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ABSTRACT

This paper reports the preliminary findings of a county-wide study of alcohol and other drug (AOD) behaviors and influences among 2,229 randomly selected students in grade 8, 10, and 12. The discussion focuses on behavioral, cognitive, and environmental predictors of AOD behaviors. The paper highlights a refined study of the influence of peers, drug information (from school-based programs and individuals), and positive school and after-school indicators in relation to drug involvement. Investigators examined 17 drugs, including beer, wine coolers, tobacco, marijuana, and liquor. The objectives of this presentation were to: (1) increase the participants' knowledge of environmental and individual factors related to AOD use; (2) identify select peer influence variables related to AOD behavior; (3) examine the relative significance of cognitive-perceptual factors in AOD use; (4) help school psychologists understand the implications of this study's findings for direct and indirect service delivery; and (5) chart developmental trends in AOD predictive models. Participants were expected to increase their understanding of the multi-determined nature of alcohol and other drug use among adolescents and gain a developmental perspective on AOD predictors. Included are 16 tables which give statistical predictions for AOD use and behavior. (RJM)

Cognitive, Behavioral, and Environmental Factors in Adolescents' Alcohol and Other Drug Use: A Developmental Perspective

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Abstract

This presentation will report preliminary findings from a county-wide study of alcohol and other drug (AOD) behaviors and influences involving 2229 randomly selected students from grades 8, 10, and 12. Discussion will focus on behavioral, cognitive, and environmental predictors of alcohol and other drug behaviors. Specifically, a more refined study of the influence of peers, drug information (from school-based programs and individuals), and positive school and after-school indicators will be discussed in relation to drug involvement. Seventeen drugs will be examined including beer, wine coolers, tobacco, marijuana, and liquor. The objectives of this presentation are to 1) increase participants' knowledge of environmental and individual factors related to alcohol and other drug use, 2) identify and distinguish select peer influence variables related to AOD behavior, 3) examine the relative significance of cognitive-perceptual factors in AOD use, 4) discuss implications of these findings to direct and indirect service delivery for school psychologists, and 5) examine developmental trends in AOD predictive models. Participants are expected to increase their understanding of the multi-determined nature of alcohol and other drug use among adolescents, gain a developmental perspective on AOD predictors, and draw inferences for direct and indirect service delivery.

INTRODUCTION

The purpose of the present study was to investigate factors which influence adolescent alcohol and other drug use. Consistent with findings from previous research, this study examined an ecology of factors in relation to 17 drugs and classes of drugs, including tobacco and alcohol. Social influences, individual perceptions, drug education sources, and indicators of positive involvements represented the classes of variables studied in relation to alcohol and other drug (AOD) use.

For nearly two decades, drug use among our nation's youth has become the focus of intense concern and research. Utilization of research findings and indicators of societal interest have been seen in community response to this problem, as reflected in increased law enforcement efforts, drug-free schools projects, national funding of community alcohol and other drug (AOD) prevention projects, religious-affiliated alternative community programs, support from the business sector in anti-drug campaigns, and employee assistance programs. Most effective was the anti-smoking campaign of the late 1970's and 1980's, which successfully activated and sustained a systems approach to decrease and prevent the use of tobacco in American society.

A single etiological factor for alcohol and other drug use has not been identified, largely due to the complexities inherent in individual and situational interactions which contribute to the initiation, frequency, and maintenance of alcohol and other

drug patterns. As reflected in previous research, several individual and environmental factors have been investigated as explanatory variables in AOD involvement. To date, research has unveiled important contributors to alcohol and other drug use, most notably the teenager's family, personal characteristics such as nonconformity and individual emotional states (i.e. distress), and social pressures. The etiological complexity of AOD involvement would suggest the need for a systems approach to prevention and intervention.

RELATED RESEARCH LITERATURE

Several studies have examined the influence of the family on adolescent alcohol and other drug behaviors. A frequently cited finding is the correlation between parental use and increased adolescent substance use (Halebsky, 1987). The disease concept of substance abuse as well as explanations which focus on individual characteristics (rather than predisposition) continue to be debated as rival explanations for this familial factor in AOD involvement. Other findings showing a positive correlation between parental attitude toward illicit substance abuse present yet another competing environmentally-related explanation (Halebsky, 1987). Such findings suggest that adolescent AOD use may be strongly influenced by the learning processes of modeling and imitation (Halebsky, 1987) as well as parental sanction, as inferred from parental attitudes and behaviors.

There have been several studies examining the influence peers exert in adolescent use of alcohol and other drugs. Consistent with the majority of studies examining peer influence,

Marcos, Bahr, & Johnson (1986) reported that the best single predictor of drug use is association with drug-using friends. Explanations for peer group influence in the initiation of drug use include mediating variables such as the enticement and encouragement of friends, social acceptance, peer values, and the desire to go along with the crowd (Ong, 1989). Similarly, Pruitt and Kingery (1991) found that students who perceive a higher degree of drug use among their friends and who receive more information about drugs from their friends use them more frequently. Findings of heightened peer pressure during the adolescent period have led other researchers to examine teen attributes that may help increase resistance skills. For example, it has been found that youth who are able to set limits with their peers and feel comfortable asserting their own opinions and needs are less likely to utilize illegal substances (Rhodes & Jason, 1990).

In addition to characteristics of the familial and social environments, cognitive variables appear to represent important explanatory factors. Cognitive motivations for AOD use have been investigated and empirically validated as important mediators of AOD involvement. Newcomb et al. (1988) recognized that self-acknowledged cognitive motivations or reasons for drug use are important etiological factors in understanding actual drug use behavior. They developed a four-factor structure of cognitive motivation items that included Reduce Negative Affect, Enhance Positive Affect and Creativity, Social Cohesion, and Addiction. Findings revealed that these factors were significant motivators

of alcohol and marijuana use among adolescents. The importance of using drugs to reduce negative affect was more prevalent among older than younger teenagers. Cognitive motivations are thought to be functionally autonomous influences on the use and abuse of drugs (Stacy, Newcomb, & Bentler, 1991).

Other studies have investigated the influence of drug information. Botvin and Tortu (1988) reported that traditional alcohol and drug prevention programs which promote awareness messages of the adverse effects of drugs are ineffective. However, more recently, Botvin and Dusenburry (1992) have introduced Life Skills Training as an alternative to the traditional information dissemination approach, which is designed to strengthen an individual's ability to cope with social influences that may lead to substance use.

Previous research indicates the importance of considering several influences in the initiation and maintenance of AOD behaviors. Accordingly, this study approaches the adolescent AOD problem from a multi-causal perspective, with a focus on both environmental and individual characteristics including student perceptions as potential explanatory variables. Extending previous research, this investigation proceeds with a developmental perspective, select focus on both high and low frequency drugs including tobacco and alcohol, and an emphasis on the social perceptions, knowledge, and activities of adolescents as explanatory variables.

METHOD

Sample Characteristics

The data was collected in a large county in northeastern Ohio. The county was comprised of metropolitan, suburban, and rural areas. A random sample of students in grades 8, 10, and 12 from seventeen public school districts, as well as a complete census at grade 8 from three private schools, participated in the study.

The total sample was comprised of 2229 students. The largest percentage of students was from the eighth grade (n=941). Seven hundred and seventy six participants were enrolled in the tenth grade, and the twelfth grade was comprised of 515 students. At all grade levels, males and females were closely equated, with slightly more females than males represented in the sample. The racial characteristics of the sample closely approximated county census figures, with African Americans slightly underrepresented. Overall, the majority of the students described themselves as white or Caucasian, ten percent as black or African American, approximately ten percent as American Indian, Oriental or Asian Americans, Mexican Americans or Chicano, and less than one percent as Puerto Rican or other Latan American (Table 1).

Procedure

In the present study, students with parent permission were administered a survey instrument under standard instructions for administration and collection. To encourage students to be truthful, the survey was voluntary and anonymous. Consistency was found between two items of drug use and AOD initiation age.

As another check, teachers' perceptions of the representativeness of the sample were requested following administration of the survey instrument. A high level of agreement with the representativeness of the sample was found. Students at the three grade levels were surveyed regarding their drug use patterns, attitudes, knowledge, social affiliations, at-risk familial situations, and AOD information sources. Alcohol and other drug use was studied in relation to the following four categories of variables: 1) perceptions regarding drugs, 2) social influences, 3) alcohol and other drug information sources, and 4) positive involvements. Specifically, perceptions of availability and risk were examined in relation to each of the following 17 drugs and classes of drugs: (1) cigarettes, (2) marijuana, (3) beer, (4) wine coolers, (5) liquor, (6) smokeless tobacco, (7) inhalants, (8) LSD, (9) any hallucinogens other than LSD, (10) amphetamines, (11) barbiturates, (12) tranquilizers, (13) "crack" cocaine, (14) cocaine in powder form, (15) heroin, (16) any other narcotic, and (17) anabolic steroids. The social variables studied in relation to the 17 drugs included perceptions of friends attitudes toward the student's AOD use, perceived peer pressure, and friends' use. The AOD information variables included drug education experiences and sources of AOD information. Lastly, activities were defined by academic performance level, extracurricular involvement, and after-school vocation.

RESULTS

Grade 8

This study examined an ecology of variables in relation to adolescents' use of alcohol and other drugs at three grade levels. Most correlations were low to moderate in magnitude, largely due to the statistical power of the sample size and the etiological complexity of AOD involvement. However, these preliminary analyses unveiled several significant predictive relationships.

At grade level 8, affiliation with drug-using friends was the strongest correlate of self-use for all 17 drugs. As indicated in Tables 2 through 17, increases in the number of close friends reported to use each of the 17 drugs were associated with increased student drug use. Coefficients ranged from .36 to .45. Perception of friends' approval was negatively related to use of both the gateway drugs and most of the harder drugs, indicating that as perceptions of disapproval decreased, drug use increased. All coefficients involving the gateway drugs were in the .30's. Similar but weaker relationships were found between perceptions of friends' approval and the harder drugs. Heroin and steroid use were not significantly correlated with perceptions of friend's approval.

Surprisingly, peer pressure to use drugs was not a strong correlate. However, the relationships were in the expected direction. The statistically significant, but low correlation coefficients indicated that as peer pressure increased, drug use increased as well. These relationships were found for the

following gateway drugs: tobacco (r=.15), marijuana (r=.21), beer (r=.18), wine coolers (r=.22), and liquor (r=.22). For most of the harder drugs, coefficients were smaller, ranging from .12 to .19. For the hard drug categories, peer pressure had a stronger influence on the use of hallucinogens (r=.22), barbiturates (r=.23), and tranquilizers (r=.23).

Other variables expected to function as mediating factors in AOD use included students' perceptions of risk and drug availability. Preliminary analyses indicated that perception of availability was a stronger predictor for all gateway drugs than perception of risk. Coefficients were of a stronger magnitude for perceptions of availability, ranging from .21 to .30. Perceptions of risk contributed little to the prediction of gateway drug use, as the coefficients ranged from -.08 to -.17. Neither were good explanatory variables for the harder drugs. Only cocaine (both crack and powder form) use was significantly associated with perceptions of availability and risk, and the coefficients were very small. Increased use of tobacco (cigarettes), marijuana, beer, wine coolers, and liquor was related to increased perceptions of ease in obtaining them and decreased perceptions of risk.

Small but significant correlations were found between the drug education experiences and the 17 drugs studied. All coefficients were in the expected direction, indicating that some drug education experiences made a very small contribution to the prediction of drug use. Drug education received as part of a health course proved to be the best correlate, as it was

associated with a decrease in the use of all drugs with the exception of inhalants. However, coefficients did not exceed -.10. Exposure to films, lectures, or discussions in a regular class was only related to a decrease in the use of "other narcotics." The experience of a "special course pertaining only to drugs" was not found to be significantly related to the use of any of the 17 drugs. Similarly, drug information sources made a small contribution to the explanation of AOD use. Teachers represented the information source that correlated most frequently with drug use behavior. Specifically, teachers as drug information sources were associated with decreased use of the following 11 drugs: tobacco (cigarettes), beer, wine coolers, liquor, smokeless tobacco, hallucinogens, amphetamines, barbiturates, tranquilizers, powder cocaine, and other narcotics. Marijuana, inhalants, LSD, "crack" cocaine, heroin, and steroids were not significantly related. Interestingly, friends and siblings as drug information sources were positively related to drug use, indicating that they were associated with an increased use of cigarettes, beer, wine coolers, and liquor. Printed sources of drug information, such as books, newspapers, and magazines were significantly related to a decrease in the following drugs: cigarettes, marijuana, liquor, inhalants, LSD, and amphetamines. Parents as sources of information were negatively associated with inhalants and "other narcotics." The media (radio and television) did not correlate with any of the drug use variables. Coefficients between drug use and the indicators of productive involvements were slightly stronger.

Student employment after school was related to a decrease in use of the following "harder" drugs: hallucinogens, barbiturates, tranquilizers, "crack" cocaine, powder cocaine, and heroin. As indicated in Tables 2 through 17, coefficients were relatively small in magnitude, ranging from .07 to .15. The best predictor was academic performance level, as indicated by self-reported average grade in the most recent grading period. Results indicated that decreasing grades were associated with increased drug use, with the exception of hallucinogens and "other narcotics." While these coefficients were small, ranging from .07 to .17, the relationship between academic performance level and cigarette use was somewhat stronger (r = .25). Lastly, involvement in enjoyable extra-curricular activities was related to decreased drug use for the following drugs: tobacco (cigarettes), marijuana, beer, LSD, hallucinogens, amphetamines, barbiturates, tranquilizers, "crack" cocaine, heroin, other narcotics, and steroids. Again, extra-curricular involvement more strongly correlated with decreased tobacco use at grade level eight.

Grade 10

Similar to grade eight results, the peer variables proved to be the strongest correlates of AOD use (Tables 2 through 17). Increases in the number of close friends reported to use the gateway and hard drugs were associated with increased AOD use. Similarly, perception of friends' approval increased with increasing AOD involvement. Compared to grade eight findings, the strength of this association was more pronounced at the 10th

grade level, with coefficients in the 30's and 40's for the gateway drugs. A similar developmental trend was found between perceptions of friends' approval of more frequent drug use and increased use of inhalants, LSD, amphetamines, barbiturates, and tranquilizers. In other words, as use of amphetamines increased, perceptions of friends' approval to use drugs on a more regular basis increased as well. However, a statistically significant but very small relationship was found between peer pressure and gateway drug use. Slightly stronger associations were found for the harder drugs, with coefficients ranging from .20 to .34. In particular, cocaine, heroin, and steroid use were more strongly associated with increased perceptions of peer pressure.

Results further indicated a significant relationship in the expected direction between students' perceptions of risk and their use of beer, wine coolers, liquor, and cocaine. As use of these drugs was reported to increase, perception of risk associated with each decreased. Surprisingly, no linear relationship was found between risk and use of cigarettes, marijuana, and the other hard drugs studied.

Students perceptions of AOD availability moderately correlated with use of marijuana, beer, wine coolers, liquor, and cocaine (crack and powder). Specifically, as drug use increased, perceptions of ease in obtaining drugs increased as well. Perception of availability was marginally associated with the other hard drugs studied and tobacco (cigarettes).

Least predictive of AOD involvement were the drug education and information source variables. As indicated by the very small

coefficients, these variables contributed little information to the prediction of AOD use. However, receiving drug education as part of a health course represented the drug education experience more frequently associated with drug use. Specifically, drug education as part of a health course was related to decreased use of beer, liquor, LSD, amphetamines, and crack. A special course just about drugs (i.e. DARE) positively correlated with all the harder drugs studied with the exception of LSD, amphetamines, and barbiturates, indicating an association between increased hard drug use and exposure to a special drug-related course. Exposure to films, discussions, and other school events related to drug education was associated with a decrease in tobacco (cigarette) use (Table 2) and beer consumption (Table 4). Increased drug use was associated with lower grades in school, whereas decreased drug use was related to involvement in enjoyable extra-curricular activities. The relationship between academic performance and drug use was strongest for the following substances: tobacco, marijuana, and beer. To a lesser extent, increased use of all hard drugs, wine coolers, and liquor was also associated with lower average grades. Involvement in enjoyable extra-curricular activities was associated with decreased use of cigarettes, marijuana, beer, wine coolers, liquor, LSD, hallucinogens, and amphetamines.

Grade 12

Consistent with grade 8 and 10 findings, peer drug use and perceived peer attitudes proved to be the strongest predictors of AOD use (Tables 2 through 17). However, at grade 12, the

strength of the relationship between friends use and self use decreased in general, while perceived peer attitudes emerged as a stronger predictor compared to the other grade levels. The latter developmental trend was more evident for the following drugs: cigarettes, marijuana, liquor (occasional use), beer (occasional use), LSD, inhalants, hallucinogens, powder cocaine, amphetamines, tranquilizers, narcotics, heroin (occasional use), crack, and barbiturates (occasional use). Peer pressure was a statistically significant, but very small contributor to use of marijuana, liquor, and amphetamines.

General trends in the data showed perception of risk to be a stronger predictor of AOD use compared to perception of availability, with the exception of marijuana use (Table 3). Findings consistently showed that decreased difficulty in obtaining drugs was associated with increased drug use for the following drugs: daily use of cigarettes, marijuana, wine coolers, liquor, crack, and cocaine. Clearly, this relationship was more evident for the gateway drugs as compared with the harder drugs. The stronger relationship between perceptions of increased risk and less drug use was evident for daily cigarette use, beer, liquor, crack, and cocaine, and to a lesser extent, use of wine coolers. Further, a developmental trend in the data showed risk to be a more influential factor in the use of tobacco (on a daily basis), liquor, beer, cocaine, and crack at grade level 12. Conversely, the relationship between perception of wine cooler availability (Table 5) and use decreased considerably, and no relationship was found between beer

availability and use (Table 4).

Drug education and drug information sources again proved to contribute little information to the prediction of AOD use. Results showed that exposure to a special drug course, drug education as part of a health class, drug education in regular classes, and other school events was related to self-reported decreased use of "other narcotics", LSD, and heroin respectively. Friends and siblings, and the media (TV and radio) were the best information source predictors of AOD involvement. Specifically, friends and siblings as sources, where most drug information is obtained, was associated with increased use of cigarettes, marijuana, wine coolers, liquor, LSD, and hallucinogens. Radio and television as potent information sources were related to decreased use of cigarettes, beer, wine coolers, LSD, amphetamines, tranquilizers, and other narcotics. Printed materials (e.g. books, newspapers) were also negatively correlated with use of tobacco, beer, and liquor, whereas teachers as primary information sources were associated with decreased marijuana use. Lastly, involvement in extra-curricular activities was associated with less frequent use of cigarettes, marijuana, liquor, and all of the harder drugs with the exceptions of crack, powder cocaine, heroin, and steroids. Similar to grades 8 and 10, higher academic grades were associated with decreased use of all gateway drugs except wine coolers and all of the harder drugs, with the exception of crack (Table 16) and heroin (Table 15). Having an after school job was associated with more frequent use of tobacco (Table 2) and less

frequent use of inhalants (Table 8) and powder cocaine (Table 11).

DISCUSSION

The purpose of the present study was to examine four clusters of environmental and individual variables hypothesized to relate to frequency of alcohol and other drug use among adolescents. These variable categories included peer affiliation, student perceptions, drug education, information sources, and productive involvements.

Overall, the strongest influence on teenage drug use at all grade levels was increased peer affiliation with drug-using friends. This study further confirmed the importance of considering student perceptions of peer attitude toward self-use. Specifically, it was found that student perceptions of peer attitudes toward their own drug use significantly correlated with increased frequency of use for all gateway drugs and to a lesser extent with most harder drugs. This variable was even more predictive of higher frequency use of beer, wine coolers, and liquor at grades 10 and 12. Thus, more frequent use of these gateway drugs at the older age levels was found to be more strongly influenced by perception of peer approval. Generally, the strength of the relationship between perceptions of peer approval and hard drug use also increased as grade level increased, particularly for use of inhalants, LSD, and amphetamines. These findings suggest again that older adolescents' hard drug use is more strongly influenced by perceptions of peer attitude.

Contrary to popular belief, peer pressure proved to be a somewhat weaker peer correlate of AOD involvement, suggesting that students may define pressure as a more overt, coercive process which is not directly experienced. At grade 10, the influence of peer pressure was of a similar magnitude to perceptions of peer approval for hard drug use, whereas at grade 12, peer pressure was found to be a very weak correlate.

Perception of availability was moderately related to use of the gateway drugs at grades 8 and 10, and to a much lesser extent at grade level 12 (with the exception of marijuana). While it was significantly associated with cocaine use at all three grade levels, the relationship was more pronounced at grade 10, suggesting that perception of ease in obtaining cocaine is more influential at the tenth grade. Perhaps heightened awareness of cocaine accessibility occurs at this grade level, thus contributing to its initiation.

Perception of risk was also studied as a cognitive factor believed to be related to knowledge of AOD effects. Given the small relationship between drug education experiences and AOD involvement found in this study, it was expected that risk would not be a strong correlate of drug use. Confirming this hypothesis, results indicated significant, albeit small associations. Perception of risk was more strongly related to use of cigarettes, beer, liquor, and cocaine with increasing grade level.

The drug education experiences proved to be relatively weak predictors, particularly at grade twelve. Small correlations

were found at the eighth grade level between drug use and having experienced drug education as part of a health course. At grade level ten, films, discussions, and "other school events" related to decreased use of cigarettes and beer, but again the contribution of these drug education experiences to the prediction of drug use was small. Similarly, the correlations between the drug information sources and drug use were very small, suggesting that primary sources of drug information have little influence on students use of alcohol and other drugs. It was noted, however, that teachers and printed media more frequently correlated with drug use, as compared to the other sources studied. Thus, when teachers and printed media were identified as primary drug information sources, decreased drug use was also found. Although the correlations were very small, this finding may suggest that with proper training, teachers could more effectively infuse drug information into their interpersonal and didactic interactions with students.

Consistent with previous findings, results from this study showed decreased drug use associated with higher grades. Regardless of the directionality of this relationship, the association does suggest that students' who are academically engaged are less likely to be involved with alcohol and other drugs. Consequently, academic at-risk students should be identified early with accompanying environmental changes designed to increase success in school. Feelings of self-worth inspired by academic success and supportive educators may well prevent drug initiation.

After-school vocation contributed little to the prediction of drug use behaviors. However, involvement with extracurricular activities was significantly related to decreased drug use. Although a strong linear relationship was not found, this association does suggest that involvement in extracurricular activities may discourage interest in using drugs through association with non-drug using peers and/or may mitigate the influence of cognitive motivations which activate drug use behaviors.

It would also appear that peer affiliation with drug-using friends and perceptions of peer approval may be functionally autonomous predictors of use, since previous analyses of this data found a small relationship between the two variables. Since perceptions of peer approval may operate independent of actual affiliation, other characteristics of peer relationships require further examination in an effort to identify peer characteristics which may be related to perceptions of drug use disapproval. Findings further indicated that peer pressure appeared to be a more influential factor in older adolescents' use of the harder drugs than it was for their gateway drug use or compared to eighth graders overall drug use. Accordingly, resistance skills training, particularly for these older adolescents, appears warranted as a prevention strategy for inclusion in school-based drug education curricula.

Perception of risk was also found to be more strongly associated with drug use, particularly cocaine, beer, and liquor for the tenth and twelfth graders. Knowledge of risk factors

appears important to retain in drug education curricula. However, traditional information dissemination approaches (e.g. school-based drug education programs) are not well supported in the literature, necessitating identification of alternative instructional approaches to communicate knowledge of AOD risks. Harnessing the prosocial influence of peers may represent the most effective means of communicating AOD risk effects, in conjunction with programming designed to strengthen students' ability to cope with social influences that may lead to substance use. For example, Botvin and Dusenburry (1992) have introduced Life Skills Training as an alternative to traditional information dissemination approaches.

In summary, knowledge of the multiple factors related to drug use, particularly gateway drug use, is essential to enable educational professionals to design and implement effective interventions. Implementation of approaches designed to increase resistance skills and promote prosocial peer involvement appears particularly promising. Previous research has shown that youth who feel confident expressing their opinions and who are able to set limits with their peers are less likely to use drugs. Educators would be well-advised to consistently provide opportunities for students to examine and verbalize their views concerning peer interactions as well as drug use. Findings from this study also suggest that helping adolescents identify and pursue positive interests and academic success is needed to combat the influence of the drug culture.

The range of contextual factors contributing to drug use is

further exemplified by previous findings showing that ineffective parenting contributes to drug use (Simons, Conger, & Whitbeck). Failure to provide proper supervision, reinforcement, and discipline are all ineffective parenting characteristics associated with increased probability of adolescent drug involvement. Consequently, empirical findings support the need to broaden the scope of present programs to (1) teach social and coping skills to youth, particularly younger adolescents and (2) to increase parents' nurturance, parenting skills, and range of coping strategies.

Equipped with knowledge of factors contributing to AOD use and strategies linked to empirically-based findings, school psychologists can be active participants in helping to plan and implement effective drug educational experiences for adolescents.

Table 1

Racial Characteristics of Sample

Race	Gr.8 (n=941)	Gr.10 (n=776)	Gr.12 (n=515)
White	73.4%	85.2%	87.4%
Black	12.6%	9.6%	7.6%
American Indian	10.5%	3.3%	2.3%
Oriental	1.4%	1.2%	1.4%
Mexican Americans	1.5%	.7%	1.2%
Latin American	.6%	.1%	.2%

Table 2

Predictors of Cigarette Use at Grades 8, 10 and 12

Variable	Gr.8 (n=933)	Gr.10 (n=765)	Gr. 12 (n=512)
Friends' Perceptions of Smoking Occasionally	-.296***	-.339***	-.390***
Friends' Perceptions of Smoking Regularly	-.336***	-.427***	-.473***
Friends' Use of First Cigarette	.361***	.374***	.383***
Friends' Use on a Daily Basis	.421***	.541***	.521***
Peer Pressure	.149***	.122***	---
Perception of Risk of First Cigarette	-.075*	---	---
Perception of Risk of Smoking Daily	-.125***	-.148***	-.250***
Perception of Availability	.215***	.085*	.100*
DRUG EDUCATION			
Included in Regular Class	---	-.07*	---
Part of Health Course	-.07*	---	---
Other School Events	---	-.08*	---
Teachers	-.09**	-.20***	---
Friends and Siblings	.08*	.13***	.09*
Parents	---	-.08*	---
Printed Materials	---	-.12***	-.12**
Radio & TV	---	-.13***	-.19***
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.25***	.31***	.22***
No Extra-Curricular Involvement	.20***	.24***	.28***
After School Job	---	---	-.14**

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 3

Predictors of Marijuana Use at Grades 8, 10 and 12

Variable	Gr.8 (n=936)	Gr.10 (n=766)	Gr. 12 (n=515)
Friends' Perceptions of Use Occasionally	-.314***	-.431***	-.487***
Friends' Perceptions of Use Regularly	.233***	-.420***	-.511***
Friends' Use	.400***	.500***	.486***
Peer Pressure	.200***	.200***	.122**
Perception of Availability	.213***	.321***	.300***
DRUG EDUCATION			
Part of Health Course	-.08*	---	---
Teachers	---	-.17***	-.12**
Friends and Siblings	---	---	.09*
Doctor	---	---	-.11*
Parents	---	-.09**	---
Other Family	---	-.07*	---
Printed Materials	---	-.12***	---
Radio and TV	---	-.11**	---
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.17***	.25***	.24***
No Extra-Curricular Involvement	.13***	.25***	.24***
After School Job	---	-.08*	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 4

Predictors of Beer Consumption at Grades 8, 10 and 12

Variable	Gr.8 (n=938)	Gr.10 (n=766)	Gr. 12 (n=515)
Friends' Perceptions of Regular Consumption	-.253***	-.332***	-.320***
Friends' Perceptions of Excessive Consumption	-.230***	-.300***	-.278***
Friends' Perceptions of Occasional Consumption	-.319***	-.435***	-.499***
Friends' Use	.444***	.540***	.479***
Peer Pressure	.177***	---	---
Perception of Risk	-.129***	-.241***	-.266***
Perception of Availability	.296***	.241***	---
DRUG EDUCATION			
Included in Regular Class	---	-.07*	---
Part of Health Course	-.07*	-.09**	---
Other School Events	---	-.11**	---
Teachers	-.14***	-.19***	---
Friends & Siblings	.15***	.13***	---
Parents	---	-.09**	---
Printed Materials	---	-.11**	-.09*
Radio & TV	---	---	-.09*
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.17***	.26***	.22***
No Extra-Curricular Involvement	.13***	.14***	---
After School Job	---	-.09**	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 5

Predictors of Wine Cooler Consumption for Grades 8, 10 and 12

Variable	Gr.8 (n=936)	Gr.10 (n=767)	Gr. 12 (n=515)
Friends' Perceptions of Regular Consumption	-.256 ***	-.242 ***	-.150 ***
Friends' Perceptions of Excessive Consumption	-.245 ***	-.230 ***	-.122 **
Friends' Perceptions of Occasional Consumption	-.300 ***	-.362 ***	-.368 ***
Friends' Use	.436 ***	.498 ***	.367 ***
Peer Pressure	.220 ***	.131 ***	---
Perception of Risk	-.179 ***	-.176 ***	-.132 **
Perception of Availability	.300 ***	.281 ***	.096 *
DRUG EDUCATION			
Part of Health Course	-.08**	---	---
Teachers	.12***	-.16***	-.16***
Friends & Siblings	.11***	.12***	.09*
Parents	---	-.07*	---
Printed Materials	---	-.13***	---
Radio & TV	---	---	-.09*
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.14***	.19***	---
No Extra-Curricular Involvement	---	.10**	---
After School Job	---	-.08*	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 6

Predictors of Liquor Consumption for Grades 8, 10 and 12

Variable	Gr.8 (n=933)	Gr.10 (n=765)	Gr. 12 (n=515)
Friends' Perceptions of Regular Consumption	-.221 ***	-.312 ***	-.249 ***
Friends' Perceptions of Excessive Consumption	-.219 ***	-.281 ***	-.212 ***
Friends' Perceptions of Occasional Consumption	-.268 ***	-.398 ***	-.425 ***
Friends' Use	.451 ***	.556 ***	.426 ***
Peer Pressure	.222 ***	---	-.089 **
Perception of Risk	-.168 ***	-.247 ***	-.256 ***
Perception of Availability	.283 ***	.139 **	.139 **
DRUG EDUCATION			
Part of Health Course	-.10**	-.10**	---
Teachers	-.11***	.16***	---
Friends & Siblings	.09**	.12***	.11**
Parents	---	.13***	---
Printed Materials	---	-.09**	-.14***
Radio & TV	---	---	-.13**
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.13***	.20***	.14***
No Extra-Curricular Involvement	---	.10**	.11**

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 7

Predictors of Steroid Use at Grades 8, 10 and 12

Variable	Gr.8 (n=937)	Gr.10 (n=767)	Gr. 12 (n=514)
Friends' Perceptions of Use Occasionally	---	---	---
Friends' Perceptions of Use Regularly	-.084 *	---	---
Friends' Use	.324 ***	.446 ***	.285 ***
Peer Pressure	.133 ***	.323 ***	---
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Part of Health Course	-.08**	---	---
Friends & Siblings	---	.14***	---
Doctor	---	.16***	---
Other Family	---	.16***	.10*
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.07*	.09**	.14**
No Extra-Curricular Involvement	.09**	---	---
After School Job	---	-.07*	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 8

Predictors of Inhalant Use at Grades 8, 10 and 12

Variable	Gr.8 (n=938)	Gr.10 (n=765)	Gr. 12 (n=514)
Friends' Perceptions of Use Occasionally	-.180***	-.206***	-.215***
Friends' Perceptions of Use Regularly	-.146***	-.245***	-.242***
Friends' Use	.422***	.516***	.305***
Peer Pressure	.119***	.203***	---
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Teachers	---	-.15***	---
Parents	-.07*	-.13***	---
Printed Materials	-.08*	-.14***	---
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.08*	.09**	---
No Extra-Curricular Involement	---	---	.12**
After School Job	---	---	.11*

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 9

Predictors of LSD Use at Grades 8, 10 and 12

Variable	Gr.8 (n=935)	Gr.10 (n=766)	Gr. 12 (n=515)
Friends' Perceptions of Use Occasionally	-.146 ***	-.259 ***	-.378 ***
Friends' Perceptions of Use Regularly	-.155 ***	-.305 ***	-.308 ***
Friends' Use	.446 ***	.621 ***	.432 ***
Peer Pressure	.169 ***	.255 ***	---
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Part of Health Course	-.09**	-.08*	-.10*
Other School Events	---	---	-.10*
Teachers	---	-.13***	---
Friends & Siblings	---	.09**	.10*
Parents	---	-.11**	-.11**
Other Family	---	---	-.11**
Printed Materials	-.09**	-.15***	---
Radio & TV	---	-.08*	-.09*
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.07*	.17***	.17***
No Extra-curricular Involvement	.11***	.09**	.23***

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 10

Predictors of Hallucinogen Use at Grades 8, 10 and 12

Variable	Gr.8 (n=938)	Gr.10 (n=764)	Gr. 12 (n=514)
Friends' Perceptions of Use Occasionally	-.136 ***	-.196 ***	-.324 ***
Friends' Perceptions of Use Regularly	-.141 ***	-.194 ***	-.250 ***
Friends' Use	.393 ***	.517 ***	.364 ***
Peer Pressure	.223 ***	.244 ***	---
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Part of Health Course	-.10**	---	---
Teachers	-.09**	---	---
Friends & Siblings	---	.08*	.10*
Doctor	---	.09**	---
Printed Materials	---	-.08**	---
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	---	.15***	.17***
No Extra-Curricular Involvement	.08**	.07*	.20***
After School Job	.15***	---	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 11

Predictors of Powder Cocaine Use at Grades 8, 10 and 12

Variable	Gr.8 (n=937)	Gr.10 (n=767)	Gr. 12 (n=515)
Friends' Perceptions of Use Occasionally	-.093 **	-.109 **	-.178 ***
Friends' Perceptions of Use Regularly	-.099 **	-.164 ***	-.200 ***
Friends' Use	.300 ***	.665 ***	.426 ***
Peer Pressure	.153 ***	.337 ***	---
Perception of Risk	-.093 **	-.222 ***	-.321 ***
Perception of Availability	.078 *	.190 ***	.153 ***
DRUG EDUCATION			
Part of Health Course	-.09**	---	---
Teachers	-.07*	---	---
Friends & Siblings	---	.16***	---
Doctor	---	.08*	---
Other Family	---	.10**	---
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.08**	.11**	.13**
After School Job	.08*	---	.09*

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 12

Predictors of Amphetamine Use at Grades 8, 10 and 12

Variable	Gr.8 (n=938)	Gr.10 (n=747)	Gr. 12 (n=515)
Friends' Perceptions of Use Occasionally	-.252 ***	-.238 ***	-.316 ***
Friends' Perceptions of Use Regularly	-.202 ***	-.219 ***	-.258 ***
Friends' Use	.422 ***	.612 ***	.474 ***
Peer Pressure	.190 ***	.218 ***	.122 **
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Part of Health Course	-.10**	-.09**	---
Teachers	-.08**	-.09**	---
Friends & Siblings	---	.11**	---
Printed Materials	-.08**	-.15***	---
Radio & TV	---	-.09*	-.12**
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.15***	.20***	.17***
No Extra-Curricular Involvement	.11***	.12***	.17***

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 13

Predictors of Tranquilizer Use at Grades 8, 10 and 12

Variable	Gr.8 (n=937)	Gr.10 (n=766)	Gr. 12 (n=514)
Friends' Perceptions of Use Occasionally	-.107 ***	-.119 ***	-.178 ***
Friends' Perceptions of Use Regularly	-.122 ***	-.202 ***	-.111 *
Friends' Use	.337 ***	.561 ***	.318 ***
Peer Pressure	.226 ***	.256 ***	---
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Part of Health Course	-.12***	---	---
Teachers	-.11***	-.11**	---
Friends & Siblings	---	.16***	---
Radio & TV	---	---	-.14**
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.09**	.07*	---
No Extra-Curricular Involvement	.07*	---	.14***
After School Job	.11***	---	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 14

Predictors of Other Narcotic Use at Grades 8, 10 and 12

Variable	Gr.8 (n=938)	Gr.10 (n=766)	Gr. 12 (n=515)
Friends' Perceptions of Use Occasionally	-.090 **	-.166 ***	-.290 ***
Friends' Perceptions of Use Regularly	-.092 **	-.196 ***	-.256 ***
Friends' Use	.388 ***	.614 ***	.450 ***
Peer Pressure	.137 ***	.266 ***	---
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Included in Regular Class	-.09**	---	---
Part of Health Course	-.12***	---	---
Other School Events	---	---	-.09*
Teachers	-.09**	-.09**	---
Friends & Siblings	---	.15***	---
Parents	-.08**	---	---
Printed Materials	---	-.07*	-.14***
Radio & TV	---	---	-.11*
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	---	.11**	.14**
No Extra-Curricular Involvement	.07*	---	.17***

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 15

Predictors of Heroin Use at Grades 8, 10 and 12

Variable	Gr.8 (n=937)	Gr.10 (n=766)	Gr. 12 (n=514)
Friends' Perceptions of Use Occasionally	---	-.099 **	-.132 **
Friends' Perceptions of Use Regularly	-.100 **	-.192 ***	-.168 ***
Friends' Use	.331 ***	.570 ***	.203 ***
Peer Pressure	.186 ***	.331 ***	---
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Included in Regular Class	---	---	-.10*
Part of Health Course	-.08**	---	---
Friends & Siblings	---	.13***	---
Other Family	---	---	.09*
Printed Materials	---	-.08*	---
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.09**	.09**	---
No Extra-Curricular Involvement	.10**	---	---
After School Job	.11***	---	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 16

Predictors of "Crack" Cocaine Use at Grades 8, 10 and 12

Variable	Gr.8 (n=937)	Gr.10 (n=767)	Gr. 12 (n=515)
Friends' Perceptions of Use Occasionally	-.118 ***	-.082 *	-.130 **
Friends' Perceptions of Use Regularly	-.135 ***	-.089 *	-.160 ***
Friends' Use	.330 ***	.538 ***	.376 ***
Peer Pressure	.152 ***	.323 ***	---
Perception of Risk	-.133 ***	-.228 ***	-.266 ***
Perception of Availability	.074 *	.215 ***	.119 **
DRUG EDUCATION			
Part of Health Course	-.08*	-.10**	---
Friends & Siblings	---	.14***	---
Doctor	---	.16***	---
Other Family	---	.17***	.11**
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.08*	.12***	---
No Extra-Curricular Involvement	.09**	---	---
After School Job	.09**	---	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

Table 17

Predictors of Barbiturate Use at Grades 8, 10 and 12

Variable	Gr.8 (n=938)	Gr.10 (n=767)	Gr. 12 (n=515)
Friends' Perceptions of Use Occasionally	-.156***	-.206***	-.228***
Friends' Perceptions of Use Regularly	-.165***	-.221***	-.172***
Friends' Use	.383***	.570***	.239***
Peer Pressure	.225***	.221***	---
Perception of Risk	---	---	---
Perception of Availability	---	---	---
DRUG EDUCATION			
Part of Health Course	-.11***	---	---
Teachers	-.06*	-.07*	---
Friends & Siblings	---	.11**	---
Doctor	---	.08*	---
Radio & TV	---	-.08*	---
PRODUCTIVE INVOLVEMENTS			
Lower Average Grades	.09**	.12***	.09*
No Extra-Curricular Involvement	.12***	---	.14**
After School Job	.13***	---	---

*p ≤ .05
**p ≤ .01
***p ≤ .001

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