

Ethnic Identity
as a Moderator of Psychosocial Risk
and Adolescent Alcohol and Marijuana Use:
Concurrent and Longitudinal Analyses

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SUMMARY. Studies of psychosocial risk and adolescent drug use among minority youth have been primarily descriptive in nature. This may be an unfortunate oversight, particularly because developmental studies indicate that cultural factors play an important role in the etiology of mental health problems. Utilizing data obtained from a sample of minority control students participating in a longitudinal

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school-based drug prevention trial, we examined the role of ethnic identity as it moderates the relations between several domains of psychosocial risk and alcohol and marijuana use. A risk-factor methodology was used to construct additive risk indices that reflected key domains of a psychosocial model of deviant behavior. Results of cross-sectional analyses indicated that ethnic identity moderated the effects of alcohol-related expectancies, knowledge, and social skills for alcohol use; whereas ethnic identity moderated the effects of social influences, competence, and social skills for marijuana use. Results of longitudinal analyses found that ethnic identity moderated the effects of social skills on alcohol use and in some instances uniquely predicted both alcohol and marijuana use, controlling for risk. Findings are discussed in terms of the formative role of cultural factors as they shape vulnerability to adolescent alcohol and drug use. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworth.com]

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The search for key determinants of early-stage drug use has uncovered a wealth of information regarding the potential role of risk and protective factors (Hawkins, Catalano, and Miller, 1992; Petraitis, Flay, and Miller, 1995). Based on both cross-sectional and longitudinal studies, a common set of risk factors has emerged. Among the most prominent are social influences, interpersonal factors (e.g., poor communication and social skills), and intrapersonal factors (e.g., depression, low self-esteem, and poor competence).

Unfortunately, most of this research has largely focused on white populations. Relatively little research has examined the etiology of drug use among minority youth. More research is warranted to increase our understanding of the factors promoting drug use in minority populations, particularly because recent survey data obtained from both school (Johnston, O'Malley, and Bachman, 1995) and community samples (National Household Survey on Drug Abuse: NIDA, 1995) indicate that there is a growing similarity in drug use prevalence rates between minority and white youths. Moreover, the most recent census data show that African-American and Hispanic youth are the fastest growing segment of the U.S. population (U.S. Bureau of the Census, 1992).

Studies with minority youth must determine whether the same set of risk and protective factors promote drug use, whether these factors operate in the same manner with these youth, and the role played by cultural factors. To date, studies involving ethnic minority youth have not suffi-

ciently examined the relationship between cultural factors and drug use (Collins, 1995; Trimble, 1995; Farrell, Danish, and Howard, 1992). Other studies that emphasize the need to understand cultural variables as they impact on drug use have either not included specific measures of ethnic identity (e.g., Dembo, Allen, Farrow, Schmeidler, and Burgos, 1985) or have rarely moved beyond the descriptive level of analysis in accounting for ethnic/racial differences in drug use (Bachman, Wallace, O'Malley, Johnston, Kurth, and Neighbors, 1991; Barnes and Welte, 1986; Dembo, Burgos, Des Jarlais, and Schmeidler, 1979; Flannery, Vazsonyi, Torquati, and Fridrich, 1994; Maddahian, Newcomb, and Bentler, 1985, 1988).

Among the few studies that have included ethnic or cultural identity in their etiological models, the findings have been mixed. For example, Trimble (1995) found that ethnic identity did not predict alcohol use, controlling for peer and adult influences in a sample of adolescent American Indians. Felix-Ortiz and Newcomb (1995) reported that cultural identity (i.e., language familiarity and cultural proficiency) differentially predicted patterns and variation in drug use among Hispanic adolescents. As these authors point out, a complicated picture emerges from both past and more recent studies of cultural identity and drug use, with some studies indicating a positive relationship and others indicating a negative one. Other research has demonstrated that ethnic or cultural identity plays an important role in the etiology of mental health problems (Phinney, Lochner, and Murphy, 1990) or is linked to self-esteem (Bautista de Domanico, Crawford, and De Wolfe, 1994; Whaley, 1993), personal and social development (Spencer, 1985), somatization patterns and health (Montgomery, 1992), and academic achievement and well-being (Arroyo and Zigler, 1995; Bernal, Saenz, and Knight, 1991).

One of the most crucial developmental tasks of adolescence is the formation and crystallization of an identity (Erikson, 1968). It is during this period that youth actively begin to construct a sense of who they are, formulate a plan for how they want to live their lives, and compare and contrast their skills and abilities with those of their closest friends and family. The synthesis of these diverse efforts culminates in the formation of a unified and coherent sense of personal identity. However, minority youth face the added challenge during this period of resolving issues of ethnic self-identification and ethnic validation (Aboud, 1987; Phinney, 1989, 1990). Phinney (1993) has suggested that minority adolescents "undergo a process of exploration and questioning about ethnicity in which they attempt to learn more about their culture and understand the implications of group membership" (p. 75). Failure to create a balance between ethnic and personal identity may result in feelings of cultural and personal

inadequacy, marginality, and role confusion, all of which lead to alcohol and drug use as a means of coping with internal psychological pressures.

In recent years, a number of researchers have suggested that a risk factors approach best considers the problems of explanation and prediction when applied to adolescent drug use (Bry, 1983; Newcomb, Maddahian, and Bentler, 1986; Scheier and Newcomb, 1991). Rather than aiming to find the single best predictor that accounts for the largest portion of variance, a risk factors approach suggests that multiple risk factors, capturing multiple facets of psychosocial functioning, will better account for behavior. In keeping with this approach, risk is measured as a cumulative (additive) index that captures the relative amount of risk across a broad array of precursors and correlates of drug use. Using this approach, several studies successfully utilized a single index of relative risk to predict alcohol and other drug use (Bry, McKeon, and Pandina, 1986; Newcomb, Maddahian, and Bentler, 1986). Subsequently, Scheier and Newcomb (1991) demonstrated that multiple risk indices were needed to distinguish early stage (experimental) from more problematic drug use. In defining the utility of this approach, Newcomb (1992) proposed that a risk factor methodology closely adheres to a cumulative stress-resilience model, capturing multiple facets of several theoretical perspectives.

The paucity of data regarding the operation of developmental risk mechanisms in minority populations and evidence of increased drug use among minority youth point toward the need for additional etiology research. The current study was designed to increase our understanding of the etiology of drug use among minority youth and the role of cultural factors. Specifically, this study assessed the role of ethnic identity as a moderator of drug abuse risk using a risk factors methodology and seven distinct categories of risk. Each risk index closely corresponds with elements of the personality and environment systems (as well as different aspects of background-antecedent variables) of problem behavior theory (Jessor and Jessor, 1977). Outcome measures include both composite measures of alcohol (frequency, intensity, and drunkenness) and marijuana (frequency and intensity) use for both the cross-sectional analyses and longitudinal analyses. Drawing on findings from the social support literature (e.g., Cohen and Wills, 1985; Pearlin, Menaghan, Lieberman, and Mullan, 1981), we have conceptualized ethnic identity as a type of social support and hypothesize the moderator or buffering activity of ethnic identity to be analogous to the manner in which social support buffers against stress. High levels of ethnic identity are hypothesized to offset interpersonal and intrapersonal pressures to use drugs.

METHOD

Sample

Data for the current study were obtained as part of a prospective investigation of the etiology and prevention of drug use among inner-city youth. For the purposes of this study, a cohort of seventh grade minority youth attending nontreatment control schools served as subjects. Consistent with the focus of this study, the sample was restricted to African-American and Hispanic youth. A total of 1,815 youth met the inclusion criteria for the seventh grade cross-sectional sample ($M = 12.96$ years old, $SD = 0.63$) and 1,303 adolescents constituted the seventh/eighth grade longitudinal sample. The gender composition of the pretest minority sample was 52% female and the resultant sample was 60% African-American and 40% Hispanic. Thirty-seven percent of the sample reported living with both parents, whereas 39% reported living with their mother only, 11% with their mother and a step-parent, and the remaining percent reported living with some adult other than their parents. A majority of these youth reported receiving free lunch (66%), while a much smaller group (5%) received lunch at reduced prices or reported not eating at all (14%).

Procedure

Participating students provided data by surveys administered in the Fall of 1994 during the seventh grade (Time 1), three months later (Time 2), and a year later during the eighth grade (Time 3). Time 1 data were used for the cross-sectional analyses and the Time 1/Time 3 data were used for the longitudinal analyses. To preserve the confidentiality of the surveys and to facilitate longitudinal tracking, numerical identification codes were lithocoded on each survey. Passive consent was obtained from parents and the refusal rate for participation in the study was less than 1%. Data were collected by carefully trained field staff following standardized procedures for administering and collecting the questionnaires at each school (no questionnaires were handled by school personnel or teachers). A 40-minute classroom period was designated for data collection and aggressive tracking and follow-up procedures were used to gather data from absentee students.

Survey Instrument. Questionnaire items included measures of intra- and interpersonal functioning as well as a variety of attitudes, intentions, and behaviors related to alcohol, tobacco, and marijuana use. Behavioral measures included current frequency of use for alcohol (beer, wine, and hard

liquor), cigarettes, and marijuana (including hashish). Item stems were worded: "About how often (if ever) do you," with responses ranging from "never" (1) to "more than once a day" (9). Using a similar stem and response format, one item assessed drunkenness: "How often do you drink until you get drunk" and one item tapped intensity of marijuana use: "How often do you smoke marijuana or hashish until you get high or stoned." Items assessing intensity were included for cigarettes: "If you smoke cigarettes, about how much do you usually smoke," responses ranging from "none at all" (1) to "more than two packs/day" (8) and alcohol: "If you drink alcohol, how much do you usually drink each time you drink," responses ranging from "I don't drink" (1) to "more than 6 drinks" (6).

Table 1 presents the psychosocial measures used in this study and their reliabilities. The psychometric properties of these scales have also been demonstrated in previous research (Botvin, Baker, Dusenbury, Tortu, and Botvin, 1990; Scheier and Botvin, 1995). Multi-item scales had reliabilities ranging from .52 for task persistence to .91 for ethnic identity.

Other measures not appropriate for inclusion in Table 1 assessed perceived social influence to use drugs, antisocial behavior, alcohol knowledge, marijuana knowledge, church attendance, self-reported absenteeism and grade point average. The social influence measures included perceived alcohol use by friends ("How many of your friends do you think drink alcohol"), perceived peer norms ("In your opinion, how many people your age drink alcoholic beverages"), perceived alcohol use ("how many adults do you think drink beer, wine, or liquor"), and perceived availability of alcohol use ("how easy is it to get beer, wine, or liquor"). Scales for the perceived drug use items ranged from "none" (1) to "all or almost all" (5) and for the availability item ranged from "very hard" (1) to "very easy" (6). Each social influence item was repeated for marijuana with the same stem and response format.

Self-reported grades were assessed on a five-point scale ranging from "D's or lower" (1) through "Mostly A's" (5). The measure of antisocial behavior consisted of three items tapping trouble at school, at home, or with the police and used a common stem for all three items ("How often in the past month did you get into trouble"). Responses ranged from "never" (1) through "more than four times" (5). The sum of these three responses was used as a relative index of delinquency. Church attendance was rated on an eight-point scale ranging from "never" (1) through "more than once a week" (8). School absenteeism was assessed on a five-point anchored scale ranging from "none" (1) through "16 or more days" (5).

TABLE 1. Reliabilities and Sources for Measures Used: Baseline Pretest Sample¹

Psychosocial measure	Sample item	α	Principal source
Ethnic identity (5)	<i>I have a lot of pride in my ethnic group and its accomplishments</i>	.91	Phinney (1992)
Task persistence (4)	<i>If something is really difficult, I get frustrated and quit</i>	.52	Kendall & Wilcox (1979)
Sensation-seeking (6)	<i>I enjoy fast driving</i>	.74	Eysenck & Eysenck (1975)
Self-esteem (5)	<i>I feel that I have a number of good qualities</i>	.89	Rosenberg (1965)
Assertiveness (10)	<i>How likely would you be to do the following things: Tell people your opinion, even if you know they will not agree with you</i>	.82	Gambrill & Richey (1975)
Communication skills (4)	<i>When I want to understand other people I: ask questions if they say something that isn't clear</i>	.75	Botvin et al. (1994)
Decision-making skills (5)	<i>Get the information needed to make the best choice</i>	.90	Wills (1986)
Self-reinforcement (5)	<i>I silently praise myself even for small achievements</i>	.85	Heiby (1983)
Self-management (5)	<i>If I feel sad, I try to think about pleasant things</i>	.86	Rosenbaum (1980)
Anxiety symptoms (4)	<i>I felt relaxed and free of tension</i>	.59	Veit & Ware (1983) Langner (1962)

TABLE 1 (continued)

Psychosocial measure	Sample item	α	Principal source
Depressive symptoms (4)	<i>I felt downhearted or sad</i>	.55	Veit & Ware (1983)
Anxiety reduction skills (5)	<i>When I feel anxious, I: tell myself to feel calm and confident, and not worry</i>	.82	Botvin et al. (1994)
Bonding to school (5)	<i>Most mornings I look forward to going to school</i>	.79	Catalano et al. (1993)
Family management practices (5)	<i>My parents are stricter with me than most other parents</i>	.81	Catalano et al. (1993)
Drug refusal skills (5)	<i>If someone asked you to smoke, drink, use marijuana or other drugs: how likely would you: make up an excuse and leave</i>	.84	Botvin et al. (1996)
Drinking attitudes (5)	<i>Kids who drink have more friends</i>	.77	Botvin et al. (1990)

¹ Sample restricted to minority youth (N = 4712). Numbers in parentheses reflect the number of items in the scale. Reliabilities were computed using Cronbach's alpha. Items scales range from: never (1) to always (5); strongly disagree (1) to strongly agree (5); definitely would (1) to definitely would not (5).

^a Scales were either developed specifically for intervention program modules and have been tested in a five-year longitudinal study or were developed specifically for new program modules incorporated in current NIDA-funded study of multiethnic youth.

Four dichotomously scored (“true/false”) items tapped knowledge of the prevalence of alcohol use (e.g., “most adults drink wine, beer, or liquor everyday”) or the effects of alcohol (e.g., “drinking beer, wine, or liquor makes you more pepped up and alert”) and were summed into a single scale. This procedure was repeated for knowledge items specific to marijuana and a separate scale was created.

Designation and Assignment of Risk/Protective Factors. Based on their respective distributions, a total of 32 individual measures were dichotomized using the upper (or respectively lower) 30th percentile. Past adolescent drug use research used cut-points ranging from the 20th-25th percentiles (e.g., Scheier and Newcomb, 1991). We used a more liberal 30th percentile, to widen the relative risk net that captures heightened or elevated vulnerability. To create binary risk factors, students in either the upper or lower 30th percentile depending on the scaling of the original measure, were assigned a “1” (designating them as “at-risk”), and the remaining portion of the distribution were assigned a “0” for no-risk. For example, distributions for the 4-item behavioral control item (assessing task persistence, attentiveness, and diligence) indicated that 33.2% of the sample at the pretest were considered being “at-risk,” having low behavioral control scores. Guided by both Jessor’s social-psychological model of problem behavior (Jessor and Jessor, 1977; Jessor, 1991) and developmental considerations, we assigned the 32 binary risk factors to one of nine additive risk indices. The nine additive indices included socioeconomic or background risk (nuclear living status, absenteeism, church attendance, and lunch status), social influence (perceived friends’ alcohol use, perceived norms for peer and adult alcohol use, and perceived availability of alcohol), alcohol expectancies and knowledge, conventionality (antisocial behavior, sensation-seeking, family management, and school bonding), competence (self-reinforcement skills, self-management skills, decision-making skills, behavioral control [task persistence] and self-reported grades), affective distress (depressive and anxious symptomatology, self-esteem, and anxiety reduction skills), and social skills (assertiveness, communication skills, and drug-refusal skills). To avoid any confounding between alcohol- and marijuana-specific social influence items, a separate social influence risk index for marijuana containing measures related only to marijuana was created and likewise a cognitive-affective risk index containing scores for marijuana expectancies and marijuana knowledge was constructed, producing a total of nine risk indices at each assessment.

Data Analysis Approach

Several analytic strategies were employed to examine the role of psychosocial risk and alcohol and marijuana use. Analysis of variance proce-

dures were used to examine mean levels of psychosocial risk and drug use by race and gender group (and included a race \times gender interaction term). A second set of analyses examined the moderating influence of ethnic identity as it interacted with the risk indices in predicting both concurrent alcohol and marijuana use. Following the mediational logic proposed by Cohen and Cohen (1983) and subsequently elaborated by Baron and Kenny (1986), hierarchical multiple regression analyses were used, regressing the behavioral measures on the independent predictor(s), the moderator, and the interaction of these two terms. Significant moderation (i.e., buffering) is observed when the interaction term predicts unique variance in the outcome measure, controlling for the main effect terms. A third set of analyses utilized the longitudinal sample and, controlling for both early risk and initial alcohol (or separately marijuana) use, examined the relative predictive durability of the risk indices and the potential buffering effects of ethnic identity in accounting for general alcohol and marijuana involvement.

RESULTS

Subject Attrition

Prior to conducting longitudinal analyses of these data, analyses were conducted to determine if subject loss across the one-year follow-up period had any systematic effects on subsequent sample behavior(s). Overall, 28.2% of the pretest students were lost to attrition, despite aggressive tracking procedures. The slightly disproportionate representation of female students remained largely stable across time (53.5%), although there was a small but significantly larger loss of male students, $\chi^2(1) = 3.85, p < .05$. Dropouts were significantly more likely to report smoking marijuana, $\chi^2(1) = 26.32, p < .001$ and significantly more likely to smoke cigarettes $\chi^2(1) = 17.42, p < .001$. Attrition did not significantly affect loss of alcohol users.

In addition to conducting chi-square proportional analyses, mean comparisons indicated that dropouts reported higher levels of alcohol involvement (using a log transformed composite measure of frequency, intensity, and drunkenness), $t(851) = 2.33, p < .05$ and higher mean levels of marijuana use, $t(604) = 4.10, p < .001$. With respect to psychosocial risk, dropouts reported higher levels of social influence risk for both alcohol, $t(1797) = 2.61, p < .01$ and marijuana, $t(852) = 3.76, p < .001$. Dropouts also had lower competence, $t(826) = 3.66, p < .001$, less conventionality, $t(775) = 2.12, p < .05$, and more affective distress, $t(436) = 2.52, p < .05$. A

regression model with stepwise inclusion indicated that only two risk indices significantly predicted retention status (dropouts coded as “0” and panel coded as “1”): social influences for marijuana use ($\beta = -.09, p < .01$) and personal competence ($\beta = -.12, p < .001$), and accounted for 2% of the variance. In summary, while there were a few significant differences in behavioral outcomes and psychosocial functioning between panel and dropout students, these differences accounted for relatively small amounts of variation in retention status.

Ethnic and Gender Differences in Drug Use Patterns

About one-third of the longitudinal sample reported some use of alcohol and 6.4% reported some use of marijuana at Time 1. Hispanic youth were more likely to have tried alcohol, $\chi^2(1) = 18.11, p < .001$, than African-American youth. Gender was not associated with drinking status. Likewise, race and gender were independent of self-reported marijuana use status. Hispanic youth reported significantly higher alcohol involvement, $t[1809] = 5.86, p < .001$.

A larger proportion of youth reported drinking (41%) and smoking marijuana (15.6%) at the end of 8th grade and there was a significant increase in the number of new drinkers (28.54%) and marijuana users (12.55%) from the seventh to the eighth grade (all p 's $< .001$). Hispanic youth continued to report significantly higher mean levels of drinking ($t[1,1364] = 6.28, p < .001$), whereas African-American youth reported more marijuana use ($M_s = 1.21$ vs. $1.14, t[1,1364] = 2.94, p < .01$). Males reported significantly more marijuana use ($M_s = 1.22$ vs. $1.13, t[1,1364] = 3.21, p < .01$).

Ethnic and Gender Differences in Psychosocial Risk

Ethnic and gender differences in psychosocial risk were also examined using analysis of variance comparisons. Table 2 shows the results of these analyses both for students during the seventh grade and later during the eighth grade. At Time 1, in grade 7, African-Americans reported higher social influences to use marijuana than Hispanic youth, $t[1,1787] = 6.54, p < .001$; less competence $t[1,1799] = 4.81, p < .001$, and a significant ethnicity \times gender interaction for affective distress ($F[1,933] = 6.41, p < .05$). Multiple range (post hoc) comparisons with Bonferroni adjustments indicated that African-American males reported the highest levels of distress, followed closely by Hispanic females, Hispanic males, and African-American females. Hispanic youth reported more sociodemographic risk ($t[1,1809] = 3.36, p < .001$).

TABLE 2. Risk Index Means by Race and Gender: Baseline (7th Grade) and One-Year Follow-Up (8th Grade)

Psychosocial Risk Index	Total		African-American		Latino		Fishers Exact				
	Mean ^a	SD	Male	Female	Male	Female	Race ^b	Sex ^b	R × S		
			Means (7th Grade)								
Alcohol Social Influences	1.32	1.16	1.99 ^c	2.22	2.11	2.26	6.54***		6.41***		
Alcohol Cognitive-Affective	0.70	0.67	0.64	0.70	0.73	0.73					
Marijuana Social Influences	1.02	1.13	1.70	1.90	1.38	1.45					
Marijuana Cognitive-Affective	0.48	0.61	0.47	0.49	0.49	0.44	4.81***				
Conventionality	0.67	0.87	0.67	0.62	0.75	0.67					
Competence	0.69	0.98	0.65	0.55	0.83	0.83					
Affective Distress	0.58	0.79	0.85	0.71	0.71	0.83	3.36***				
Social Skills	0.76	0.76	0.80	0.76	0.77	0.68					
Sociodemographic	2.17	0.96	2.10	2.12	2.31	2.21					
			Means (8th Grade)								
Alcohol Social Influences	1.30	1.22	1.07	1.29	1.36	1.57	4.30**	2.54*			
Alcohol Cognitive-Affective	0.85	0.69	0.75	0.90	0.84	0.89	4.94***				
Marijuana Social Influences	1.55	1.33	1.63	1.77	1.21	1.43					
Marijuana Cognitive-Affective	0.77	0.69	0.68	0.86	0.67	0.81		4.04***		4.03***	
Conventionality	0.99	1.05	0.88	0.89	1.21	1.04	3.73***				2.29*
Competence	1.02	1.11	1.00	0.89	1.27	1.07					
Affective Distress	0.78	0.95	0.71	0.72	0.84	0.89		2.64**			
Social Skills	0.85	0.78	0.90	0.88	0.80	0.75	2.49*				
Sociodemographic	1.67	0.97	1.66	1.60	1.74	1.75	2.05*				

^a Sample means unadjusted.

^b Main effects reported as t-values, significant interaction reported as F-value. Sample sizes vary because of missing data (Total sample N₁ = 938-1815; N₂ = 1087-1303).

^c Means for subgroups are least-squares. Alphas for post hoc comparisons adjusted to control for experiment-wise Type I error rate.

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

At the end of the eighth grade, there were substantially more ethnic and gender differences in mean levels of psychosocial risk. Hispanic youth reported more alcohol-related social influence risk $t(1,1360) = 4.30, p < .001$, more unconventionality, $t(1,1309) = 4.04, p < .001$, more competence risk, $t(1,1363) = 3.73, p < .001$, more affective distress, $t(1,1131) = 2.64, p < .01$, and more sociodemographic risk, $t(1,1364) = 2.05, p < .05$. African-American youth, on the other hand, reported more social influences to use marijuana, $t(1,1360) = 4.93, p < .001$, and more social skills risk, $t(1,1269) = 2.48, p < .05$. There were also more significant gender differences at the end of the eighth grade than during the seventh grade. Females reported more perceived social influence risk for alcohol ($t[1,1360] = 3.20, p < .01$) and marijuana ($t[1,1360] = 2.56, p < .05$), more alcohol-related cognitive-affective risk ($t[1,1349] = 2.54, p < .05$), more marijuana-related knowledge and more positive expectancies ($t[1,1348] = 4.03, p < .001$), and males reported more competence risk ($t[1,1363] = 2.29, p < .05$).

*Ethnic Identity as a Moderator of Risk and Drug Use:
Cross-Sectional Analyses*

Utilizing the seventh grade cross-sectional data, we examined ethnic identity as a moderator of the effects of risk on drug use. Moderators operate in several ways including changing the direction of the relationship between the predictor and criterion or by lowering the magnitude of the association between the predictor and criterion. Moderation is demonstrated when the interaction between a moderator variable and predictor variable (represented as their cross-product term) adds significant unique variance when predicting the criterion (Cohen and Cohen, 1983). Although a variety of analytic techniques are available for detecting moderation, the most commonly used approach involves hierarchical moderated multiple regression with forced entry of predictor variables followed by inclusion of any interaction terms (Cohen and Cohen, 1983).

Table 3 contains the results of these analyses for both alcohol and marijuana use. Two out of the seven equations produced a significant interaction term for alcohol (cognitive-affective risk and social skills) and three significant interaction terms were obtained for marijuana (social influences, competence, and social skills). Using guidelines presented in Aiken and West (1991), the ethnic identity measure was trichotomized to reflect low (-1 SD), medium (centered on the mean), and high ($+1$ SD) levels of ethnic identity. Regression slopes for the equations containing significant interactions are plotted in Figure 1 for alcohol and Figure 2 for marijuana.

TABLE 3. Moderated Multiple Regression Statistics for Seventh Grade Cross-Sectional Data

Risk Domain	ΔR^2	F	β	SE
<u>Corresponding Step</u>		<u>Alcohol^a</u>		
Cognitive-Affective	.033 ^b	11.95***	.174***	.029
Ethnic Identity	.002	0.62	-.009	.005
CA \times EI	.011	4.02*	.110*	.008
Social Skills	.002	0.85	.049	.024
Ethnic Identity	.003	0.96	.003	.005
SS \times EI	.018	6.63*	-.146*	.006
<u>Corresponding Step</u>		<u>Marijuana^c</u>		
Social Influences	.102	39.50***	.340	.011
Ethnic Identity	.006	2.41	-.059	.004
SI \times EI	.010	4.04*	-.006	.003
Competence	.009	3.35 [†]	.102 [†]	.012
Ethnic Identity	.0001	0.04	-.091	.005
CP \times EI	.012	4.20*	.137*	.003
Social Skills	.017	6.12*	.131	.017
Ethnic Identity	.002	0.07	-.002	.004
SS \times EI	.011	3.86*	-.112*	.004

^a A composite measure of frequency, intensity, and drunkenness, natural logarithm transformed plus 1.

^b Initial step is zero-order bivariate correlation. Subsequent steps reflect incremental R^2 , significance level corresponds to incremental R^2 and corresponding F-change.

^c A composite measure of frequency and intensity, natural logarithm transformed plus 1.

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

As depicted, the graphs for alcohol represent disordinal interactions, where the rank ordering of the ethnic identity groups changes as risk increases. The plot of alcohol use by cognitive-affective risk status (Figure 1a) shows that the high ethnic identity group is at greatest risk for alcohol involvement, whereas the low ethnic identity group is at lower risk for alcohol involvement. Figure 1b shows that youth who have low ethnic identity and high social skills risk are at greatest risk for alcohol use, whereas youth reporting low ethnic identity and low social skills risk are at lowest risk for alcohol use.

The graphs (Figures 2a, b, c) depicting the findings of the moderation analyses with marijuana use confirm our hypotheses regarding the buffer-

FIGURE 1. Plot of the Significant Buffering Effects of Ethnic Identity: Log-Transformed Alcohol Use

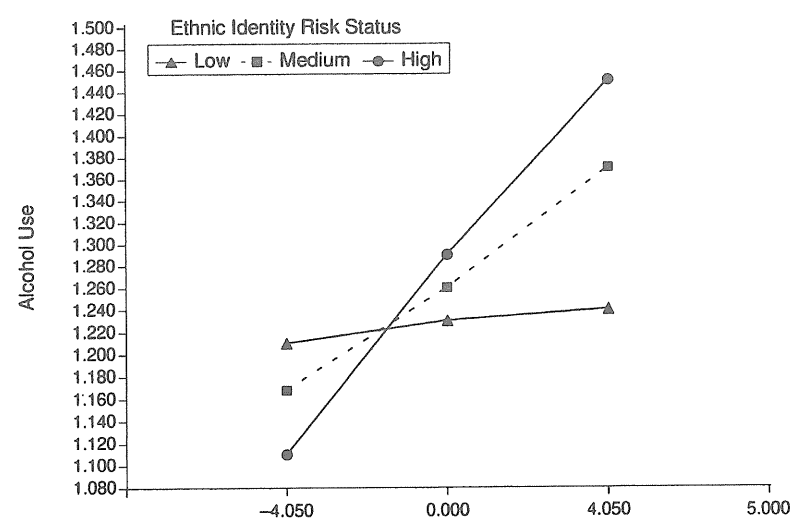


Figure 1a. Cognitive-Affective Risk

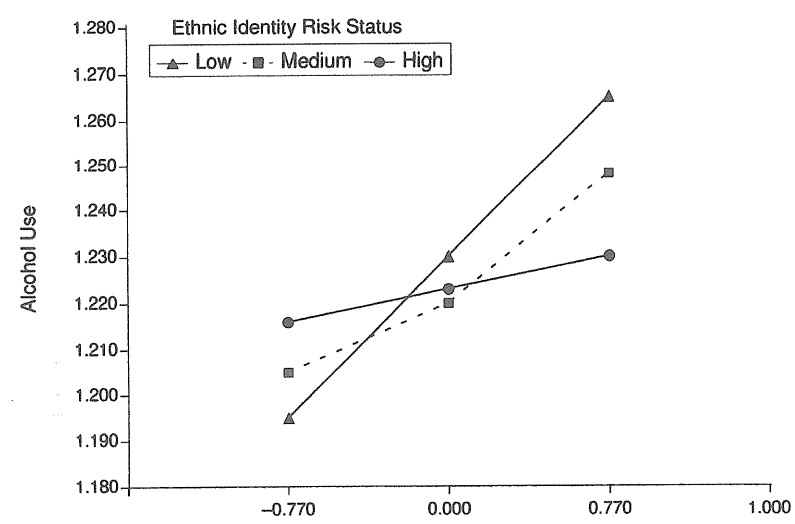


Figure 1b. Social Skill Risk

FIGURE 2. Plot of the Significant Buffering Effects of Ethnic Identity: Log-Transformed Marijuana Use

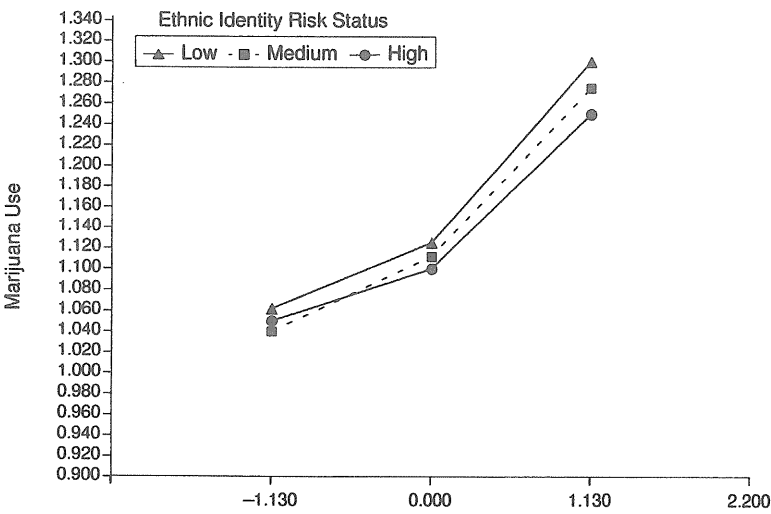


Figure 2a. Social Influence Risk

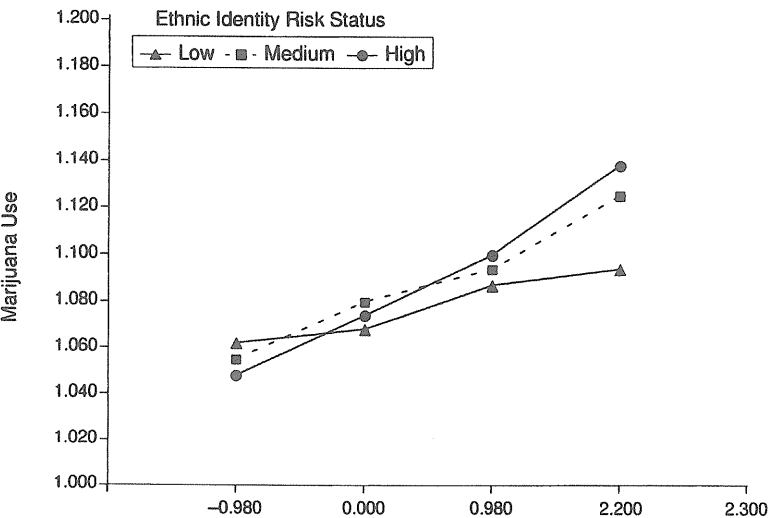


Figure 2b. Competence Risk

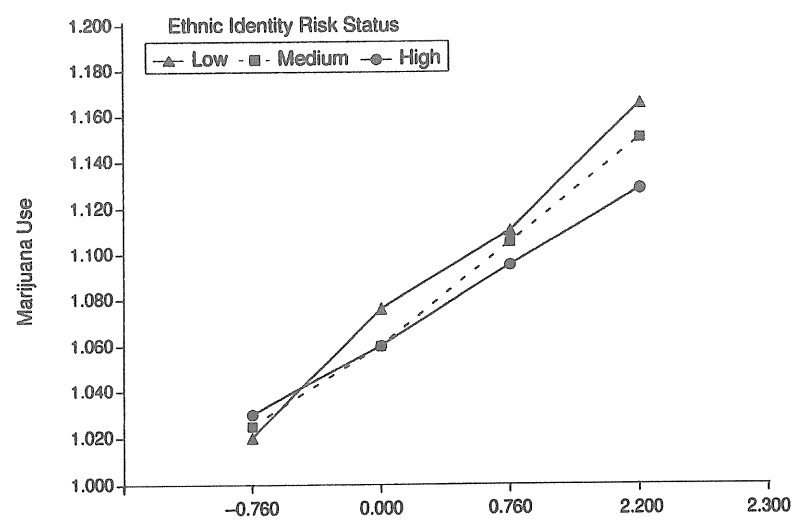


Figure 2c. Social Skill Risk

ing effects of ethnic identity. With respect to social influence risk, there is a partial crossover effect for ethnic identity. The rank position of the high ethnic identity group changes as social influence risk increases. The low ethnic identity group remains at highest risk for marijuana use and this remains so, irrespective of social influence risk status. Figure 2b also demonstrates the crossover effect with the high ethnic identity group at lowest risk for marijuana use and at low levels of competence risk, whereas at higher levels of competence risk, the high ethnic identity group is at the highest risk for marijuana use. The model containing social skills risk (Figure 2c) also contains a crossover effect and shows a protective effect at high levels of ethnic identity and social skills risk.

To determine if the individual interaction terms maintain their predictive significance when specified with other types of risk, we also tested a model that included all seven risk indices and the two significant interaction terms for alcohol. This model was repeated for the three significant interaction terms obtained for marijuana including the marijuana-specific risk indices. In the model containing alcohol as the criterion, the seven risk indices were entered blockwise, followed hierarchically by ethnic identity and the two significant interaction terms. In the final step, the skills \times ethnic identity term was significant ($\beta = -.12, p < .05$) and the cognitive-affective risk \times ethnic identity term approaches significance ($\beta = .08, p < .10$). The incremental R^2 and the corresponding F -value for the final step

were significant ($\Delta R^2 = 2.1\%$, $F = 9.55$, $p < .01$). For marijuana use, on the other hand, both the competence and skills interaction terms remained significant, controlling for all other levels of risk: competence \times ethnic identity ($\beta = .13$, $p < .05$) and social skills ($\beta = -.11$, $p < .05$) ($\Delta R^2 = 2.2\%$, $F = 9.40$, $p < .01$).

*Ethnic Identity as a Moderator of Risk and Drug Use:
Longitudinal Analyses*

The longitudinal models also utilized moderated multiple regression techniques using eighth grade behavioral measures as the criterion and controlling for seventh grade levels of alcohol or marijuana use, respectively, and seventh grade levels of psychosocial risk. Again, separate regression models were conducted for each risk index with the specified order of entry hierarchically including the covariates (seventh grade use and psychosocial risk), eighth grade psychosocial risk and ethnic identity,¹ and the cross multiplication of these terms.

The results of the longitudinal regression analyses are contained in Table 4. Only one of the seven equations produced a significant interaction term and this involved social skills risk and alcohol use. The full model accounted for 20% of the variance in drinking, $F(5, 645) = 32.72$, $p < .001$, and the partial effect associated with the interaction term contributed slightly under 1% to the model variation, $F = 6.79$, $p < .01$. Significant regression parameters at the final step included seventh grade alcohol use ($\beta = .39$, $p < .001$), eighth grade social skills risk ($\beta = .16$, $p < .001$), and the interaction term ($\beta = .095$, $p < .01$). There were no significant interaction terms for the marijuana analyses, although there was a marginal trend for affective distress ($\beta = -.09$, $p < .10$, $F = 3.52$).

We also ran an empirically reduced model that included only those seventh grade and eighth grade risk indices that accounted for significant portions of variation in the criterion and included the social skills \times ethnic identity interaction term. This model tests whether the interaction remains significant controlling for all other levels of risk during both the seventh and eighth grades. A fully saturated model including seventh grade drinking, all of the seventh grade and eighth grade risk indices, ethnic identity, and an interaction term (ethnic identity \times social skills risk) accounted for 37% of the variance in drinking behavior, $F(16, 467) = 16.10$, $p < .0001$. The skills \times ethnic identity interaction term was marginally significant ($\beta = .07$, $p < .10$). Significant predictors in this model also included seventh grade drinking ($\beta = .26$, $p < .001$), seventh grade social influence risk ($\beta = -.10$, $p < .05$), eighth grade social influence risk ($\beta = .32$, $p < .001$), eighth grade conventionality risk (lowered family management skills,

TABLE 4. Moderated Multiple Regression Statistics for Longitudinal Data

Eighth Grade Risk Domain	Alcohol Model Statistics ^a				Marijuana Model Statistics			
	ΔR ²	F	β	SE	ΔR ²	F	β	SE
Social Influences (SI)	.28	95.23***	.368***	.014	.26	88.36***	.33***	.012
Ethnic Identity (EI)	.003	3.20 ^m	.056 ^m	.004	.001	0.54	-.020	.004
SI × EI	---- ^b	----	----	----	.001	0.79	-.029	.003
Cognitive-Affective (CA)	.16	45.66***	-.062 ^m	.004	.14	37.25***	-.090*	.023
Ethnic Identity (EI)	.003	2.73 ^m	.063 ^m	.004	.001	0.69	-.024	.004
CA × EI	.001	1.12	-.040	.006	.0015	1.19	.040	.005
Conventionality (CV)	.25	79.06***	.287***	.015	.17	45.67***	.212***	.015
Ethnic Identity (EI)	.004	3.71 ^m	.053	.004	---- ^b	----	.006	.004
CV × EI	.001	0.75	.030	.003	.0015	1.19	-.040	.003
Competence (CP)	.16	48.24***	.089***	.017	.14	37.29***	.084*	.014
Ethnic Identity (EI)	.008	6.72**	.091**	.004	----	----	.017	.004
CP × EI	----	----	----	----	.003	2.60	-.061	.003
Social Skills (SS)	.19	51.15***	.160***	.022	.16	41.13***	.219***	.019
Ethnic Identity (EI)	.002	1.75	.021	.004	.001	0.71	-.043	.004
SS × EI	.008	6.79**	.095**	.005	.002	1.40	.045	.005
Affective Distress (AD)	.15	29.64***	.165***	.021	.09	17.00***	.050	.019
Ethnic Identity (EI)	.005	3.11 ^m	.077 ^m	.006	----	----	.045	.005
AD × EI	----	----	----	----	.007	3.52 ^m	-.091 ^m	.004
Sociodemographic (SD)	.15	44.23	.048	.019	.13	36.27***	.080*	.018
Ethnic Identity (EI)	.004	3.84 ^m	.064 ^m	.004	.001	0.58	-.030	.004
SD × EI	.0015	1.34	.039	.004	----	----	----	----

^a Model fit statistics include controls for Time 1 consumption and Time 1 risk. R² at initial step corresponds to model plus covariates whereas successive R²'s are incremental variance (partial regression coefficient). β's reflect standardized regression parameters at final step.

^b Parameter not estimated ($p > .05$ F-to-enter).

* $p < .05$, ** $p < .01$, *** $p < .001$, ^m $p < .10$

lowered school bonding, deviant behavior, and high sensation seeking: $\beta = .21, p < .001$), eighth grade social skills risk ($\beta = .11, p < .01$), and eighth grade affective distress risk ($\beta = .08, p < .05$). In a second step, the nonsignificant predictors were eliminated from the saturated model and a final model was obtained that included seventh grade drinking ($\beta = .26, p < .001$), seventh grade conventionality risk ($\beta = .07, p < .10$), eighth grade social influence risk ($\beta = .30, p < .05$), eighth grade conventionality ($\beta = .22, p < .001$), eighth grade social skills risk ($\beta = .09, p < .01$), and the interaction of social skills risk and ethnic identity ($\beta = .06, p < .10$). The reduced model accounted for 36% of the variance in drinking behavior, $F(7, 703) = 56.26, p < .001$, indicating that there was little degradation in the fit of this model compared to the saturated model with all seventh and eighth grade risk indices.

DISCUSSION

This study examined the role of ethnic identity as a moderator of the relationship between several distinct classes of psychosocial risk for alcohol and marijuana use, both concurrently and longitudinally in a cohort of minority youth. Early adolescence is a time when many youth first experiment with alcohol and other drugs. It is also during this period that youth actively begin to form a more coherent sense of identity. In addition to the major developmental tasks that are the hallmark of this period for all adolescents, minority youth must also deal with issues of ethnic self-identification and ethnic validation and the integration of their ethnic and personal identity. Because of the relative salience of these tasks, it is an ideal time to examine the role of identity processes in the development of alcohol and drug use behavior. It was hypothesized that ethnic factors would play a major role in determining vulnerability to alcohol and marijuana drug use. Specifically, it was posited that high ethnic identity would offset either social influences or intrapersonal motivations to drink alcohol or use marijuana.

The sample of youth we examined reported levels of alcohol and marijuana use consistent with recently obtained national estimates for a similar age group. Overall, one-third of these youth reported some use of alcohol in the seventh grade, and by the eighth grade this proportion had significantly increased to 41%. Marijuana use was reported by 6.4% of the seventh graders and increased to 15.6% by the eighth grade. Recent data from the National Household Survey on Drug Abuse (NHSDA, 1995) found that 41.7% of 12-15 year olds used alcohol and 14.4% used marijuana.

The impact of ethnic identity on drug use was highlighted by the results of both cross-sectional and longitudinal data. However, most of the significant interactions were obtained using the cross-sectional data. The pattern and form of the interactions revealed essentially two distinct processes by which ethnic identity influences the relationship between psychosocial risk and drug use. Low levels of ethnic identity were associated with both low risk and low use; at higher levels of risk, low ethnic identity was associated with high levels of drug use. This finding is consistent with a stress-buffering interpretation and indicates that high identity offsets or diminishes the negative effect of risk.

In two instances, however, high levels of ethnic identity were associated with high levels of risk and drug use. These findings were specific to competence risk and marijuana use, and cognitive-affective risk and alcohol use. With respect to cognitive-affective risk (low knowledge and positive drug use expectancies), the functional role of deviant peer bonding may offer a viable explanation for the finding that the role of ethnic identity was the opposite of what was hypothesized, suggesting that social influences play a large role in promoting drug use irrespective of the nature or origins of these social influences. Youth low in competence (at high risk) may attempt to offset feelings of distress and self-derogation by bonding with deviant peers. A by-product of bonding to a deviant or unconventional peer group is that it may provide a means of obtaining information about drugs and their effects, two important components in the decision to use drugs (Scheier and Botvin, 1997).

The findings from the longitudinal analyses provide further evidence that ethnic factors may emerge over time and play an independent role in the initiation of drug use. When controlling for seventh grade drinking, and eighth grade risk, ethnic identity significantly and uniquely predicted alcohol use in a model including competence risk. There was also a trend for unique effects in the models containing social influence risk, cognitive-affective risk, conventionality, affective distress, and sociodemographic risk. In addition to these findings, the measures of risk included in this study were found to be substantial and significant predictors of concurrent alcohol and marijuana use. Over time, these determinants gained in explanatory power, accounting for larger portions of variance during the eighth grade than in the seventh grade. The findings from the longitudinal analyses also indicate that, controlling for early levels of risk, ethnic factors still accounted for significant portions of variance in alcohol use.

Notwithstanding the importance of these findings, there are several limitations to this study. First, the small sample size for some of the cross-sectional moderator analyses (limited by the low response rate to the

ethnic identity items) may have hampered our ability to detect significance. The ethnic identity items were located toward the end of the survey and fatigue may have contributed to the lower completion rate for these items. Second, the measure of ethnic identity was based on four items that represented only one aspect of ethnic identity. Phinney (1992) and others have encouraged the use of much longer measures to assess the full spectrum of ethnic identity. Thus, the absence of stronger evidence for the moderator effect of ethnic identity in the longitudinal analyses may be the result of measurement limitations. Future studies should replicate these findings with a more comprehensive measure of ethnic identity.

Third, several factors typically contribute to difficulty in detecting significant moderator effects (McClelland and Judd, 1993). Variability of the joint term (and heteroscedasticity of the residual), the form or shape of the distribution of the interaction term, and the strength of the association among the variables entered into the model often determine the statistical power of the test for significance of the interaction. The sum total of these statistical problems is a failure to control Type II error, which leads to the erroneous acceptance of a false null hypothesis. Despite our efforts to control for many of these potential confounds, future studies should address these issues with greater precision. By their very nature, moderator variables and the operation of interactions are complex and often difficult to interpret. However, attempts to unravel these relationships are important to further our understanding of the role of risk factors in drug use among minority youth.

Finally, this study was conducted entirely within an exploratory framework. A complete understanding of the mechanisms of action for ethnic identity and drug use are still in the preliminary stages of discovery. Necessarily, only a limited set of variables associated with drug use and ethnic identity was included in this study. Future studies should include a broader range of risk factors in order to increase our understanding of how ethnic identity and other cultural factors interact with interpersonal and intrapersonal risk factors. However, despite the limitations of this study, these findings provide important new information about the role of ethnic identity and the initiation of drug use that may help refine current prevention approaches and increase their effectiveness with minority youth.

ENDNOTE

1. Ethnic identity assessed in the eighth grade was used because the seventh grade measure had a large amount of missing data. The ethnic identity questions appeared at the end of the survey, and in the seventh grade assessment, reading

comprehension and fatigue may have limited the response rates for these items (and any items appearing subsequent in the survey). A full year and grade level later, almost twice the number of students responded to these items. We also felt that using the eighth grade measure of ethnic identity would be more conceptually appropriate, particularly because Cross (1985) and others (Knight et al., 1993) have argued that this age represents a critical juncture point for initiating the developmental process of ethnic identity consolidation. Therefore, we postulated that the use of the Time 3 measure would introduce more meaningful variance.

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