



Published in final edited form as:

Addict Behav. 1992 ; 17(2): 117–124.

SUBSTANCE USE AMONG HISPANIC AND NON-HISPANIC ADOLESCENTS

STEVEN SCHINKE

School of Social Work, Columbia University

MARIO ORLANDI and **DONATO VACCARO**

American Health Foundation

RENATO ESPINOZA and **ALFRED McALISTER**

School of Public Health, University of Texas — Houston

GILBERT BOTVIN

Department of Public Health, Cornell University Medical College

Abstract

This study compared lifetime prevalence data on substance use with demographic and psychosocial variables among 2,821 Hispanic and non-Hispanic white students from two Southwestern cities. Study findings revealed that ethnic-racial background factors were not the strongest predictors of substance use. Rather, when the analyses accounted for school grades and for maternal education, non-Hispanic youth had higher lifetime substance use rates than Hispanic youth. Study findings suggest that preventive intervention and treatment efforts for substance abuse problems among adolescents should consider sociodemographic risk factors as well as ethnic-racial factors.

INTRODUCTION

Much scientific knowledge exists on the prevalence and problems of substance abuse among American adolescents. Investigators have documented national rates of substance abuse among American youth (Johnston, O'Malley, & Bachman, 1987); measured the acquisition of substance use among youth (Elder, De Moor, Young, Wildey, Molgaard, Golbeck, Sallis, & Stern, 1990; Fleming, Leventhal, Glynn, & Ershler, 1989; Rather, 1990); tracked patterns of substance use from adolescence through early adulthood (Kandel & Logan, 1984); correlated substance abuse with adolescents' knowledge, attitudes, and behavioral patterns (Forney, Forney, & Ripley, 1988; Newcomb, Maddahian, & Bentler, 1986); related biopsychosocial variables to adolescents' use of substances (Bauman, Foshee, Linzer, & Koch, 1990; Gilchrist, Gillmore, & Lohr, 1990; Rhodes & Jason, 1990); and successfully launched interventions to prevent adolescent substance abuse (Botvin, Baker, Filazzolla, & Botvin, 1990; Johnson, Pentz, Weber, Dwyer, Baer, MacKinnon, Hansen, & Flay, 1990; Schilling & McAlister, 1990). While these and other scientific studies have usefully measured patterns and prevalence of adolescent substance use, and most have differentiated this data according to the ethnic-racial identity of the subjects studied, few such studies have examined the influence of sociodemographic variables on substance use among American ethnic-racial minority populations (Brunswick & Messeri, 1986; Marin, Perez-Stable, & Marin, 1989; Schilling & McAlister, 1990).

Correspondence to: STEVEN SCHINKE.

Requests for reprints should be addressed to Steven Schinke, Columbia University School of Social Work, 622 West 113th Street, New York, NY 10025.

Data reported in this paper are from a supported by grants from the William T. Grant Foundation, the Henry J. Kaiser Family Foundation, and the Pew Charitable Trusts.

Particularly under-researched are relationships between substance use, sociodemo-graphic patterns and behavioral variables among Hispanic American youth. One reason for this might be the lack of data regarding the prevalence of Hispanic adolescent substance use (Singer, 1987). Empirical data on these variables and relationships among them would contribute to several areas of research and practice. Knowledge of factors aside from ethnic-racial identity that potentially influence substance use among, for example, Hispanic youth will guide efforts to distinguish subpopulations of at-risk youth using other variables, potentially more salient and concrete than ethnic-racial variables, for predicting substance use. Preventive intervention activities will also clearly benefit from careful analyses of relationships among the factors that determine substance use patterns of Hispanic American adolescents. An empirical understanding of such relationships can help investigators to design more responsive preventive intervention programs aimed at reducing substance abuse problems among Hispanic American adolescents.

The present research sought to advance that empirical understanding. Of interest were substance abuse patterns categorized by ethnic-racial variables and by sociodemographic and behavioral variables. Thus, the purpose of the study was to obtain, analyze, and interpret original data on substance use prevalence rates and family and school variables among Hispanic adolescents in the Southwestern United States. For comparative purposes, we juxtaposed that data with findings gathered from non-Hispanic white adolescents from the same Southwestern U.S. area.

METHOD

Subjects

Study subjects were Hispanic and non-Hispanic white public high school and middle school students in two Southwestern cities. The two cities had similar socioeconomic and demographic profiles, with population sizes estimated at between 17,500 and 20,500 by the Bureau of Census. Prior to study involvement, subjects gave their informed consent for research participation. Rates of refusal at the informed consent stage were < 1% across the sample. Informed and consenting adolescents in the study anonymously completed a questionnaire designed as a measurement instrument of substance abuse rates and related variables. Each subject privately completed the self-administered survey instrument during a 20-min session.

Measurement

Coded to preserve subject confidentiality, the optical scan format instrument contained 45 items divided into two categories: background characteristics and substance use prevalence. The two-page questionnaire consisted of multiple-choice and fill-in answers in which subjects self-identified their ethnic-racial group affiliation, educational level of their family members, and their own school performance. Subjects also answered questions on their use of substances such as tobacco, alcohol, marijuana, cocaine, amphetamines, tranquilizers, glue, and heroin. Students were not asked for information on family incomes, occupations, or details of their residence in the United States. The questionnaire was pretested prior to administration in the present study and revised based on pretest results.

Procedure

Data regarding the prevalence of substance use was gathered from subjects' responses on the instrument, which were scored on eight point Likert scales from never used (score = 1) to daily use (score = 8). Overall, the instrument's psychometric properties showed reliability (Chronbach's alpha) of .82. Subscale reliability for substance use prevalence items had an alpha of .85.

Odds ratios and 95% confidence intervals were performed on questionnaire outcome data. Because they impart readily interpretable information and diminish uncertainty in bivariate comparisons, odds ratios and confidence were selected as the preferred analytic method for the present data (Thompson, 1987). Odds ratios represent an arithmetic contrast, similar to the computation of a simple fraction, of one group of interest (Hispanic adolescents in this study) relative to another group (non-Hispanic white adolescents). Confidence intervals determine the statistical probability of the odds ratios occurring by chance alone.

Consequently, odds ratios and confidence intervals in this study allowed statistical determinations of the strength of connections between selected risk factors and substance use rates. Those risk factors included organismic variables of gender and ethnicity, a sociodemographic variable of maternal education, and behavioral variables of adolescents' grades in school. On appropriately coded and scaled variables, logistic regression analyses were performed to determine statistical relationships between subjects' ethnic-racial group membership and their rates of substance use.

RESULTS

A total of 3,157 (96%) of all questionnaires distributed to consenting subjects were completed and returned. Questionnaires from 331 subjects who identified themselves as neither Hispanic nor non-Hispanic white were excluded from the analysis. In addition, five questionnaires were eliminated because subjects' responses suggested inaccurate or frivolous answers. Of the remaining questionnaires, 42% were Hispanic and 58% were non-Hispanic white, and 52% were from female students and 48% were from male students.

Data on sociodemographic variables and substance use among Hispanic and non-Hispanic white adolescents appear in Table 1. Findings shown in Table 1 indicate that Hispanic subjects were more likely to live in an urban area, have mothers who did not graduate from high school, earn grades of C and under in school, and have lower expectations for high school graduation than non-Hispanic white subjects. Relative to non-Hispanic white subjects, Hispanic subjects were more apt to have smoked marijuana, used cocaine, and sniffed glue.

Nonsignificant odds ratios in Table 1 are shown for odds ratios that fell within the 95% confidence interval. For example, on the variable of gender, Hispanic youths did not significantly differ from non-Hispanic white youths in the percentage of adolescents who were male in the study sample. Finally, the data in Table 1 indicated that non-Hispanic white youths had higher lifetime prevalence rates of alcohol and snuff use than Hispanic youths.

To determine the influences of family educational status on adolescent substance use rates, data from Hispanic and non-Hispanic white youths were compared on a bivariate factor of mothers' completion of high school (Table 2). This variable was employed as a bivariate factor in these analyses because many youths in the sample lived in female-headed households, and other youths did not know their fathers' educational level.

Data shown in Table 2 indicated that prevalence rates for all substances were greater for subjects whose mothers failed to complete high school. According to odds ratios and confidence intervals performed on these data, non-Hispanic white subjects used snuff and alcohol more than Hispanic youths, regardless of maternal education. Among subjects whose mothers completed high school, Hispanic youths were more likely than non-Hispanic white youths to have sniffed glue. Non-Hispanic white youths whose mothers did not finish high school reported higher lifetime prevalence use of amphetamines and heroin than Hispanic youths. It is possible that confounding factors regarding the age of youths whose mothers did

and did not complete school may have slightly influenced the results in Table 3. No information on such confounds was obtained in the study.

Questionnaire data on school performance were bifurcated for subjects who reported grades of B and over, relative to subjects who reported grades of C and under (Table 3). As revealed in Table 3, lifetime use rates for all substances were higher for students who reported grades of C and under in school. Regardless of grades, non-Hispanic white students used snuff and alcohol more than Hispanic students. Hispanic subjects had higher rates of marijuana use when compared with their non-Hispanic white counterparts.

A final set of analyses were performed to simultaneously adjust for study subjects' gender, urbanicity, school grade level, mother's education, grades in school, and intention to graduate from school. Findings from these analyses are shown in Table 4. According to β coefficients listed in Table 4, Hispanic subjects were less likely than non-Hispanic white subjects to report use of snuff, alcohol, barbiturates, heroin, and injectable drugs. Furthermore, Hispanic subjects were less likely than non-Hispanic white subjects to report having gotten drunk or having sniffed illicit substances. Hispanic subjects did report using marijuana, cocaine, and amphetamines at greater rates than non-Hispanic white subjects.

DISCUSSION

Results from this study suggest that ethnicity is an unreliable predictor of lifetime substance use prevalence among Hispanic and non-Hispanic white adolescents. In our sample sociodemographic factors of maternal education and school grades were stronger correlates of substance use than was ethnicity. Differences seen in the data may have been somewhat affected by the sample size in each subgrouping of subjects; however the odds ratio and confidence interval procedure controlled for most differences due to varying sample sizes.

Caveats are necessary about limitations of the research. Foremost among these limitations are the constraints of a school-based study. Clearly, the questionnaire did not reach school dropouts, students who were absent from school on the day of administration, and students who felt that their answers might be monitored by school officials. Information from youths in any of the foregoing categories may well affect the rates of substance use and patterns of sociodemographic and behavioral variables that were observed in the present analysis.

These limitations notwithstanding, study findings have four implications for substance abuse programs and research among Hispanic American adolescents. First, future prevalence and incidence studies will wisely differentiate adolescent samples by factors other than ethnic-racial identity. Ethnic-racial group membership may provide an insensitive predictor and biased explanatory factor for some forms of substance use among American adolescents. Indeed, clinical and lay evidence points toward patterns of increased heterogeneity within ethnic-racial minority groups, as their members diffuse themselves into mainstream America. (Schinke, Schilling, & Gilchrist, 1986; Schinke, Moncher, Palleja, Zaya, & Schilling, 1988; Moncher, Palleja, & Schinke, in press).

A second implication of the study is that Hispanic American adolescents are not necessarily at higher risk for substance use problems than non-Hispanic white youth. Non-Hispanic white adolescents in the present study reported more overall substance use than Hispanic adolescents when other background variables were considered. A third indication made by study findings is the potential of substance abuse preventive interventions targeted at more specifically defined risk groups of American adolescents. Illustrative of such targeted efforts would be interventions designed for youths who perform poorly in school, who choose certain substances over others, and whose parents lack secondary education. Here again, social and family

background factors ought to carry greater weight in determining risk and prevention programming than factors associated with ethnic-racial group membership.

Finally, findings from this study beg for replication with other samples of Hispanic and non-Hispanic white adolescents grouped by geography and urbanicity. By replicating comparisons performed in the present investigation, other studies will confirm whether our findings are part of a national trend toward nonethnic explanations of substance use risk among American adolescents. In so doing, a body of useful data will emerge to guide clinical diagnoses, preventive interventions, and treatment efforts with Hispanic and non-Hispanic white adolescents at risk for substance use and abuse.

REFERENCES

- Bauman KE, Foshee VA, Linzer MA, Koch GC. Effect of parental smoking classification on the association between parental and adolescent smoking. *Addictive Behavior* 1990;15:413–422.
- Botvin GJ, Baker E, Filazzola AD, Botvin EM. A cognitive-behavioral approach to substance abuse prevention: One-year follow-up. *Addictive Behaviors* 1990;15:47–63. [PubMed: 2316411]
- Elder JP, De Moor C, Young RL, Wildey MB, Molgaard CA, Golbeck AL, Sallis JF, Stern RA. Stages of adolescent tobacco-use acquisition. *Addictive Behaviours* 1990;15:449–454.
- Fleming R, Leventhal H, Glynn K, Ershler J. The role of cigarettes in the initiation and progression of early substance use. *Addictive Behaviours* 1989;14:261–272.
- Forney PD, Forney MA, Ripley WK. Alcohol and adolescents: Knowledge, attitudes, and behavior. *Journal of Adolescent Health Care* 1988;9:194–202. [PubMed: 3372285]
- Gilchrist LD, Gillmore MR, Lohr MJ. Drug use among pregnant adolescents. *Journal of Consulting and Clinical Psychology* 1990;58:402–407. [PubMed: 2212176]
- Johnson CA, Pentz MA, Weber MD, Dwyer JH, Baer N, MacKinnon DP, Hansen WB, Flay BR. Relative effectiveness of comprehensive community programming for drug abuse prevention with high-risk and low-risk adolescents. *Journal of Consulting and Clinical Psychology* 1990;58:447–456. [PubMed: 2212182]
- Johnston LD, O'Malley PM, Bachman JG. Psychotherapeutic, licit, and illicit use of drugs among adolescents. *Journal of Adolescent Health Care* 1987;8:66–51.
- Brunswick AF, Messeri P. Drugs, lifestyle, and health: A longitudinal study of urban black youth. *American Journal of Public Health* 1986;75:52–57. [PubMed: 3940453]
- Kandel DB, Logan JA. Patterns of drug use from adolescents to young adulthood: 1. Periods of risk for initiation, continued use, and discontinuation. *American Journal of Public Health* 1984;74:660–666. [PubMed: 6611092]
- Marin G, Perez-Stable EJ, Marin BV. Cigarette smoking among San Francisco Hispanics: The role of acculturation and gender. *American Journal of Public Health* 1989;79:196–199. [PubMed: 2913840]
- Moncher, MS.; Palleja, J.; Schinke, SP. Health promotion and problem prevention among Hispanic adolescents. In: Feindler, EL.; Kalfus, GR., editors. *Casebook in Adolescent Behavior Therapy*. Springer; New York: in press
- Newcomb MD, Maddahian E, Bentler PM. Risk factors for drug use among adolescents: Concurrent and longitudinal analyses. *American Journal of Public Health* 1986;76:525–531. [PubMed: 3485928]
- Rather, Bruce C. Using the alcohol expectancy questionnaire-adolescent form to predict college drinking: Long versus short forms. *Addictive Behaviors* 1990;15:567–572.
- Rhodes JE, Jason LA. A social stress model of substance abuse. *Journal of Consulting and Clinical Psychology* 1990;58:395–401. [PubMed: 2212175]
- Schilling RF, McAlister AL. Preventing drug use in adolescents through media interventions. *Journal of Consulting and Clinical Psychology* 1990;58:416–424. [PubMed: 2212178]
- Schinke SP, Moncher MS, Palleja J, Zayas LH, Schilling RF. Hispanic youth, substance abuse, and stress: Implications for prevention research. *International Journal of the Addictions* 1988;23:809–826. [PubMed: 3066765]

- Schinke SP, Schilling RF, Gilchrist LD. Hispanic and black adolescents, prevention, and health promotion. *Behavioral Medicine Abstracts* 1986;7:109–114.
- Singer, M. Current knowledge on Hispanic adolescent drinking patterns. In: Singer, M.; Davison, L.; Yalin, F., editors. *Conference proceedings: Alcohol use and abuse among Hispanic adolescents*. Hispanic Health Council; Hartford: 1987. p. 19.-27.
- Thompson WD. Statistical criteria in the interpretation of epidemiologic data. *American Journal of Public Health* 1987;77:191–194. [PubMed: 3799859]

Table 1

Demographic characteristics (%) and prevalence (%) of lifetime substance use among Hispanic and non-Hispanic white adolescents, including crude odds ratios (OR) and 95% confidence intervals (CI)

Characteristics	Hispanic	Non-Hispanic white	OR	95% CI
Male	51.8	49.7	1.09	0.93, 1.28
Live in urban area	83.3	60.6	3.25	2.72, 3.89
Mother quit high school	54.8	11.2	10.79	9.02, 12.91
Grades of C and under	34.7	18.0	2.41	2.03, 2.87
No plans to graduate	9.7	3.0	3.45	2.49, 4.78
Cigarette use	51.3	48.5	1.12	0.96, 1.30
Snuff use	19.0	30.3	0.54	0.45, 0.65
Alcohol use	72.5	76.1	0.83	0.70, 0.99
Marijuana use	37.1	26.4	1.65	1.40, 1.93
Cocaine use	9.6	6.7	1.49	1.13, 1.96
Amphetamine use	8.5	8.2	1.04	0.79, 1.37
Barbiturate use	6.9	7.1	0.98	0.73, 1.31
Heroin use	3.8	3.0	1.27	0.84, 1.92
Sniffed glue	14.8	9.9	1.58	1.26, 1.98

Prevalence of lifetime substance use among Hispanic and non-Hispanic adolescents, by school grades, B and over vs. C and under, including crude odds ratios (OR) and 95% confidence intervals (CI)

Table 3

Substance use	Grades of B and over						Grades of C and under					
	Hispanic		Non-Hispanic white		OR	95% CI	Hispanic		Non-Hispanic white		OR	95% CI
	no.	%	no.	%			no.	%	no.	%		
Cigarettes	328	43.3	579	43.5	0.99	0.83,1.19	267	66.1	207	70.6	0.81	0.58,1.12
Snuff	119	15.7	346	26.0	0.53	0.42,0.67	101	24.7	147	49.5	0.33	0.24,0.46
Alcohol	524	68.8	983	73.5	0.79	0.65,0.96	325	79.6	260	87.8	0.54	0.36,0.82
Marijuana	226	29.9	308	23.0	1.42	1.17,1.74	205	50.5	123	41.9	1.41	1.04,1.91
Cocaine	54	7.2	70	5.2	1.40	0.97,2.00	58	14.4	39	13.4	1.09	0.79,1.69
Amphetamines	40	5.3	90	6.8	0.78	0.53,1.14	58	14.5	45	15.1	0.95	0.60,1.46
Barbiturates	36	4.8	79	5.9	0.80	0.53,1.19	42	10.4	37	12.4	0.83	0.51,1.33
Heroin	17	2.3	27	2.0	1.12	0.60,2.06	27	6.7	23	7.6	0.88	0.49,1.58
Glue	75	10.0	107	8.0	1.27	0.93,1.72	96	23.8	56	18.8	1.34	0.92,1.95

Table 4

Regression coefficients and their standard errors (S.E.) from logistic regression analyses estimating substance use risk between Hispanic adolescents and non-Hispanic white adolescents

Substance use	β	S.E.
Cigarettes	0.022**	0.022
Snuff	-0.200**	0.028
Alcohol	-0.104**	0.027
Drunk	-0.051**	0.022
Marijuana	0.059**	0.024
Cocaine	0.184**	0.042
Amphetamines	0.831**	0.044
Barbiturates	-1.038**	0.061
Heroin	-1.081**	0.079
Glue	-0.501**	0.040
Injected drugs	-0.678**	0.070

**
p < .01