Risk Factors for Early Adolescent Drug Use in Four Ethnic and Racial Groups

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ABSTRACT

Objectives. It is widely believed that risk factors identified in previous epidemiologic studies accurately predict adolescent drug use. Comparative studies are needed to determine how risk factors vary in prevalence, distribution, sensitivity, and pattern across the major US ethnic/racial groups.

Methods. Baseline questionnaire data from a 3-year epidemiologic study of early adolescent development and drug use were used to conduct bivariate and multivariate risk factor analyses. Respondents (n = 6760) were sixth- and seventh-grade Cuban, other Hispanic, Black, and White non-Hispanic boys in the 48 middle schools of the greater Miami (Dade County) area.

Results. Findings indicate 5% lifetime illicit drug use, 4% lifetime inhalant use, 37% lifetime alcohol use, and 21% lifetime tobacco use, with important intergroup differences. Monotonic relationships were found between 10 risk factors and alcohol and illicit drug use. Individual risk factors were distributed disproportionately, and sensitivity and patterning of risk factors varied widely by ethnic/racial subsample.

Conclusions. While the cumulative prevalence of risk factors bears a monotonic relationship to drug use, ethnic/racial differences in risk factor profiles, especially for Blacks, suggest differential predictive value based on cultural differences. (*Am J Public Health.* 1993;83:185–189)

Introduction

Experimentation in early adolescence with alcohol, cigarettes, and illicit drugs is an important marker of future persistent drug use.[1,2] Certain risk factors have predicted early drug use with considerable accuracy in a limited number of regional and national studies.[3–6] However, these studies were limited in their ability to make comparisons across the major US ethnic/racial groups.

Consistent monotonic relationships have been found between cumulative risk factors and the use of illicit drugs.[4,5] It is now widely accepted in the drug research field that multiple risk factor models are required for understanding adolescent drug use.[6] Bry et al. state that drug use is best understood as a general coping mechanism, and, as a result, the quantity of risk factors rather than any unique combination predisposes adolescents to drug use.[5] However, Newcomb et al. note that people are not exposed to the same number of risk factors, and that "the likelihood of manifesting drug use may vary according to various characteristics of the individual and their environment."[2]

Comparative epidemiologic studies about adolescent drug use are rare, especially studies contrasting African Americans, White non-Hispanics, and Hispanics. Furthermore, epidemiologic findings about Hispanics are applicable only to Mexican-American and Puerto Rican youth.[7,8] Logically, ethnic/racial groups may be exposed differentially to risk factors, and the number or pattern of factors required to significantly increase risk may differ by group as well. This study reports early adolescent prevalence and risk factor data in four groups residing in southern Florida: Blacks, non-Hispanic Whites, Cubans, and other Hispanics. Risk profiles include a comparative assessment of risk factor distribution and predictive value for each ethnic/racial subsample.

Methods

Sample

The sample consisted of 6760 boys from sixth- and seventh-grade classes in the greater Miami area. Dade County, Florida, is predominantly urban, with a 1991 population of approximately 1 937 000, of whom about one half were Hispanic. The Cuban and other Hispanic groups each constitute about 25% of the population; 20% are Black and the remaining 30% are non-Hispanic White. The other Hispanic and Black groups have the lowest mean age and, as a result, are disproportionately represented in the school system.

These data were taken from the first wave of a longitudinal study, conducted during the fall semester of 1990, of the 48 middle/junior high schools in Dade County. Although the largest Hispanic ethnic group is of Cuban origin, the combined other Hispanic subsample, composed primarily of Nicaraguans, Salvadorans, Colombians, Puerto Ricans, Dominicans, and Venezuelans, is more numerous than the Cuban subsample. Many Central Americans in the other Hispanic subsample are recent refugees, are

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TABLE 1—Prevalence of Risk Factors

Risk Factor	Overall, %	White Non-Hispanics, %	Hispanics, %		Blacks, %
			Cubans	Other	
Family					
Low family pride	13.9	18.5[a,b*]	11.0[c*]	12.8[d*]	16.8
Family substance use problems	18.4	18.4[a**]	15.0[c,e*]	20.2	20.1
Parent smoking	32.0	36.4[b,f*]	36.4[c,e*]	28.9	28.8
Psychosocial					
Low self-esteem	18.2	13.8[b,f*]	15.5[c,e*]	20.0	20.9
Depression symptoms	14.7	13.8[f*]	11.6[c*e**]	15.1[d*]	19.5
Suicide attempt	6.9	5.1[b*,f***]	6.1[e***]	7.8	7.6
Peer					
Perception of high peer substance use	21.6	26.1[b,f*]	25.4[c,e*]	20.0[d**]	17.1
Perception of peer approval for substance use	9.6	8.1[f**]	9.3[c***]	9.2[d*]	12.0
Deviance					
Willingness to engage in nonnormative behavior	15.1	10.4[a,b,f*]	17.0	15.8	15.2
Delinquent behavior	18.9	12.6[a,b,f*]	18.3[c*]	18.3[d*]	25.8

[a]White non-Hispanics were significantly different from Cubans.
[b]White non-Hispanics were significantly different from other Hispanics.
[c]Cubans were significantly different from Blacks.
[d]Other Hispanics were significantly different from Blacks.
[e]Cubans were significantly different from other Hispanics.
[f]White non-Hispanics were significantly different from Blacks.
*$P < .001$; **$P < .01$; ***$P < .05$.

TABLE 2—Cumulative Prevalence of Risk Factors

No. of Risk Factors	Overall, %	White Non-Hispanics, %	Hispanics, %		Blacks, %
			Cubans	Other	
0	30.4	32.0	31.9	30.5	27.3
1	27.2	25.8	27.3	27.7	26.1
2	16.0	16.9	14.8	16.5	16.4
3	10.0	9.3	10.0	9.8	10.8
4	6.8	6.3	5.6	6.6	9.5
5–6	7.0	6.1	7.6	6.5	8.1
7+	2.5	3.4	2.8	2.4	1.8
Mean	1.7	1.6	1.6	1.6	1.8[a]

[a]Blacks were significantly different from Cubans and other Hispanics ($P < .01$) and significantly different from White non-Hispanics ($P < .05$).

TABLE 3—Lifetime Prevalence of Substance Use

Substance	Never Used, % (SE)	Ever Used, %	Used > 2 Times, % (SE)
Alcohol	63.1 (0.6)	36.9	18.7 (0.5)
Cigarettes	79.3 (0.9)	20.7	5.3 (0.3)
Inhalants	96.0 (0.2)	4.0	1.6 (0.2)
Illicit drugs	95.2 (0.3)	4.8	1.5 (0.1)

destitute, and reside in congested, low-income areas within Dade County.

Students in the sixth and seventh grades were given consent forms for written parental approval. Of the 10 423 eligible male students, 79% returned consent forms. Of those returning consent forms, 6934 (83%) granted permission; thus, the overall consent rate was 66.5%. Usable data were collected for 6760 male students. The sample included 899 (13.3%) White non-Hispanics, 1745 (25.8%) Cubans, 2551 (37.7%) other Hispanics, 1330 (19.7%) Blacks, and 188 (2.8%) "others."

Comparisons between sample characteristics and those of the sampling universe were made. The only significant differences found were that African Americans were slightly underrepresented in the sample (24.0%) compared with the population (27.9%), and Whites and Hispanics were slightly overrepresented. Whites constituted 20.6% of the sample and 19.1% of the population, and Hispanics constituted 53.7% of the sample and 51.4% of the population.

Measures

Illicit drug use was measured using a series of scales that tapped lifetime use, frequency of use in previous month and previous year, and grade at first use. Because the respondents were in early adolescence, we anticipated very low prevalence rates for specific types of illicit drugs. This turned out to be the case. As a result, for the analyses presented in this paper, illicit drug use is assessed as a compound variable that includes lifetime use of any illicit substance, including marijuana, cocaine, crack cocaine, PCP, and nonprescribed barbiturates, amphetamines, and tranquilizers. Alcohol, cigarettes, and inhalants were assessed separately and not included in the illicit drug variable.

The risk factors used were selected from the research literature. Following the lead of Newcomb and colleagues, we used 10 risk factors in order to maximize the predictive value of the profile for alcohol and illicit drugs.[2,4] Phil and Spiers reported that depression and poor self-concept were related to drug use.[9] Other investigators have noted the importance of subjective perceptions about peer attitudes toward and behaviors regarding drugs,[10–15] the role of parent modeling,[1,16,17] deviance,[18–20] psychological distress,[21,22] family characteristics and emotional ties,[23–26] and early use of cigarettes and alcohol.[27–29] Guided by these findings, we identified 10 statistically significant risk factors using bivariate analyses with drug use as the dependent variable.

Most risk factors were operationalized as scales. Cut points were established to ensure reasonably low prevalence of individual risk factors for the sample. No more than one fifth of the sample met the criteria for a specific risk factor, except for the variable parent smoking. The variables used as risk factors in this study are summarized below.

Low family pride. The Family Pride Scale consists of 7 items derived from the work of Olson and colleagues.[30] Each item has a range of 1 through 4. The threshold was greater than 14 for high risk, with 13.9% of sample having this risk.

Family substance abuse problems. Two items tapped whether any family member had problems due to a family member's use of alcohol or other drugs. The threshold was an affirmative response to either question, with 18.4% having this risk.

Parent smoking. Two items inquired how often the mother or father smokes cigarettes, with answers ranging from 1 through 5. The threshold was endorsement of a "sometimes," "often," or "always" response for mother and/or father, with 32.0% having this risk.

Low self-esteem. The Kaplan Self-Derogation Scale is a 13-item scale; each item has a range of 1 through 4.[22] The threshold was a mean of 2.5 or lower (on average, agreement with negative statements about oneself); 18.2% of the sample met the criteria for being at risk.

Depression symptoms. Four items from the Center for Epidemiologic Studies Depression scale were used. Scores ranged from 1 through 4,[31] with higher scores indicating more symptoms. The threshold was a mean of 1.5 (an average frequency of experiencing the symptoms more often than rarely in the previous week), with 14.7% having this risk.

Suicide attempt. Respondents were asked whether they had attempted suicide. The threshold was an affirmative response, with 6.9% meeting this risk criterion.

Perception of high peer substance use. Respondents were asked how many of their friends use cigarettes, marijuana, cocaine, and alcohol, with responses ranging from none (1) to all (4). The threshold was a mean of 1.5 or higher, with 21.6% having this risk.

Perception of peer approval for substance use. Respondents were asked how they thought their friends feel about people who use cigarettes, marijuana, cocaine, and alcohol, with responses ranging from approve a lot (1) to disapprove a lot (4). The threshold was a mean score of less than 3 (i.e., approval); 9.6% were at high risk.

Willingness to engage in nonnormative behavior. Respondents indicated, on a 4-point scale, their agreement or disagreement with statements supporting delinquent or law-breaking behavior. Respondents who, on average, agreed with the statement were classified as at risk; 15.1% met the criteria for this risk.

TABLE 4—Lifetime Prevalence of Substance Use, by Race/Ethnicity

Substance	White Non-Hispanics, % (SE)	Blacks, % (SE)	Hispanics: Cubans, % (SE)	Hispanics: Other, % (SE)
Alcohol	48.2[a,b,c*] (1.7)	25.0 (1.3)	41.3[d,e*] (1.2)	31.2[f*] (1.0)
Cigarettes	26.8[a,b,c*] (1.5)	12.4 (1.0)	20.5[e*] (1.0)	20.2[f*] (0.8)
Inhalants	5.0[c**] (0.7)	2.6 (0.5)	4.8[e**] (0.5)	3.6 (0.4)
Illicit drugs	4.8 (0.7)	3.7 (0.5)	5.1 (0.5)	5.2[f***] (0.4)

[a]White non-Hispanics were significantly different from Cubans.
[b]White non-Hispanics were significantly different from other Hispanics.
[c]White non-Hispanics were significantly different from Blacks.
[d]Cubans were significantly different from other Hispanics.
[e]Cubans were significantly different from Blacks.
[f]Other Hispanics were significantly different from Blacks.
*$P < .001$; **$P < .01$; ***$P < .05$.

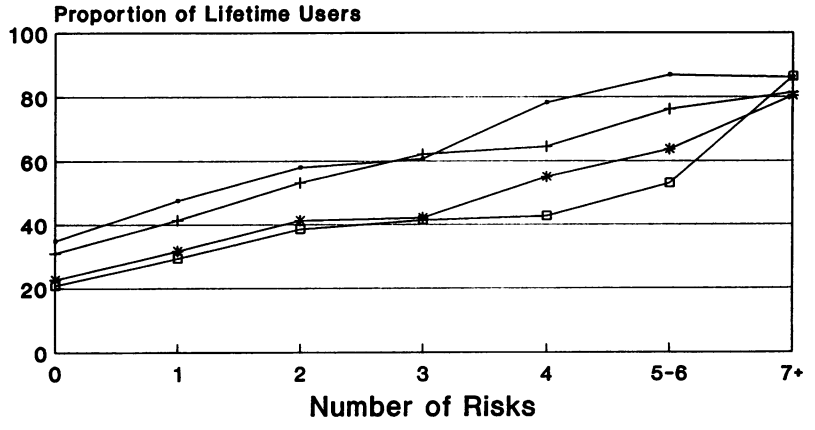

FIGURE 1—Relationship between risks and lifetime alcohol use.

Delinquent behavior. A 7-item scale tapping delinquent behavior was taken from the Kaplan Deviance Scale, which assesses serious predatory or antisocial behaviors.[22] Each question required a yes or no response. The threshold was endorsement of two or more behaviors; 18.9% met this risk criterion.

Results

Table 1 presents the prevalence of risk factors in four areas: family, psychosocial, peer, and deviance. Between-group differences for each risk factor were tested using one-way analyses of variance. White non-Hispanics and Blacks had the highest prevalence of low family pride. Blacks and other Hispanics were most likely to report family substance abuse problems but least likely to report parent smoking. Cubans and White non-Hispanics were most likely to indicate parent smoking. Blacks and other Hispanics were highest on the three psychosocial risk factors.

Among peer risk factors, Cubans and White non-Hispanics were highest on perception of high peer substance use. Blacks were highest on perception of peer approval for substance use but lowest on perception of high peer substance use. Among the deviance risk factors, Cubans were the most likely to indicate a willingness to engage in nonnormative behaviors, and Blacks were the most likely to report delinquent behavior.

Table 2 presents the cumulative prevalence of risk factors for the sample and for each racial/ethnic group. Overall, the distribution of risk factors was similar for all groups. However, Blacks were less likely to have no risk factors and more likely to have three to six, while White non-Hispanics were more likely to have seven or more. In addition, Blacks had the highest mean number of risk factors.

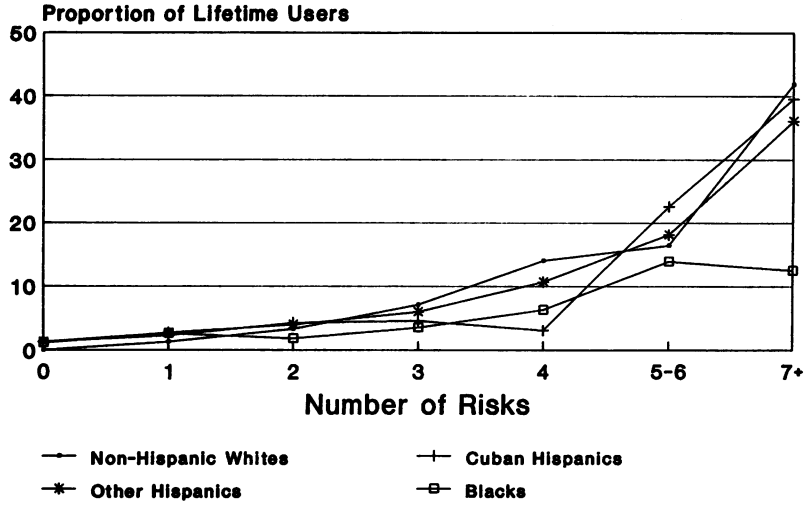

FIGURE 2—Relationship between risks and lifetime illicit drug use.

TABLE 5—Logistic Regression of Lifetime Alcohol Use on Risk Factors, by Racial/Ethnic Group

	Other Hispanics (n = 1742)	Cubans (n = 1313)	Blacks (n = 808)	Whites (n = 741)	Total Sample (n = 6760)
Perceived peer use	.40***	.40***	.29*	...	.38***
Peer approval	.31***	.28**	...	1.2***	.26***
Low family pride	.37***	.47***	.57***	.39*	.46***
Depression	...	...	...	.42*	...
Delinquency	.88*	...	...	...	.54*
Willingness to engage in nonnormative behavior	.57***	.63***	.49***	.48**	.56***
Family substance use problems	.48***	.30*	.30*	...	.33***
Parent smoking	.18*	.19*	.38**	...	.22***
Low self-esteem	.26**	...	...	...	...
Suicide attempt	.71**	...	...	...	...
Model χ^2	262.1	188.0	95.6	146.6	614.2
Users correctly classified, %	37.8	53.0	34.0	64.4	42.9

Note. Values shown are standardized coefficients.
*$P < .05$; **$P < .01$; ***$P < .001$.

The overall prevalences of substance use are shown in Table 3. The data indicate that about 5% of the respondents had used an illicit drug at least once in their lifetime; however, only about 1.5% did so more than two times. Thus, illicit drug use was a fairly rare event among the sixth- and seventh-grade boys in this sample. On the other hand, over one third of the respondents had used alcohol at least once, and about one fifth of them had used alcohol two or more times. About 1 in 5 respondents had tried smoking, but only 1 in 20 had done so two or more times. The prevalence for inhalants was similar to that for illicit drugs. Table 4 reports lifetime substance use and statistical tests of differences among the various racial/ethnic groups. Blacks consistently had the lowest levels of use for all substances. Their prevalence levels were 20% to 30% lower than those in other racial/ethnic subsamples. White non-Hispanics reported more alcohol, cigarette, and inhalant use, whereas Cubans and other Hispanics reported slightly higher levels of illicit drug use.

Figure 1 illustrates the proportion of lifetime alcohol users as a function of risk factors for each racial/ethnic group. The curves are monotonic for all subsamples. However, White non-Hispanics with no risk factors were almost twice as likely to have tried alcohol as Blacks. Cubans with no risk factors had proportions of lifetime use similar to White non-Hispanics, and other Hispanics were similar to Blacks. Beyond four risk factors, the curves for Cuban Hispanics and other Hispanics were similar. At the seven or above risk-factor level, 86.2% of the White non-Hispanics, 81.4% of the Cubans, 80.3% of the other Hispanics, and 86.4% of Blacks had tried alcohol. The strongest association between risk factors and alcohol use occurred with Blacks; their proportion was almost four times greater for those with seven or more risk factors than for those with no risk factors. In comparison, other Hispanics had the second strongest association.

Figure 2 illustrates the proportion of lifetime illicit drug use as a function of risk factors. The curve is monotonic for all groups, except for a minor nonmonotonic fluctuation among Blacks. Few respondents from any subsample who had no risk factors had used an illicit drug. At 7+ risk factors, all subsamples except Blacks had similar proportions, ranging from 36% to 40%. In contrast, the illicit drug use of Blacks with seven or more risk factors was only 12%. All slopes are markedly linear from five through six to seven or more risk factors except the slope for Blacks, which shows a marginal decline. In order to determine the differential patterning of risk factors for each subsample, we conducted a logistic regression analysis for alcohol (Table 5). The low prevalence for illicit drugs made a similar analysis for those drugs unfeasible. Only statistically significant risk factors are reported for each subsample, and both consistencies and dissimilarities are noted. Five risk factors were identified for Blacks, four for White non-Hispanics, six for Cubans, and nine for other Hispanics. Low family pride and willingness to engage in nonnormative behavior were statistically significant for all subsamples. Depression symptoms were important only for White non-Hispanics. Low self-esteem, suicide attempts, and delinquency were important only for other Hispanics. Respondents correctly classified by statistically significant risk factors ranged from only 34% of Blacks to 64.4% of White non-Hispanics.

Discussion

There are several important findings and implications stemming from this study. Risk factors were found to be consistently related to alcohol and illicit drug use among the sixth- and seventh-grade boys in the sample, affirming the value of risk factors for predicting substance use among adolescents. The comparative design of this study made it possible to detect major ethnic/racial subsample differences in prevalence and in risk profiles.

Individual risk factors were found to be distributed disproportionately across subsamples. For example, Blacks and other Hispanics were more vulnerable to depressive mood and low self-esteem. Cubans and White non-Hispanics were most likely to believe that their friends used drugs, while White non-Hispanics reported the lowest levels of family pride. Nonetheless, the cumulative prevalence of risk factors was similar for all subsamples. Although Blacks reported the highest mean number of risk factors, White non-Hispanics were the most likely to have seven or more.

Overall associations between risk factors and proportions of lifetime alcohol or illicit drugs were monotonic, albeit with significant intergroup variations. Blacks appear to be much less sensitive to the cumulative effects of these risk factors in the instance of illicit drug use. Although some investigators have suggested that it is not worthwhile to seek the "best combination" of risk factors, these data suggest the opposite conclusion.[5] The logistic regression analysis indicates subgroup specific patterning of risk factors and differential vulnerability to their combined effects. Whereas two in three White non-Hispanics who used alcohol in their lifetime were correctly classified, only one in three Blacks were correctly classified. These findings could result from greater subcultural resilience among Blacks.[32]

The two Hispanic subsamples were interesting to compare because 35% of the Cuban boys were foreign born and resided in a long-established ethnic enclave in Miami, while nearly 60% of other Hispanic boys were foreign born and more likely to be recent arrivals, often with uncertain residency status.[33] Despite differences in the distribution of risk factors, the two subgroups are similar in having higher levels of family pride than White non-Hispanics and Blacks.[34] The two groups also have (1) similar prevalence levels for lifetime tobacco, inhalant, and illicit drug use; (2) similar risk factor curves for alcohol and illicit drugs; and (3) similar patterning of specific risk factors for alcohol use. Future analyses of these data for Hispanics will permit finer comparisons in order to determine whether these differences represent cultural/acculturation effects or are conditioned by sociodemographic factors.[35] □

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