

UNDERSTANDING LATINO ADOLESCENT RISK BEHAVIORS: PARENTAL AND PEER INFLUENCES

Objective: To assess baseline factors associated with having ever drunk alcohol, smoked, and having had sex two years later among a sample of Latino adolescents.

Design: In a prospective cohort study, Latino adolescents completed telephone surveys assessing demographic information and health-enhancing and -compromising behaviors, administered 3 times (baseline, T2, and T3) during a two-year period.

Setting: Students were recruited between 1997 and 1998, from four middle schools within three Los Angeles school districts.

Participants: Latino adolescents in 7th and 8th grade, from any of the four middle schools, whose parents provided written permission for them to participate in a telephone health behavior survey.

Main Outcome Measures: Self-report of ever drunk alcohol, ever smoked cigarettes, ever had sex by T3.

Results: Being more acculturated, engaging in risky behaviors, valuing independence, and having friends who had ever smoked at baseline were positively associated with having ever drunk alcohol and having ever smoked by T3. Parents' negative reactions to risky and unhealthy behaviors were protective against drinking and smoking. Working at a paid job and having parents with a high school education or higher were associated with drinking alcohol by T3. Older age at baseline was positively associated with having sex, while receiving good grades and valuing religion were protective against having sex.

Conclusions: Findings reveal that both parents and peers are important influences on adolescent risk behaviors and suggest that interventions for adolescents to prevent such behaviors should involve peers and parents. (*Ethn Dis.* 2007;17:298–304)

Key Words: Latino Adolescents, Acculturation, Alcohol, Smoking, Sexual Activity, Parental Influence, Peer Influence

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INTRODUCTION

Latinos represent a sizable and growing segment of the US population.^{1,2} Since 1995, Latino children have made up the largest group of minority children and are currently the second largest group of all children in the United States.¹ A growing body of research has examined health-compromising behaviors, including drinking alcohol, smoking cigarettes, and having sex, that may put Latino adolescents at increased risk of disease or mortality.³

Alcohol-related disease and death is higher among Latino adolescents in the United States than among non-Latinos.^{4,5} Smoking is also prevalent: by 8th grade, Latino adolescents smoke at two to three times the rate of their African American counterparts,⁶ and by high school, 33% report being current smokers.⁶ Although Latinos have a lower rate of sexual intercourse than African American or White adolescents,^{1,7} rates of pregnancy and sexually transmitted infections are higher.^{1,7}

Adolescents' engagement in risky behaviors is dependent on a variety of demographic, parental, academic, and social/environmental factors.⁸ In cross-sectional studies, sex has been associated with smoking initiation among teen-

agers⁹ and attitudes toward initiation of sexual activity,^{10,11} although studies about alcohol use are inconclusive relative to sex.^{4,9} Alcohol use, smoking, and sexual behavior are associated with level of acculturation^{12–14} and family structure.^{14–18} Peer group attitudes and behaviors have also been shown to predict adolescent health-risk behaviors,^{4,19–22} while church attendance and religion protect against such behaviors.^{3,23}

Research on Latino risk behaviors has focused on high-school aged individuals or young adults, with few studies examining the development of risk behaviors longitudinally. Less work has been done with Latinos in middle school or has examined how early-age characteristics predict future behavior. Given that early initiation of risky behaviors contributes to continued use, abuse, and dependence throughout high school years and beyond,^{4,24} it is important to examine factors that influence engagement in these behaviors during early adolescence (grades 6–8), as our study aims to do.

Our analysis prospectively examined baseline characteristics among Latino adolescents associated with engagement in three risk behaviors two years later: ever drunk alcohol, smoked cigarettes, and had sex. We explored a wide range of adolescent, parental, and peer factors that might have an influence. We hypothesized that having supportive parents, strong academic performance, a positive outlook for the future, and a strong religious faith in early adolescence would be protective against engagement in one or all three risk behaviors two years later. In contrast, we expected that adolescents' engagement in other risky behaviors, strong desire for independence, and having

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We hypothesized that having supportive parents, strong academic performance, a positive outlook for the future, and a strong religious faith in early adolescence would be protective against engagement in one or all three risk behaviors two years later.

friends who had ever smoked or drunk alcohol during early middle school years would be positively associated with risk behaviors two years later.

Risky behaviors tend to cluster, suggesting common underlying factors that influence adolescents to take part in such actions.³ Understanding the nature of these influences may help identify effective interventions that might simultaneously reduce risk for smoking, drinking, and having sex within this population.

METHODS

Recruitment

Participants were recruited during 1997 and 1998 from the 7th and 8th grade science classes of four Los Angeles schools (in three districts), selected for predominantly Latino populations. The principal investigator visited each class, explained the study's purpose and procedures, and invited students to participate in a telephone survey. All students received an information packet containing a letter from the principal and a consent form written in Spanish and English. Contact materials and recruitment protocols were approved by institutional review boards at the University of California, Los Angeles, and the University of California, San

Francisco. Students who had a parent's signed consent were eligible to participate. One month prior to interviews, personalized reminder letters were sent to all interested students. Each participant received two movie tickets as an incentive.

The study was introduced to approximately 2,853 students. A total of 970 students (34%) returned consent forms agreeing to participate, and 732 students were successfully enrolled, yielding a final response rate of 26%. Of 732 students enrolled, 695 were Latino. All interviews were conducted via telephone, beginning with baseline in 1998 (from January to July). In 1999, 548 (79%) of Latino baseline participants were re-interviewed (T2), and 480 (69%) also completed a second followup in 2000 (T3). Our analyses focused on those students who completed all three survey waves.

Measures

Outcome Variables

At baseline, students were asked whether they had ever drunk alcohol, smoked, or had sex. At T2 and T3, students were asked whether they had engaged in any of these behaviors since last interviewed. We created a cumulative measure of "ever drank alcohol by T3" if the student had answered "yes" to the question at baseline, T2, or T3. The outcome measure included those who initiated the behavior during the follow-up period and those who had already tried it at baseline. Cumulative variables for "ever smoked by T3" and "ever had sex by T3" were created in the same manner.

Predictors

Sociodemographic Characteristics. Adolescent sociodemographic variables included ethnicity, sex, age, and acculturation. To measure acculturation, participants were asked to identify the language in which they thought, read, and spoke, used as a child, spoke at

home, and spoke with friends.²⁵ Response values ranged from 1 to 5, (only Spanish, Spanish more than English, both languages equally, more English than Spanish, only English). Calculating the mean of these five items yielded a language acculturation score, with higher scores corresponding to higher levels of acculturation.²⁵

Parental Characteristics. Highest level of education for mothers and fathers, as reported by adolescents, was recoded into two categories: high school or more vs less than high school. Variables were combined into one measure reflecting highest grade completed by either parent. Adolescents were asked to report family structure, indicating their parents' relationship (married / living together vs other). Students were also asked if mothers and fathers currently smoke. Responses were combined into one variable reflecting whether either parent currently smoked.

Parental Involvement. Students were asked to report how often (never, sometimes, or often) their parents were involved in their social life, using seven questions adapted from Jessor.²⁶ Factor analysis confirmed the unidimensionality of three items to be included in a final scale of parental involvement (ask you where you are going when you go out, decide whether you can go on a date or to parties, tell you what time to be home) ($\alpha=0.60$). Responses were averaged into one measure, with final values ranging from 1(never) to 3 (often).

Parental Reaction to Adolescent Behaviors. Students were asked how they expected their parents to react to seven risky and health-compromising behaviors. Three items emerged as a unidimensional scale of perceived parental reaction to adolescents' risky behaviors: smoking cigarettes, drinking alcohol, having sex ($\alpha=0.60$). A second factor emerged from four items

reflecting perceived parental reaction to health-compromising behaviors (eating too much fast food, not exercising regularly, not attending PE classes, not using a seatbelt in the car) ($\alpha=0.66$). Responses for each scale were averaged to reflect an overall score. Final values for each scale ranged from 1 (not upset) to 3 (very upset).

Achievement/ Confidence in the Future. Students' self-reported grades were dichotomized into "mostly As and Bs" and "Cs, Ds, and Fs." They were asked if they currently worked at a paid job and to report their chances (low, medium, high) of achieving seven future goals.²⁶ Four items (chances of graduating from high school, going to college, having a job that pays well, owning a home) were averaged into one variable reflecting confidence in the future ($\alpha=0.71$). Final values ranged from 1 (low) to 3 (high).

Psychosocial Indicator Scales. Risky behaviors. Students were asked to report how often in the past six months they had engaged in 11 risky behaviors (never, sometimes, often).²⁶ Factor analysis identified a four-item scale assessing frequency of risky behaviors: doing something dangerous where you might have been hurt, doing something risky because it was a kick, not telling your parents where you were, skipping school without permission ($\alpha=0.62$).

Value of independence. The value students placed on independence was assessed through five questions.²⁶ All five items (importance of...deciding for yourself how to spend your free time, choosing your own clothes, using money you have the way you want, making your own decisions about what movies or TV programs to watch, deciding what to do on weekends) were loaded on one factor ($\alpha=0.61$). Responses were averaged into one measure, with final values ranging from 1 (not important) to 3 (very important).

Importance of religion. Each of five items²⁶ (how important is it for you to...rely on religion when you have a problem, not smoke or drink because of your religion, believe in a God, rely on your religious beliefs as a guide for your day-to-day living, pray when you have a personal problem) were loaded on a single factor measuring importance of religion ($\alpha=0.67$). Responses were averaged to obtain a scale score. Final values ranged from 1 (not important) to 3 (very important).

Friends' health behaviors. Peer influence was captured using single-item indicators asking students how many of their friends had ever drank alcohol and ever tried smoking at baseline. Categories for each question were dichotomized (some/most vs none).

DATA ANALYSIS

Univariate and multivariate models were used to examine three risk behaviors at T3: having ever drunk alcohol, smoked, and had sex. Analyses included bivariate comparisons of males and females who completed all three survey waves ($n=480$). Indicator variables were included in multiple logistic regression analyses based on *a priori* hypotheses or significant bivariate (chi-square) associations with any of the outcome variables ($P<.15$).

To create unidimensional summated scale scores for various parental and adolescent attitudes and behavior measures, we began using factor analysis with promax rotation. Once subscales were established, we estimated their internal consistency reliability using Cronbach's coefficient alpha. Final scale scores were included in bivariate and multivariate analyses.

Multiple logistic regression analyses were employed to estimate independent associations between outcome variables and potential predictors: sociodemographic factors, parental/ family characteristics, academic and achievement

characteristics, psychosocial indicators, and friends' health behaviors. Respondent's education was excluded due to its high correlation with age, as was country of birth, because it was highly correlated with acculturation. School district was included as a fixed effect, controlling for district where participants were recruited.

RESULTS

Demographic Characteristics at Baseline (Table 1)

Students who completed all three survey waves ($n=480$) were younger (12.8 years vs 12.9 years), had a significantly higher mean acculturation score (3.0 vs 2.8), and were more likely to report that their parents were married or living together (74.0% vs 59.5%) compared to those who were lost to followup ($n=215$) (results not presented).

The sample was split almost evenly by sex. Nearly a quarter of students reported one or both parents had completed high school or higher. Only 31.9% of students reported that one or both parents were current smokers. Mean scores for scales pertaining to adolescents' perceptions of parents were: degree of parental involvement in social life, 2.6; reaction to risky behaviors, 2.9; reaction to health compromising behaviors, 2.2.

More than one-fourth of students reported receiving As and Bs or better, and girls were significantly more likely to report good grades than boys. While 22.4% reported working at a paid job, boys were significantly more likely to do so than girls. The mean response to confidence in the future was 2.5, with no difference observed by sex.

Mean scores for psychosocial indicator scales were: frequency of engagement in risky behaviors, 1.3; value of independence, 2.3; and value of religion, 2.6, with boys reporting a higher mean response than girls.

Table 1. Latino Youth Survey. Demographic variables at baseline

	Students who completed the study (N=480)		
	Boys (N=221) N (%)	Girls (N=259) N (%)	Total (N=480) N (%)
Personal characteristics			
Age (mean, SD)	12.8 (0.7)	12.8 (0.7)	12.8 (0.7)
Acculturation (range 1–5) (mean, SD)	3.1 (0.8)	3.0 (0.7)	3.0 (0.8)
Family characteristics			
Parents' highest education			
High school or higher	48 (21.7)	70 (27.0)	118 (24.6)
Parents' marital status			
Living together/married	172 (77.8)	183 (70.7)	355 (74.0)
Parents' smoking status			
Mom or Dad currently smokes	66 (29.9)	87 (33.6)	153 (31.9)
Parental involvement in social life (range 1–3) (mean, SD)	2.5 (0.5)	2.6 (0.5)	2.6 (0.5)*
Parents reaction to risky behaviors (range 1–3) (mean, SD)	2.9 (0.3)	2.9 (0.3)	2.9 (0.3)
Parents' reaction to unhealthy behaviors (range 1–3) (mean, SD)	2.1 (0.5)	2.2 (0.5)	2.2 (0.5)
Achievement/confidence in the future			
Academic grades			
As and Bs or better	47 (23.1)	85 (32.8)	132 (27.5)**
Work at a paid job	69 (31.2)	38 (14.8)	107 (22.4)†
Confidence in future (range 1–3) (mean, SD)	2.5 (0.4)	2.5 (0.4)	2.5 (0.4)
Psychosocial indicators (Scales)			
Engagement in risky behaviors (range 1–3) (mean, SD)	1.3 (0.4)	1.3 (0.4)	1.3 (0.4)
Value of independence (range 1–3) (mean, SD)	2.3 (0.4)	2.3 (0.4)	2.3 (0.4)
Value of religion (range 1–3) (mean, SD)	2.7 (0.4)	2.5 (0.4)	2.6 (0.4)†
Friends' risk behaviors			
Friends have tried alcohol			
Some/most	33 (14.9)	76 (29.3)	109 (22.7)†
Friends have tried cigarettes			
Some/most	92 (41.6)	125 (48.3)	217 (45.2)
Personal risk behaviors			
Ever drank alcohol	49 (22.3)	88 (34.0)	137 (28.6)**
Ever smoked	58 (26.2)	60 (23.2)	118 (24.6)
Ever had sex	5 (2.3)	3 (1.2)	8 (1.7)

P value of Chi-square statistic testing for differences by sex: * $P < .05$, ** $P < .01$, † $P < .001$.

At baseline, while 45.2% of students reported that their friends had tried smoking, only 22.7% reported that their friends had ever tried alcohol. Girls were significantly more likely than boys to report that their friends had ever drunk alcohol.

While 28.6% of adolescents reported having ever drunk alcohol at baseline and 24.6% reported having ever tried smoking, only 1.7% reported having ever had sex. Girls were more

likely than boys to report having ever drunk alcohol.

Logistic Regression Analysis (Table 2)

Ever Drank Alcohol by T3

Level of acculturation at baseline was positively associated with having ever drunk alcohol by T3, as was level of parents' education. Degree to which adolescents' perceived parents would be

upset with their behavior (risky and health-compromising) was inversely associated with having tried alcohol by T3. Students who worked at a paid job at baseline were more likely to have tried alcohol by T3 than those not working at baseline. Adolescents' engagement in risky behaviors and value of independence were positively associated with having tried alcohol by T3. Students who reported that some/most friends smoked at baseline were more likely to have tried alcohol by T3 than those whose friends had not tried smoking.

Ever Smoked by T3

Level of acculturation was positively associated with having smoked by T3. Parents' reactions to adolescents' risky behaviors and unhealthy behaviors were both inversely associated with having smoked by T3. Engagement in risky behaviors at baseline was positively associated with having tried smoking by T3, as was value of independence. Students who reported that some/most friends smoked at baseline were also significantly more likely to have smoked by T3 compared to those reporting that no friends had smoked.

Ever Had Sex by T3

Age was positively associated with having sex by T3. Students who reported receiving As and Bs in school at baseline were less likely to report ever having sex by T3 than those with lower grades, as were those who placed more value on religion. Those whose friends smoked at baseline were more likely to have had sex by T3 than those whose friends had never smoked.

DISCUSSION

This longitudinal study aimed to examine factors associated with drinking, smoking, and having sex among a cohort of Latino adolescents recruited from middle schools in Los Angeles.

Table 2. Latino Youth Survey. Logistic regression models. Baseline predictors of engagement in risk behaviors at T3

	Ever drank alcohol (T3) N=472 (1.7% missing)	Ever smoked (T3) N=472 (1.7% missing)	Ever had sex (T3) N=472 (1.7% missing)
Adolescent characteristics			
Sex			
Male (vs female)	1.50 (0.95–2.36)	0.79 (0.49–1.28)	0.59 (0.33–1.06)
Age (continuous)	1.13 (0.84–1.54)	1.23 (0.90–1.68)	1.80 (1.24–2.60)**
Acculturation (range 1–5)	1.46 (1.09–1.97)*	1.38 (1.01–1.89)*	1.34 (0.91–1.97)
Parental characteristics			
Parents' highest education			
High school or higher (vs less than high school)	1.66 (1.00–2.77)*	0.91 (0.53–1.56)	1.23 (0.64–2.35)
Parents' marital status			
Living together/married (vs single, divorced, widowed)	0.88 (0.54–1.45)	1.10 (0.66–1.84)	0.81 (0.45–1.46)
Parents' smoking			
Mom or Dad currently smokes (vs never/ formerly)	1.36 (0.85–2.16)	1.35 (0.84–2.17)	1.50 (0.88–2.58)
Parental involvement in social life (range 1–3)	0.68 (0.44–1.06)	0.88 (0.55–1.42)	1.08 (0.60–1.97)
Parents' reaction to risky behaviors (range 1–3)	0.25 (0.10–0.63)**	0.25 (0.10–0.58)†	0.75 (0.30–1.83)
Parents' reaction to unhealthy behaviors (range 1–3)	0.51 (0.32–0.81)**	0.60 (0.37–0.96)*	1.15 (0.65–2.02)
Achievement/confidence in the future			
Academic grades			
As and Bs (vs mostly Cs, Ds or Fs)	1.12 (0.67–1.86)	0.61 (0.35–1.05)	0.48 (0.23–0.99)*
Work at a paid job (vs not working for pay)	1.86 (1.08–3.19)*	1.34 (0.78–2.30)	1.70 (0.95–3.04)
Confidence in the future (range 1–3)	1.23 (0.69–2.17)	1.36 (0.75–2.49)	1.21 (0.62–2.38)
Psychosocial indicators (Scales)			
Engagement in risky behaviors (range 1–3)	3.76 (1.79–7.90)†	2.05 (1.06–4.00)*	1.76 (0.90–3.46)
Value of independence (range 1–3)	2.41 (1.46–3.99)†	2.48 (1.44–4.26)†	1.28 (0.68–2.44)
Value of religion (range 1–3)	0.79 (0.45–1.39)	0.89 (0.50–1.59)	0.51 (0.27–0.97)*
Friends' health behaviors			
Friends smoke			
Some/most (vs none)	2.07 (1.28–3.35)**	3.23 (2.00–5.22)†	2.43 (1.32–4.47)**
Friends drink			
Some/most (vs none)	0.93 (0.50–1.72)	1.75 (0.98–3.13)	1.23 (0.66–2.31)

* $P \leq .05$, ** $P \leq .01$, † $P \leq .001$. Models adjusted for school district, as well as all other variables in the model.

Baseline factors associated with adolescent smoking and drinking by T3 were similar; however, predictors of sexual activity differed.

Level of acculturation at baseline was a significant predictor of drinking and smoking, a finding consistent with previous research.^{14,27} Perceived parental reactions to adolescents engaging in risky and health-compromising behaviors were also associated with both drinking and smoking by T3. Cross-sectional data^{15–17} informs us that close parental monitoring is protective against smoking.^{15,28} Our longitudinal data indicate that the relationship between parental monitoring and adolescent risk behavior may be more than an association, and highlight a potential opportunity to improve adolescent risk be-

havior through early intervention with parents.

A strong value of independence was also associated with drinking alcohol and smoking. For Latino adolescents, identity formation may play a significant role in influencing risk behaviors. Decisions made during this life phase may be partially driven by a desire to assert independence from parents and may be at odds with cultural values.¹⁴

Engagement in risky behaviors was also associated with having tried alcohol and having smoked. This is not surprising given the growing base of literature indicating co-variation of unhealthy behaviors among Latino adolescents.⁸

Our study also revealed several predictors unique to having ever drunk alcohol, namely, higher parental educa-

tion and working at a paid job. The latter finding is consistent with previous research.^{24,29} Having disposable income allows adolescents to pay for alcohol. The workplace may also provide environmental influences beyond school-based peers, enhancing exposure to alcohol.

With one exception, predictors of having sex by T3 were distinct from factors associated with drinking and smoking. Age at baseline was associated only with ever having sex by T3, consistent with national research showing that initiation of sex tends to occur later than smoking or drinking.⁹ Better grades and a greater value placed on religion were protective against sex. The latter finding might be expected as church involvement is a strong pre-

dicator of conservative sexual attitudes.²³

No parental characteristics at baseline were associated with having sex by T3, in contrast to previous studies that found adolescents from single parent families were more likely to have had sexual intercourse.^{14,18} However, the quality of the parenting relationship may be more significant than the family structure in predicting this behavior.¹⁴

Despite differences found between predictors of drinking, smoking, and having sex, friends' smoking behavior emerged as a significant predictor of all three risk behaviors. Peer influence has consistently emerged as a strong predictor of adolescent behavior.²⁰⁻²²

Several factors included in the final models were not associated with any risk behaviors examined. No sex differences were found at T3, challenging the notion that boys are more likely than girls to engage in risky behaviors. Recent studies have begun to show a trend toward no sex differences in substance use.² For Latinas, alcohol use is increasing, particularly among more acculturated females,² as is smoking.³⁰ It is not clear why a sex difference in sexual initiation was not seen in our sample, as previous work with Latino adolescents has found that boys are more likely to engage in sexual activity than girls.^{10,11}

Further, although past research has indicated that adolescents' perceptions of chances for success in life may be protective against various risk behaviors,³¹ level of confidence in achieving future goals was not associated with any of the risk behaviors in our study. Earlier research focused specifically on "binge drinking,"³¹ rather than our measure of "ever tried alcohol," which may explain our null findings in this area.

The study's limitations include the low response rate at baseline (26%), which may limit the generalizability of findings to other populations. There may also be differences between nation-

al origin subgroups of Latino adolescents that we were not able to examine due to sample size limitations. In addition, we lost some individuals to followup by T3 (31% of baseline). However, bivariate comparisons of students completing the final survey vs those lost to followup yielded few differences. Truthfulness of responses should also be considered, as our data were based on adolescent self-report. Given that students were recruited in a school setting, they may have under-reported behaviors for fear of teachers finding out, or over-reported for fear of peers finding out. In addition, our outcome measures are reports of having "ever" engaged in risk behaviors. For drinking and smoking in particular, having ever tried alcohol or smoking is different than drinking or smoking regularly. However, the numbers of regular drinkers and smokers were too small to allow for meaningful comparisons. Finally, we did not stratify our analysis by those who had engaged in targeted behaviors at baseline vs those who initiated during followup. Despite this, considerable increases in behaviors from baseline to T3 indicate that this is a high-risk developmental period during which initiation of risky behaviors is common. By including those who reported having ever engaged in the targeted behaviors at baseline, we may actually be underestimating the effects of predictors on initiation of these behaviors.

Ultimately, our results contribute to research examining risky behaviors among Latino youth. Given our longitudinal study design, we were able to prospectively observe baseline factors that influenced engagement in risky behaviors. By understanding factors that may precede adoption of drinking, smoking, and sexual intercourse, (eg, parental monitoring) we can develop interventions to specifically target at-risk adolescents in an effort to prevent future initiation of and engagement in these behaviors.

Our analyses reveal that peers and parents are significant influences on adolescent behavior, signaling important avenues for future interventions. Results suggest that these interventions should involve adolescents, peers, and parents. If peer smoking is a gateway behavior leading adolescents to initiate other risky behaviors, as our findings suggest, then anti-smoking campaigns targeted toward Latino adolescents beginning in early middle school may have the potential to influence smoking, as well as alcohol experimentation and early sexual initiation. In addition, because we found that adolescents' smoking and drinking were influenced by perceptions of their parents' reactions, prevention education and outreach should engage parents to ensure success.

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