slightly different change pattern. Four of seven change scores were negative. However, only two of these negative change scores were more than negligible, specifically those for the ratio of drug discussions with one's peers and perceived peer approval of drugs. Personal drinking increased, as did perceptions of peer use. The remaining coefficients suggested that very little change has occurred.

Drug Attitudes and Past Behavior: Predicting Change

The first regression model reported in Table 2 examines only Time 1 drinking in terms of Time 1 social learning measures. Once again, separate analyses were performed for middle school and high school students. Five of the six independent variables made significant contributions to middle school drinking patterns; the full model accounted for 20% of the variance. The proportion of best friends drinking alcohol was the single best predictor, a finding which is consistent with most empirical tests of differential association theory and social learning theory. Both peer and parental discussion ratios made significant contributions, with the coefficient for the peer variable nearly twice that of that observed for parental discussion. However, only one of the coefficients was in the predicted direction. While the ratio of the

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frequency of pro-drug to anti-drug discussions with peers was indeed positive, the same ratio for discussions with parents was negative. It would appear that children in this study rejected their parents as a source of delinquent definitions: the lower the ratio of the frequency of pro- to anti-drug discussions, the higher the drug use. This interpretation was supported by the coefficient for significant other adult approval. Such people would seem to be dismissed by middle school students as a source of delinquent definitions.

Table 2 about here

The regression equation for high school students was different from that observed for middle school students in three respects. First, the equation was dominated by peer use and personal approval. Second, peer discussions contributed roughly as much as both parental discussions and significant other adult approval, unlike the case for middle school students, where it made nearly twice the contribution as the other two. Finally, the explained variance (38%) was nearly twice that reported for middle school students.

It appeared that at Time 1 middle school drinking was best understood in terms of peer associations and definitions, with some small proportion of the total picture being provided by rejection of parents and significant other adults as reverse role models. Significantly, personal definitions of middle school students played a small role at this juncture. Alcohol use in high school, on the other hand, was less dependent upon peer discussions or parental and significant other adult negative modelling. Rather, involvement with alcohol was largely understood in terms of the personal views held by high school students and the perceived level of peer involvement. Thus, among middle school students, drinking alcohol seemed to be less a function of what one has learned and internalized, and more a function of what one's peers say and do. Among high school students, what one's peers do is still important, but personal definitions play at least as great a role, and certainly a greater role than definitions or perceived levels of approval by others.

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The second set of equations in Table 2 addresses the more fully expli-
cated model which used not only Time 1 measures to predict Time 2 use, but
also included change scores for all six independent variables. The role play-
ed by the drug discussions with peers reported by middle school students was
roughly the same as observed in the first equation. The influence of signifi-
cant other adults decreased markedly, as did parental discussions. Peer use
and personal definitions once again exhibit strong direct links.

In panel studies that employ multiple regression, multicollinearity be-
tween predictor variables is a concern, particularly when the regressors in-
clude change scores and static measures (Lewis-Beck 1980; Markus 1979). The
six static independent variables were intercorrelated with their respective
change measures. The coefficients were negative and ranged from $r = -.44$ for
the proportion of use by friends to $r = -.67$ for the ratio of the frequency of
peer drug-related discussions. There was little evidence of multicollinearity
in the coefficients, standard errors of the coefficients, and the adjusted R^2.
In addition, in no equation was there a significant correlation between any of
the residuals and independent variables for that equation.

Three change scores also made significant contributions in the equation
for Time 2 alcohol use by middle school students. In all three cases, the
signs of the coefficients suggest that the changes support social learning
theory: there was movement toward higher values at Time 2 than at Time 1. The
two strongest links, both rivaling that for the Time 1 measure, were observed
for change in personal definitions and proportion of peers drinking alcohol:
the greater the positive, or pro-use, definitions change, the greater level of
reported Time 2 alcohol use. The other significant change score, involving
the ratio of peer drug discussions, exhibited a standardized coefficient
roughly equivalent to that observed for the static Time 1 measure of peer drug
discussions. Additionally, in the Time 1 equation the proportion of peers
drinking alcohol was a better predictor of Time 1 personal use than current

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personal values. In the Time 2 equation peer use continued to perform in a manner superior to personal approval, and the change in perceived peer use was a better predictor than the change in personal approval. These findings tended to support the view that middle school students are at a different stage in the process of learning deviant definitions than are high school students. This model explained 30% of the variance in Time 2 middle school drinking.

Among high school students, Time 2 drinking patterns were better understood in terms of, first, their personal definitions about drugs and, second, changes in these definitions that moved the person in concert with the principles of social learning. Of secondary importance were the perceived peer use patterns and changes in those patterns, once again in concordance with social learning theory. It is interesting to note that the third most important set of variables was linked to significant other adults. These people are being rejected as sources of negative definitions and, conversely, accepted as sources of positive definitions against the use of drugs. This pattern was not observed for middle school students, in spite of the fact that six months earlier adult approval levels was equally important to both groups.

These findings suggest that over time, personal attitudes, as well as changes in those attitudes, assume a greater role in shaping the pattern of one's drug involvement than does differential associations. This observation is consonant with the principles of social learning. At some point, after the specific drives and motives have been learned, the person makes personal decisions to engage in or abstain from the law violations based on the principle of social learning. It seems logical, therefore, to expect that the role played by differential associations will decrease or remain relatively static, while the role played by personal definitions will increase once the balance has been shifted in favor of law violation.

The final two equations examined the relative influence of the static and change measures on the reported change in alcohol consumption from Time 1 to

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Time 2; they reinforced the primacy of personal definitions. The explained variance was less for the middle school students' equation ($R^2 = .37$) than the one for high school students ($R^2 = .45$). The standardized coefficients reported in these equations were very similar to those reported in the equations for Time 2 drinking. This fact is all the more interesting since Time 1 drinking is included in this equation and exhibits a rather substantial inverse link to the observed change in drinking habits: The higher the Time 1 drinking level, the lower the change in drinking habits, or, conversely, the lower the Time 1 drinking level, the higher the change.

DISCUSSION AND CONCLUSIONS

On balance, then, the findings support social learning theory as elements of the theory predicted present and future drinking, as well as changes in drinking over time. Specifically, the more youths associate with peers that use alcohol, possess pro-drug definitions, and engage in peer discussions about drugs, the more likely they are to drink or engage in increased drinking. In addition, both drinking and changes in drinking behavior were related to increases in positive peer discussions about drugs, increases in alcohol use by friends, and increases in personal approval of drugs.

Our findings contain implications for drug intervention and prevention policy makers and program designers. Consider the popular notion that progressively younger children must be targeted for "drug education" programs, a broadly defined term under which we include both intervention and prevention strategies. We suggest that at the theoretical epicenter of this strategy are drug definitions and behavior that are acquired through a process of social learning, a process that is fueled by the influences of peer behavior and definitions among younger students and established personal values among older students. The presence of this process in the learning environment can mitigate the goals of drug education programs. For example, learning to "just say no" may not be enough, particularly if the child does not believe in the cor-

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rectness of "just saying no". That is, the presence of personal pro-drug orientations, gleaned through the process of social learning, or the presence of drug using peers make saying yes a far more likely outcome.

Prevention and intervention programs must, therefore, be sensitive to the forces which produce the learning of pro-drug attitudes and behaviors. Our research tells us that personal attitudes towards drug use are fairly well-developed by high school, but are ill-defined in middle school. It also seems to be the case that while drinking in high school is best understood in terms of personal values and past behavior, patterns of alcohol use by middle school students has far more to do with definitions gleaned from peers. If we have faithfully portrayed the process of learning about drugs, then drug education programs might better be focused on youths that have yet to define drug use as a positive or negative venture. Furthermore, the success or failure of such programs may be dependent upon their ability to blunt the role of the peer group as a source of pro drug definitions. Programs designed to help high school students make informed choices may be irrelevant, as they have already made their choices. Such strategies may work for far younger students, perhaps even grade school children. The success or failure of any given program may be measured by the extent to which it taps into the process of learning anti-drug and pro-drug definitions, and employs the appropriate message senders at the critical junctures in the learning process.

A most disturbing finding is that neither parents nor significant other adults greatly influence the alcohol use learning patterns. Indeed, parental anti-drug discussions and significant other adult disapproval may have an effect directly opposite that intended. Given the fact that most anti-drug programs involve adults, and that their influence on youthful drinking is unclear and inconsistent, the issue merits further study. Future research should include measures of perceived adult use patterns. Also, celebrity role models (eg., musicians or athletes) may have a different anti-drug force from

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generic significant other adults.   Finally, these findings might hold for alcohol, a non-drug drug to most youths, but not for illicit substances.

To the extent that the findings accurately reflect the inclination of youth to rebel against adult authority, then increase used of peer rather than adult counselors in drug programs may prove more fruitful.   Whatever specific strategy is adopted, and our suggestions are not meant to be fiats nor do they exhaust the list of possible alternatives, one thing is clear.   Drug education policy makers and program designers, and the communities they serve, should avoid programs that attempt to be all things to all people.

Table 1. Means and Standard Deviations for T2 Drinking, T1 Drinking, Change in Drinking, T1 Social Learning Measures and Change in Social Learning Measures for Middle School Students (N = 373) and Senior High School Students (N = 282)

Variables	Middle School		Senior High	
	Mean	S.D.	Mean	S.D.
Time 2 Drinking[a]	.73	1.43	2.31	2.28
Time 1 Drinking	.33	.91	1.66	2.04
Parental Discussion[b]	.66	.35	.70	.50
Peer Discussions	.84	.63	1.05	1.01
Other Adult Approval[c]	6.20	2.54	5.46	2.33
Peer Approval	6.20	2.67	7.67	3.16
Personal Approval	5.55	2.57	6.47	2.90
Peer Use[d]	1.40	.82	2.67	1.24

Table 1. (Continued) Means and Standard Deviations for T2 Drinking, T1 Drinking, Change in Drinking, T1 Social Learning Measures and Change in Social Learning Measures for Middle School Students (N = 373) and Senior High School Students (N = 282)

Variables	Middle School		Senior High	
	Mean	S.D.	Mean	S.D.
Change in:[e]				
Drinking	.80	1.53	.67	2.26
Parental Discussions	-.01	.55	-.09	.54
Peer Discussions	-.08	.83	-.14	1.15
Other Adult Approval	.08	3.10	-.03	2.53
Peer Approval	.07	3.29	-.14	3.24
Personal Approval	.24	3.23	-.26	2.61
Peer Use	.23	1.09	.26	1.22

[a]Higher the score on Drinking, the more frequent the drinking episodes.

[b]The discussion variables are grounded in any type of drug discussion, with no specific drug as the empirical referent.

[c]The approval variables are grounded in approval of alcohol, marijuana and other illegal drugs; the higher the score on the approval variable, the greater the variety of drugs approved of by the respondent.

[d]The peer use variable is grounded specifically in the proportion of one's peer perceived to be drinking alcohol; the higher the peer use score, the higher the proportion of one's best friends that drink alcohol.

[e]Change scores were obtained by subtracting the T1 values from the T2 values for each social learning variable and drinking; for social learning theory, a positive value indicates a movement toward a situation conducive to social learning.

Table 2. Standardized Regression Coefficients for the Effects of T1 Social
Learning Variables and Changes in Social Learning Variables on T1
Drinking, T2 Drinking, and Change in Drinking by Middle School (N
= 373) and High School (N = 282)

Variables	Time 1 Drinking		Time 2 Drinking		Change in Drinking	
	Mid[a]	Sr[b]	Mid	Sr	Mid	Sr
Time 1 Drinking					$-.50^{***}$	$-.60^{***}$
Parental Discussions	$-.13^{**}$	$-.12^{*}$	$-.04$	$.10$	$-.03$	$.14$
Peer Discussions	$.22^{***}$	$.11^{*}$	$.19^{**}$	$.01$	$.16^{**}$	$-.02$
Other Adult Approval	$-.14^{**}$	$-.13^{**}$	$-.04$	$-.20^{**}$	$-.02$	$-.17^{*}$
Peer Approval	$.04$	$-.05$	$-.14$	$-.09$	$-.14^{*}$	$-.03$
Personal Approval	$.16^{*}$	$.42^{***}$	$.24^{*}$	$.61^{***}$	$.20^{**}$	$.45^{***}$
Peer Use	$.28^{***}$	$.35^{***}$	$.40^{***}$	$.34^{***}$	$.34^{***}$	$.24^{**}$

Table 2. (Continued) Standardized Regression Coefficients for the Effects of T1 Social Learning Variables and Changes in Social Learning Variables on T1 Drinking, T2 Drinking, and Change in Drinking by Middle School (N = 373) and High School (N = 282)

Variables	Time 1 Drinking		Time 2 Drinking		Change in Drinking	
	Mid[a]	Sr[b]	Mid	Sr	Mid	Sr
Change in:						
Parental Discussions			.00	.07	.00	.07
Peer Discussions			.16**	.01	.16**	-.02
Other Adult Approval			-.05	-.17*	-.03	-.17**
Peer Approval			.01	-.07	.01	-.03
Personal Approval			.25***	.45***	.23**	.41***
Peer Use			.40***	.32***	.36***	.33***
R^2	.21	.40	.32	.43	.39	.48
Adjusted R^2	.20	.38	.30	.40	.37	.45

[a]Middle school students.

[b]Senior high school students.

*Significant at or exceeding .05 alpha level.

**Significant at or exceeding the .01 alpha level.

***Significant at or exceeding the .001 alpha level.

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