Published in final edited form as:

Addict Behav. 2007 October ; 32(10): 2253–2259.

Culture and Environment as Predictors of Alcohol Abuse/ Dependence Symptoms In American Indian Youths

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Abstract

This study utilizes Bronfenbrenner's ecological model (1979) to examine multiple and interactive environmental (familial, social, and cultural) predictors of adolescent alcohol abuse/dependence symptoms. A stratified random sample of 401 American Indian youths was interviewed in 2001. The findings showed that family members' substance problems, peer misbehaviors, and participation in generic cultural activities positively predicted adolescent alcohol symptoms. Conversely, cultural pride/spirituality predicted fewer alcohol symptoms, and, importantly, religious affiliation moderated the effects of problematic peers and family members on adolescent alcohol symptoms. The findings suggest further study of intervention and prevention efforts regarding the benefits from consideration of the complex relationships among multiple environmental variables.

Keywords

Alcohol abuse/dependence symptoms; religious affiliation; family members' substance problems; peer misbehaviors; American Indian culture

1. Introduction

Compared with adolescents of other American ethnic groups, American Indians consume more alcohol and suffer more severe health problems (including chronic liver disease and cirrhosis death) and social consequences (including sexually transmitted diseases) (Beauvais, 1998; USDHHS, 2003). Prior research indicates that poor familial and social environments (mainly, addicted family members and misbehaving peers) are positively related to adolescent substance involvement (USDHHS, 2001; Yu et al., 2005). On the other hand, cultural environment may protect against adolescent substance problems (Herman-Stahl et al., 2003).

Using Bronfenbrenner (1979)'s ecological approach indicating that the developing person is embedded in a variety of environmental contexts that interact with one another, this study examines multiple and interactive environmental (familial, social, and cultural) predictors of adolescent alcohol problems. In particular, we test the moderating effects of cultural environments on the relationships between poor familial and social environments, and alcohol

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problems in a sample of American Indian youths. There are few studies on the integration of cultural variables associated with American Indian adolescent alcohol problems. This paper helps provide information for specific intervention and prevention plans for adolescents with such problems.

2. Methods

2.1. Subjects

As part of a NIDA-funded study designed to research the mental health and substance abuse service needs of American Indian youths, a sample of 401 youths (205 reservation and 196 urban youths) was interviewed in person through a two-stage method in 2001. Full details of sampling and interview procedures were published elsewhere (Stiffman et al, 2003; Yu et al., 2005). Family members of urban youths had significantly higher socioeconomic status ($p < .0001$). Urban youths were significantly older by about 9 months on average (16.0 vs. 15.3 years old, range = 13–19, $p < .0001$). There was no significant difference in gender between two locations.

2.2. Measures

The National Institute of Mental Health's Diagnostic Interview Schedule was used to measure alcohol abuse/dependence diagnoses and symptoms (Robins & Helzer, 1994). Onset age of alcohol use was determined by the age when youths first had a drink (a glass of wine, a can/bottle of beer, or a shot of hard liquor) at least once a month for 6 months in a row. Family members' substance problems were evaluated by asking two questions: if adolescent parents, brothers, and/or sisters have ever had 1) a drinking problem and 2) a drug problem. Peer misbehaviors were assessed by asking how many of the youth's friends had trouble with the police/juvenile officers; had/fathered babies; used alcohol, tobacco, or other drugs; were both unemployed and out of school; sold drugs; or belonged to a gang in their life (Cronbach $\alpha = 0.84$) (Stiffman et al., 1999). Cultural pride/spirituality 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).

2.3. Statistical Analysis

All analyses were completed using SAS 9.1 (SAS Institute Inc., 2006). PROC SURVEYREG and PROC SURVEYFREQ were used to yield correct t, F 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).

3. Results

3.1. Extent of Alcohol Use

Reservation youths initiated alcohol use significantly earlier by about 11 months on average (13.4[2.6] vs. 14.3[2.1], $t = 2.45$, $df = 107$, $p = .0160$). During the lifetime period of drinking the most, one fifth (20%) of the youth drank alcohol almost every week; over one eighth (12%) drank alcohol about half the weeks in a year; one fifth (22%) drank alcohol in at least one week a month; and approximately half (44%) drank alcohol less than one week a month. Rates for drinking in the past 12 months were substantially similar to those for the period of drinking the most (See Table 1).

3.2. Prevalence of Alcohol Abuse/Dependence Symptoms

Reservation youths reported significantly more lifetime alcohol abuse/dependence symptoms than urban youths (3.0[6.5], range = 0–24 vs. 1.4[4.1], range = 0–22, $t = 4.13$, $df = 399$, $p < .0001$). In parallel, reservation youths had double the rates of lifetime alcohol abuse/dependence than urban youths (16.1% vs. 7.2%, $\chi^2 = 10.88$, $df = 1$, $p = .0007$).

3.3. Multiple and Interactive Predictors of Alcohol Abuse/Dependence Symptoms

Multiple and interactive predictors of adolescent alcohol abuse/dependence symptoms were explored using regression models without and then with interaction terms. Logarithmic transformations were performed on alcohol symptoms to improve normality (Tabachnick & Fidell, 2001).

Model 1 ($F(8,320) = 21.93$, $p < .0001$), containing no interactions, explained 36% of the variance in adolescent alcohol symptoms. Lower socioeconomic status of family members was related to more alcohol symptoms. After controlling for other demographics (i.e., age and location), family members' substance problems, peer misbehaviors, and participation in generic cultural activities were positively associated with alcohol symptoms, while cultural pride/spirituality and religious affiliation were negatively associated with such symptoms.

The other two models explored interaction effects. The total variance explained once an interaction term was introduced increased by only one percent. Model 2 ($F(9,319) = 20.79$, $p < .0001$, $R^2 = .37$) revealed that, for youths with many peer misbehaviors (dichotomized in median = 10, range = 0–36), belonging to an organized religious group reduced alcohol symptoms (see Fig. 1 for an illustration of the interaction). Similar to Model 2, Model 3 ($F(9,319) = 20.01$, $p < .0001$, $R^2 = .37$) showed that, for adolescents with more family members who had substance problems (dichotomized in median = 1, range = 0–2), religious attendance reduced alcohol symptoms (see Fig. 2 for an illustration).

4. Discussion

The study found that reservation youths had significantly higher rates of alcohol abuse/dependence diagnoses and symptoms, and initiated alcohol use significantly earlier than urban youths. The multivariate analyses revealed that, after controlling for adolescent demographics (i.e., location, age, and socioeconomic status), family members with addiction problems and misbehaving peers positively predicted adolescent alcohol symptoms. Largely, the results are parallel to research on non-Indian adolescents (USDHHS, 2001).

Unique to this study is the inclusion of the cultural domain while using Bronfenbrenner's model (1979) on an American Indian population. Our study revealed that referring youths with alcohol problems to generic cultural activities as a common intervention step may not have the expected positive effect. Focus group meetings with American Indian college students explained that

events such as Powwows (even though alcohol free) were regularly followed by the “49’s,” which is an informal social gathering involving drinking. In contrast, pride in being American Indian and religious affiliation were associated with fewer alcohol symptoms. Importantly, religious affiliation reduced the impacts of negative familial and social environments on youth’s alcohol symptoms. This has implications for further intervention/prevention strategies: promoting cultural pride/spirituality and religious affiliation, particularly in the presence of problematic peers and family situations, adolescents may reduce alcohol involvement and, consequently, prevent problems.

In order to strengthen generalizability, future research needs to test the effects of the multiple and interactive environments on alcohol problems using different tribes and ethnic/racial groups. In addition, the use of longitudinal studies will allow for causality and investigation of various trajectories of alcohol problems. For example, future studies should examine the patterns and predictors of the change over time using growth curve models. Yet, our study builds on O’Neill and Mitchell’s (1996) demonstration by specifying particular aspects of culture that might be pertinent for prevention plans for adolescent alcohol problems.

Acknowledgements

*This study is supported by NIMH K02 MH01797-01A1, NIDA R24DA13572-0, and R01 DA13227-01. The authors are grateful to Dr. Ed. Spitznagel for statistical guidance.

References

- Beauvais F. American Indians and alcohol. *Alcohol Health and Research World* 1998;22(4):253–259. [PubMed: 15706751]
- Bronfenbrenner, U. *The Ecology of Human Development*. Harvard University Press; Cambridge, MA: 1979.
- Herman-Stahl M, Spencer DL, Duncan JE. The implications of cultural orientation for substance use among American Indians. *Am Indian Alsk Native Ment Health Res* 2003;11(1):46–66. [PubMed: 12955631]
- Hollingshead, AB. *Four factor index of social status*. Wiley; New York: 1975.
- O’Neill TD, Mitchell CM. Alcohol use among American Indian adolescents: The role of culture in pathological drinking. *Social Science & Medicine* 1996;42(4):565–578. [PubMed: 8643981]
- Robins LN, Helzer JE. The half-life of a structured interview: The NIMH Diagnostic Interview Schedule (DIS). Special Issue: A ten-year retrospective on the NIMH Epidemiologic Catchment Area (ECA) Program. *International Journal of Methods in Psychiatric Research* 1994;4(2):95–102.
- SAS Institute Inc.. *Base SAS 9.1.3 Procedures Guide, Second Edition, Volumes 1,2,3, and 4*. Author; Cary, NC: 2006.
- Stiffman AR, Hadley-Ives E, Elze D, Johnson S, Dore P. Impact of environment on adolescent mental health and behavior: structural equation modeling. *Am J Orthopsychiatry* 1999;69(1):73–86. [PubMed: 9990438]
- Stiffman AR, Striley CW, Brown E, Limb G, Ostmann E. American Indian youth: Southwestern urban and reservation youth’s need for services and whom they turn to for help. *J Child Fam Studies* 2003;12:319–333.
- Tabachnick, BG.; Fidell, LS. *Using Multivariate Statistics*. 4th ed. A Pearson Education Company; Needham Heights, MA: 2001.
- USDHHS. Risk and protective factors for adolescent drug use: Findings from the 1997 National Household Survey on Drug Abuse. Office of Applied Studies: Substance Abuse and Mental Health Services Administration; Rockville, MD: 2001. A-12Analytic series:
- USDHHS. *The DASIS Report: American Indian/Alaska Native treatment admissions in rural and urban areas: 2000*. Office of Applied Studies, Substance Abuse and Mental Health Services Administration; 2003.

Yu M, Stiffman AR, Freedenthal S. Factors affecting American Indian adolescent tobacco use. *Addictive Behaviors* 2005;30(5):889–904. [PubMed: 15893087]

Fig. 1.
Role of religious affiliation in moderating the impact of misbehaving peers on alcohol abuse/dependence symptoms

Fig. 2.
Role of religious affiliation in moderating the impact of addicted family members on alcohol abuse/dependence symptoms

Table 1

Extent of alcohol use

	During the period of drinking the most (n=209) ^a %	During the past 12 months (n=83) ^b %
Almost every week (48–52 wks)	20.2	17.7
More weeks than not (30–47 wks)	1.7	2.0
About half the weeks (23–29 wks)	12.3	12.8
On a average, at least one week a month (12–22 wks)	21.9	31.9
Fewer weeks than that (1–11 wks)	43.8	35.8

Note: percentages were weighted; sample sizes were unweighted.

^a among those who consume more than six drinks in their life.

^b among those who consume more than five drinks a week in the past 12 months.

Table 2
Multiple regression models for predicting alcohol abuse/dependence symptoms in American Indian youths (N=329^a)

Variable	Model 1		Model 2		Model 3	
	b	t	b	t	b	t
Intercept	-1.00	-2.10 [*]	-1.19	-2.44 [*]	-1.06	-2.25 [*]
Higher age ^b	.06	1.91	.06	1.94	.06	1.97
Reservation (vs. urban) ^b	.11	1.30 [*]	.14	1.55 [*]	.12	1.38 [*]
Socioeconomic status	-.03	-2.44 [*]	-.03	-2.38 [*]	-.03	-2.19 [*]
Family members' substance problems	.14	2.38 [*]	.13	2.35 [*]	.20	2.71 ^{***}
Peer misbehaviors	.07	9.87 ^{***}	.08	10.20 ^{***}	.07	9.72 ^{***}
Religious affiliation	-.18	-2.22 [*]	.19	1.61	.02	.15
Generic cultural activities	.04	2.86 [*]	.04	2.74 ^{**}	.04	2.85 ^{**}
Cultural pride/spirituality	-.05	-2.15 [*]	-.04	-1.75	-.05	-2.30 [*]
Religious affiliation * Peer misbehaviors			-.04	-2.63 ^{**}		
Religious affiliation * Family members' substance problems					-.23	-2.11 [*]

Note: a. 35 adolescents who received American Indian healing or medicines were excluded in the models (Weighted N=465) b. age and location retained due to potential confounding

* $p < .05$

** $p < .01$

*** $p < .0001$