

Alcohol and Illicit Drug Use Problems in American Indian Youth: Multiple and Interactive Determinants, and Their Implications

ManSoo Yu, Ph.D.
Washington University in St. Louis
St. Louis, Missouri

Statement of the Research Problem

It is well documented that alcohol and illicit drug use problems are a critical issue among American Indian youth. Compared with adolescents of other American ethnic groups, American Indians consume more alcohol and have higher rates of any illicit drug use (Senate Report. 108-075, 2003; U.S. Department of Health and Human Services [USDHHS], 2003). It is not surprising that they suffer more severe health problems (including death) and social consequences (including sexually transmitted diseases) (American Indian Health Council [AIHC], 1997; Beauvais, 1998; USDHHS, 2003).

Given that American Indian adolescents have higher rates of alcohol and illicit drug use problems than other ethnic groups this study is to examine direct and interactive associations of multiple determinants of alcohol and illicit drug use problems (personal, familial, social and cultural determinants). There are few studies on the integration of the multiple domains to examine determinants of adolescent alcohol and illicit drug use problems. Through identifying interactive as well as direct associations, it helps practitioners establish specific and effective intervention/prevention strategies for adolescents with such problems.

Research Background and Hypotheses

In order to construct a conceptual model for identifying multiple determinants of alcohol and illicit drug use problems and their interactive associations, this study merged three theories. Jessor and Jessor's problem behavior theory (1977) was applied to test if engaging in personal problems (psychiatric disorders) and negative environment increases the likelihood of alcohol and illicit drug use problems. Bronfenbrenner's ecological model (1979) was used to examine how multiple environments (familial, social and cultural) and their interrelations are associated with adolescent problems. Lastly, Hawkins and Weis's social development model (1985) was employed to investigate if resiliency factors (i.e., positive familial and cultural environments) moderate the impacts of psychiatric disorders or negative environmental factors on alcohol and illicit drug use problems (see Figure 1).

Under the conceptual framework, this study specifies multiple potential determinants of adolescent alcohol and illicit drug use problems by reviewing previous studies. Psychiatric disorders (predominantly, disruptive behavior disorders and mood disorders) (AIHC, 1997; Gray & Nye, 2001; Kunitz et al., 1999), problematic familial environment (predominantly, addicted family members) (Harrier, Lambert, & Ramos, 2001; Hurdle, Okamoto, & Miles, 2003; Yu, Stiffman, & Freedenthal, 2005), and negative social environment (predominantly, negative school and neighborhood problems, and misbehaving peers) (Bates, Beauvais, & Trimble, 1997; Rutter, 1981; Scheier, Miller, Ifill-Williams, & Botvin, 2001; USDHHS, 2001; Yu et al., 2005) are related to adolescent substance use problems. On the other hand, positive environments (predominantly, positive parent-adolescent relations, cultural pride, and religious affiliation) may protect against such problems (Albaugh, 1974; Ellickson, Collins, & Bell, 1999; Kulis, Napoli, & Marsiglia, 2002).

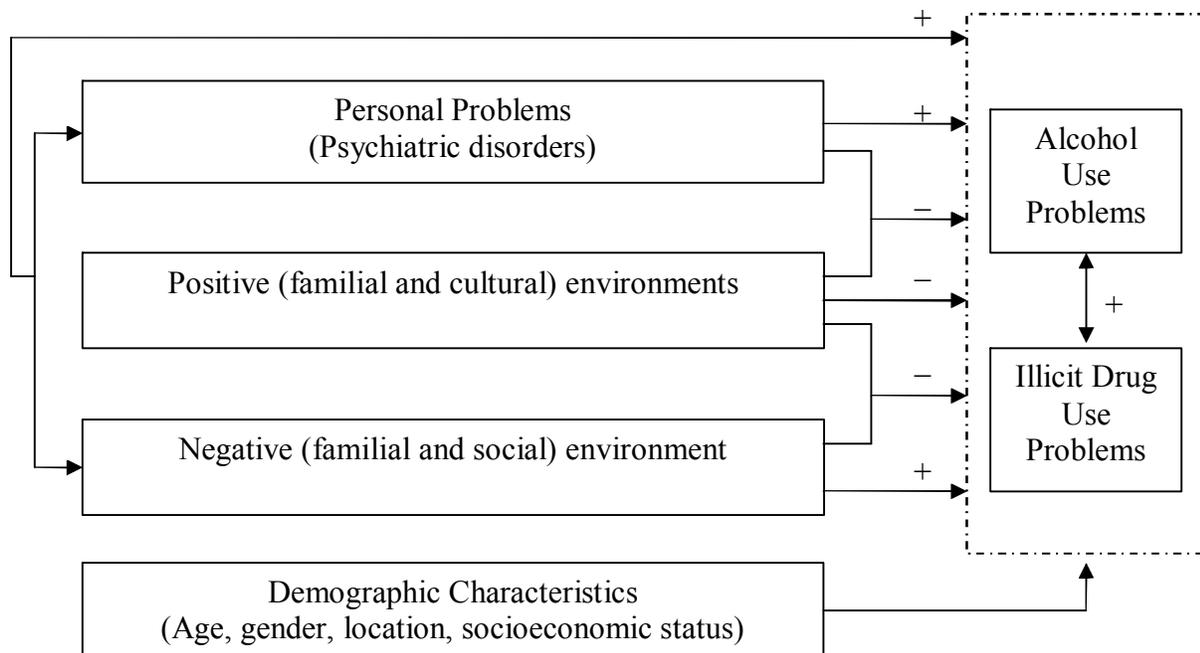


Fig. 1 A conceptual framework for testing direct and moderating associations of psychiatric disorders, positive environment, and negative environment in predicting adolescent alcohol and illicit drug use problems.

The purpose of this dissertation study is twofold. 1) Cross-sectional models examine direct and interactive associations of psychiatric disorders, positive familial and cultural environments, and negative familial and social environments in predicting adolescent alcohol and illicit drug use problems. It presumes that psychiatric disorders and negative familial and social environments are positively related to alcohol and illicit drug use problems while positive familial and cultural environments are negatively related to such problems. 2) Longitudinal models using two waves of the data test direct and moderating associations of early alcohol and illicit drug use problems, early/late psychiatric disorders, and later positive and negative environments in predicting later

alcohol and illicit drug use problems. In doing this, the models also test roles of early and later psychiatric disorders, and later environments in moderating the effects of early alcohol and illicit drug use problems on later alcohol and illicit drug use problems. It hypothesizes that early and later psychiatric disorders, and later negative environments will positively moderate the effects of early alcohol and illicit drug use problems on later alcohol and illicit drug use problems. On the other hand, positive environmental factors will negatively moderate the effects of early problems on later problems.

Methodology

This study is part of the presenter's dissertation study, entitled 'Alcohol and Illicit Drug Use Problems in American Indian Youth: Multiple, interactive and joint determinants, and their implications.' The dissertation research is based on a secondary analysis of a NIDA-funded study (R01 DA13227-01), American Indian Multisector Help Inquiry (AIM-HI), designed to research mental health and substance abuse service needs in one reservation and one urban American Indian populations, over a 4-year period. The presenter's dissertation chair, Arlene Rubin Stiffman, Ph.D., is the principal investigator of the AIM-HI project.

Subjects

A sample of 401 American Indian adolescents (205 reservation and 196 urban youths), aged 13 to 19 years living in Southwestern areas in 2001 and 341 adolescents (186 reservation and 155 urban youths) from the subjects in 2004 was interviewed in person with an 85% retention rate through a two-stage method. Institutional Review Boards at Washington University, the tribal council and the school district reviewed, shaped, and approved all consent and protection procedures. Full details of sampling and interview procedures were published elsewhere (Stiffman et al., 2003; Yu et al., 2005). Urban youths had significantly older by about 9 months on average in 2001 than reservation youths (16 years old vs. 15.3 years old). Family members of urban youths had significantly higher socioeconomic status in both waves. There is no significant difference in gender between the two locations.

Measures

The National Institute Mental Health's Diagnostic Interview Schedule (DIS, Robins & Helzer, 1994) was used to measure alcohol and illicit drug use disorders, and psychiatric disorders (i.e., conduct disorder and depression disorder). The DIS section allows symptom counts as well as diagnoses based on algorithms. This study utilizes symptom counts of alcohol and illicit drug abuse/dependence, conduct disorder (measured in 2001 only), and depression disorder, rather than diagnoses of such disorders to use multiple linear regression. Linear regression has more power than logistic regression that requires categorical variables as dependent variables (e.g., diagnoses) as linear regression has fewer Type II errors than logistic regression (Garson, 1998; Morrow-Howell & Proctor, 1992).

Problematic familial environment (addicted family members) and negative social environment (negative neighborhood and school environments, and misbehaving peers)

were assessed with adaptation of existing measures with established reliability and validity (Hadley-Ives, Stiffman, Elze, Johnson, & Dore, 2000; Stiffman, 1989a, 1989b; Stiffman, Hadley-Ives, Elze, Johnson, & Dore, 1999). Positive parent-adolescent relations were assessed using the Family Satisfaction scale (Hudson, 1982).

Cultural pride was assessed by asking three questions: "How proud are you of your American Indian ancestry?" "How important is being spiritual to you?" "Do you feel spiritual values are a part of your life?" (Cronbach $\alpha = 0.73$). Religious affiliation was measured by asking if adolescents belonged to or were involved with an organized religious group or church. Two types of cultural activity: spiritual and generic cultural activities were assessed as determined by factor analysis using maximum likelihood extraction with promax rotation. The items that loaded on the spiritual factor were sweats, naming ceremonies, talking circles, and spiritual running (Cronbach $\alpha = 0.76$). The generic cultural factor was composed of four items: memorials/ feasts, Powwows/dances, giveaways and religious celebrations (Cronbach $\alpha = 0.75$).

Socioeconomic status was determined by the job of the person who was the main financial supporter of their current family (Hollingshead, 1975).

Statistical Analysis

All analyses were completed using SAS 9.1 (SAS Institute Inc., 2006). Multiple linear regression analyses were utilized to test cross-sectional and longitudinal models that predict alcohol and illicit drug abuse/dependence symptoms. The regression analyses with interaction terms were used to test if there are moderating associations of the multiple determinants. SAS PROC SURVEYREG as well as PROC REG was used to yield correct t and p values and standard errors because the data was derived from a sample originally overselected for problem behaviors and then weighted to confirm to population norms (see Stiffman et al., 2003; Yu et al., 2005 for details). Variance inflation factors were calculated to estimate multicollinearity. PROC RANK with *normal=bloom* combined with PROC UNIVARITE PLOT was utilized to assess normality.

Results

The study revealed that the subjects reported 2.2 alcohol abuse/dependence symptoms and 4.8 illicit drug abuse/dependence symptoms on average in 2001, and 2.1 alcohol symptoms and 3.6 illicit drug symptoms on average in 2004. The reservation youths reported significantly more symptoms of alcohol and illicit drugs than urban youths in 2001 (Alcohol symptoms, 3.0 vs. 1.4; illicit drug symptoms, 6.1 vs. 3.4), but not 2004.

Cross-sectional findings revealed that, controlling for location (reservation vs. urban), the point of data collection and socioeconomic status, conduct disorder symptoms, depression disorder symptoms, addicted family members, misbehaving peers and generic cultural activities were positive determinants of alcohol and illicit drug symptoms whereas religious participation was a negative determinant of both symptoms. Negative neighborhood environment was a unique determinant of illicit drug symptoms. With

regard to moderating effects, religious participation negatively moderated the effect of conduct disorder symptoms on alcohol and illicit drug symptoms. In addition, religious affiliation negatively interacted with peer misbehaviors in predicting alcohol symptoms. More moderating roles were found in determining alcohol symptoms. There were positive moderating associations of psychiatric disruptive and mood disorder symptoms, addicted family members, and misbehaving peers in predicting alcohol symptoms. In addition, depression disorder symptoms positively moderated the effects of conduct disorder symptoms and addicted family members on illicit drug symptoms (For more details about the cross-sectional findings, see Table 1).

Longitudinal findings revealed that, of the cross-sectional determinants, later depression disorder symptoms, later addicted family members and misbehaving peers were positively related to later alcohol and illicit drug symptoms after controlling for demographics. Early conduct disorder symptoms and alcohol symptoms were determinants of later alcohol symptoms only, while, similar to the cross-sectional findings, later negative neighborhood influences (as well as early illicit drug symptoms) uniquely predicted later illicit drug symptoms. Regarding roles of the multiple determinants in moderating early alcohol and illicit drug symptoms on later symptoms, for reservation youths, addicted family members and misbehaving peers positively moderated the effects of early alcohol symptoms on later alcohol symptoms. For urban youths, later depression increased the impact of early alcohol symptoms on later alcohol symptoms. No cross influences of early and later alcohol and illicit drug symptoms were found (For more details about the longitudinal findings, see Table 2).

Utility for Social Work Practice

This study suggests that intervention and prevention efforts for adolescents with alcohol and illicit drug use problems may benefit from considering the personal, familial, social and cultural factors simultaneously because the multiple determinants are interrelated in predicting such problems. From findings of cross-sectional analyses, of those youths who had psychiatric disorders, youths with negative environmental influences are more likely to have alcohol and illicit drug symptoms than youths without. From findings of longitudinal analyses, negative personal and environmental determinants exacerbate the effects of early substance use problems on later problems.

In designing intervention/prevention programs, as a preliminary step, it is important to assess alcohol and illicit drug use problems as early as possible in that the findings revealed that early alcohol and illicit drug symptoms were significantly related to later symptoms, respectively. It may be effective to American Indian youths who initiate the use of alcohol and illicit drugs earlier than the general population (Schinke, Orlandi, Botvin, Gilchrist, & Locklear, 1988).

The assessment of the multiple determinants is also critical for youths with alcohol and illicit drug use problems. Those youths with such problems should be assessed for psychiatric disorders such as disruptive and mood disorders (particularly, conduct disorder and depression). Importantly, practitioners should evaluate the presence of psychiatric disorders if youths have negative environmental influences. Certainly, practitioners should evaluate positive and negative familial, social and cultural

environments. Particularly, as the findings indicating that addicted family members and misbehaving peers are important risk factors associated with alcohol and illicit drug use problems, practitioners should consider how to keep youths from the poor familial and social environments. Conversely, positive familial environment (e.g., appropriate parenting) may reduce or delay use of alcohol and illicit drugs. Compared to other ethnic groups, American Indians may have more family influences (Cross, 1986). Regarding the effects of peers on adolescent substance use problems, practitioners may consider how adolescents develop skills to prevent them from close friend's drinking and drug use problems. The programs, for example, may include how to increase awareness of the negative effects of misbehaving peers on alcohol and illicit drug use by sharing thoughts and feelings in pros and cons of alcohol and drug use. Lastly, the impact of negative neighborhood environment on adolescent illicit drug use problems should be evaluated on its own as an important part of environmental risk factors affecting illicit drug use problems. Optimal adolescent development is not possible in problematic neighborhood environments.

More unique to this study is the inclusion of the cultural domain, while using the merged theory on an American Indian population. In particular, the study revealed that referring youths with alcohol and illicit drug use problems to American Indian cultural activities as a common intervention step may not have the expected effect. Focus group meetings with American Indian college students explained that events such as Powwows (even though alcohol and drug free) were regularly followed by the "49's," which is an informal social gathering involving the use of alcohol and illicit drugs. However, religious affiliation contributed variance to fewer alcohol and illicit drug use problems, and, more importantly, it reduced the impacts of psychiatric disorders, and the negative familial and social environments on youth's alcohol and illicit drug use problems. Promoting religious affiliation, particularly in the presence of mental health problems, and problematic peers and family situations, youths may reduce or delay involvement and, consequently, prevent problems.

Conclusion

Adolescence is a key developmental stage during which risky health behaviors are initiated, so it is key time for intervention and prevention efforts. The study expands understanding of risk and resiliency factors associated with adolescent alcohol and illicit drug use problems by providing knowledge about complex as well as direct associations of the multiple (personal, familial, social and cultural) determinants of such problems. The findings support the merged theory by specifying particular aspects of each theory. The study extends problem behavior theory by specifying a cluster of problem behaviors (e.g., the interactive association of personal and environmental problem behaviors in predicting alcohol and illicit drug use problems). It also builds on the ecological approach by identifying moderating associations of familial, social and cultural environments in predicting alcohol and illicit drug use problems. Lastly, the study extends the social development model by identifying the moderating role of cultural environment between personal disorders and environmental problems, and adolescent problems.

Future research needs to test the multiple and interactive determinants of alcohol and illicit drug use problems using different tribes and other racial/ethnic groups to strengthen generalizability. Future studies also need to collect multiple waves of data so that researchers can examine various trajectories or developmental progression of adolescent alcohol and illicit drug use problems and what determinants influence the trajectories or progression of such problems over time. Lastly, they should consider additional potential determinants (e.g., parent monitoring/discipline, and attitudes toward alcohol and illicit drug use) in seeking to further clarify other sources of the problems associated with alcohol and illicit drug use problems.

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Table 1

Summary of cross-sectional multivariate significant findings of alcohol and illicit drug abuse/dependence symptoms

	Reservation area		Urban area		Combined reservation and urban areas	
	2001	2004	2001	2004	2001	2004
Alcohol and illicit drug abuse/dependence symptoms (SX)	Conduct disorder SX Misbehaving peers	Addicted family members Misbehaving peers	Conduct disorder SX Misbehaving peers Generic cultural activities	Depression SX Misbehaving peers	Conduct disorder SX Misbehaving peers	Age Depression SX Misbehaving peers
Alcohol abuse/dependence SX only	Depression SX Religious participation (INTERACTIONS) Conduct disorder SX* Religious participation Misbehaving peers influences* Religious participation	Age	SES (INTERACTIONS) Conduct disorder SX* Generic cultural activities Conduct disorder SX* Misbehaving peers	Age (INTERACTIONS) Depression SX* Misbehaving peers	SES Religious participation (INTERACTIONS) Conduct disorder SX* Religious participation Misbehaving peers* Religious participation	Addicted family members (INTERACTIONS) Depression SX* Misbehaving peers Addicted family members* Misbehaving peers
Illicit drug abuse/dependence SX only	Addicted family members		Depression SX Religious participation (INTERACTIONS) Conduct disorder SX* Depression SX Conduct disorder SX* Religious participation		Depression SX Addicted family members (INTERACTIONS) Depression SX* Addicted family members	Negative neighborhood environment

* All independent, moderating, and mediating effects were significant at $p < .05$

Table 2

Summary of longitudinal multivariate significant findings of later alcohol and illicit drug abuse/dependence symptoms

	Reservation area	Urban area	Combined reservation and urban areas
Later alcohol and illicit drug abuse/dependence SX	Later addicted family members Later misbehaving peers	Later misbehaving peers	Later depression SX Later misbehaving peers
Later alcohol abuse/dependence SX only	Early alcohol abuse/dependence symptoms (INTERACTIONS) Early alcohol abuse/dependence symptoms* Later addicted family members Early alcohol abuse/dependence symptoms* Later misbehaving peers	Age Early conduct disorder symptoms Early alcohol abuse/dependence symptoms Later depression symptoms (INTERACTIONS) Early alcohol abuse/dependence symptoms* Later depression symptoms	Age Location Early conduct disorder symptoms Early alcohol abuse/dependence symptoms Later addicted family members (INTERACTIONS) Early conduct disorder symptoms* Later depression symptoms
Later illicit drug abuse/dependence SX only		Early illicit drug abuse/dependence symptoms	Early illicit drug abuse/dependence symptoms Later negative neighborhood environment (INTERACTIONS) Early illicit drug abuse/dependence symptoms* Later addicted family members

* All independent and moderating effects were significant at $p < .05$