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Mexican-Heritage Preadolescents' Ethnic Identification and Perceptions of Substance Use

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Abstract

This paper examines the relationship between ethnic identification and substance use for 1,346 Mexican-heritage preadolescents in a National Institute on Drug Abuse–funded study in Phoenix, Arizona (2004–2005). Participants ranged from 9 to 13 years old, 49% reported their gender as male, 33% self-identified as Mexican, and 67% as Mexican American, and 91% of the students reported taking part in the free or reduced-price lunch program. Questionnaire responses were analyzed by fitting regression models. Analyses showed that ethnic identification may play a protective role, with stronger ethnic identification related to more antidrug norms, less positive drug expectations, stronger refusal efficacy, and less intent to use substances. While gender did not significantly moderate the relationships, ethnic identification appears more broadly related to antisubstance-use norms for Mexican-born than U.S.-born participants. This study presents important implications for substance-use prevention research among Mexican heritage preadolescents. Finally, limitations of the study are noted.

Keywords

Mexican heritage; preadolescents; substance use; ethnic identification; substance-use expectancies; substance-use norms; substance-use intentions

Introduction

Health disparities negatively affect a large number of ethnic minority individuals in the United States (Williams, Neighbors, and Jackson, 2003). National surveys reveal that, in general, Hispanics, the fastest growing ethnic minority group in the United States (U.S. Census Bureau, 2004), report higher rates of substance use than other minority groups (Johnston, O'Malley, Bachman, and Schulenberg, 2005). In particular, younger Hispanics report the highest rates of use in nearly every class of drugs by eighth grade (Johnston et al., 2004, 2005).

Addressing these higher rates involves understanding the diversity that exists under the umbrella of the Hispanic ethnic categorization. Often, substance-use research presents and studies Hispanics as a homogenous group. In fact, Hispanics differ on many dimensions, including education, socioeconomic status, immigration status, and national background, with those of Mexican heritage forming the largest subgroup of Hispanics in the United States (U.S. Census Bureau, 2004). Several authors note the limitations of the approach to examining

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ethnicity as represented by broad ethnic/racial identifier checklists (Collins, 1995; Hecht, Warren, Jung, and Krieger, 2004; Trimble, 1995; Williams, Lavizzo-Mourey, and Warren, 1994). As a result, these authors proposed recognizing the heterogeneity within groups and considering other factors such as gender. A thorough understanding of ethnicity advances this more nuanced approach. In the context of substance use among Hispanics, this approach involves recognizing subgroups, such as those who are of Mexican heritage, examining the ways that people identify with this subgroup, and highlighting cultural similarities and differences between and among members of the subgroup, based on such factors as their country of birth (e.g., Mexico vs. the United States).

The present study contributes to our understanding of the complex relationships between substance use and identity among Mexican-heritage preadolescents. The focus on younger, preadolescent Mexican-heritage youth extends understandings of how ethnic identification functions within an underserved and high-need population.

Identity and Substance-Use Prevention

Recent substance-use research suggests that identity plays a role in substance-use decisions (Brook and Pahl, 2005; Marsiglia, Kulis, and Hecht, 2001; Oyserman, Coon, and Kemmelmeier, 2002). This research explored whether identity influences substance use and abuse (Smith, Walker, Fields, Brookins, and Seay, 1999), and also focused on a variety of identifications such as racial/ethnic (Austin, 2004; Hecht, Trost, Bator, and MacKinnon, 1997; Marsiglia, Kulis, Hecht, and Sills, 2004), gender (Moon, Hecht, Jackson, and Spellers, 1999; Orozco and Lukas, 2000), and sexual orientation (McCabe, Boyd, Hughes, and d'Arcy, 2003).

Extensive research has focused on conceptualizing identity and health. Ethnic identification is complex, dynamic, and multilayered (Hecht et al., 2004) that may be defined as the extent to which individuals associate themselves with attitudes and values of a particular ethnic group and feel like a member of that group (Hecht and Miller-Day, in press). It plays a significant role in judgments, decision making, and a wide range of behaviors (Oyserman et al., 2002). Roberts et al. (1999) argue that identity also must be understood as a developmental process that begins with little awareness of self and moves to a period of exploration in adolescence as commitment to an identity emerges to produce a secure and confident sense of membership in various groups.

Overall, three conclusions may be drawn from the literature on identity and substance use that guide this research: (1) identity plays an important role in the understanding of substance use and abuse decisions (Hecht and Miller-Day, in press; Hecht et al., 1997; McCabe et al., 2003; Marsiglia et al., 2001; Moon et al., 1999); (2) identity exhibits complex interactions with other variables such as peer and adult influence, socioeconomic status, gender, well-being, self-esteem, and cultural context (Berry, Phinney, Sam, and Wedder, 2006; Caldwell, Sellers, Bernat, and Zimmerman, 2004; Hecht et al., 1997; Moon et al., 1999; Phinney, Horenczyk, Liebkind, and Vedder, 2001; Umaña-Taylor and Bámaca-Gómez, 2003); (3) identity develops over time with the beginning of adolescence being a key period in the process when exploration and commitment to ethnic groups emerges (Atkinson, Morton, and Sue, 1989; Erikson, 1968; Roberts et al., 1999).

These studies suggest that substance-use researchers should take identity (whether sexual, gender, or racial identity) into consideration in their work. Researchers have demonstrated the utility of ethnic identity as a potential protective factor (Brook and Pahl, 2005; Marsiglia et al., 2004) and identity is now considered a critical factor in substance use especially during formative adolescent years (James, Kim, and Armijo, 2000). However, the process through which specific identities or mediators (e.g., norms, attitudes) impact substance use still needs

clarification and could benefit from more research, particularly within understudied, high-risk groups such as Mexican-heritage youth.

Mexican-Heritage Ethnic Identification—Substance use by youth of Mexican heritage emerges within a complex nexus of cultural factors. Families of Mexican heritage tend to demonstrate strong family pride, family closeness, respect for parents, mutual obligation, trust, and cohesion (Chandler, Tsai, and Wharton, 1999; Olson et al., 1983). Furthermore, traditional Mexican normative behaviors such as greater parental monitoring and involvement with children, and the tendency of married couples to settle close to parents and other family members often leads to greater monitoring of children in more cohesive communities (Chandler et al., 1999; Denner, Kirby, and Coyle, 2001; Gonzales, 1993). These family factors, especially the greater monitoring and cohesiveness, provide the context for ethnic identity development and should result in less substance use by Mexican-heritage preadolescents.

Research demonstrating a relationship between identity and substance use among Mexican-heritage adolescent focuses on mid-to-late adolescence. Among adolescents, ethnic identity has been found to be related to substance use as well as norms and expectation of use (Brooks, Stuewig, and LecRoy, 1998; Herd and Grube, 1996; Hecht et al., 1997; Moon et al., 1999). For example, Marsiglia et al. (2004) found that Mexican-heritage youth who displayed a positive ethnic identity reported less substance use and stronger antidrug norms than those who did not.

However, little is known about either the ethnic identification or its impact on younger preadolescents' substance use. As noted earlier, developmental research shows that around this time, youth are beginning to explore their identities (Roberts et al., 1999). In addition, while preadolescents' use rates tend to be lower than older youth, their emerging attitudes, norms, expectancies, and perceptions of such use serve as important future predictors and mediators of behavior (Petraitis, Flay, Miller, Torpy, and Greiner, 1998; Stipek, de la Sota, and Weishaupt, 1999). The National Institute on Drug Abuse (NIDA, 2003) reports that the estimated average age of first-time cigarette and alcohol use is between 11 and 13 years (marijuana use between 13 and 14 years). As such, it is important to address substance use earlier instead of waiting until middle and high school when norms are well developed (Stipek et al., 1999).

As a result, it is important to consider this developmental period and in doing so consider a range of outcomes. We expect preadolescents to demonstrate similar relationships to those expressed by adolescents between ethnic identification and the predictors of future substance use, and thus, posed the following research hypothesis:

H1: Mexican-heritage preadolescents' stronger ethnic identification is related to lower substance-use intentions, less positive substance-use expectancies, more antidrug substance-use norms, and lower reported availability of substances.

While we expect ethnic identification to be related to substance use, other factors such as gender and country or origin, reflect the variations within the group and may moderate these relationships. Next, we examine these moderators.

Gender and Country of Origin as Moderators

Theories such as the Communication Theory of Identity (CTI) argue that isolating an individual element of identity may distort the complex, multilayered nature of the construct (Hecht, 1993; Hecht et al., 2004). These theories argue that social actors rarely see themselves in terms of single identity. Rather, other identities usually come into play (e.g., race/gender, occupation/country of origin) and are interpenetrated or interactive with each other. In this study, we

examined gender and country of origin, two important elements of the identities of Mexican-heritage youth.

Gender—Research has shown that males and females often differ in their substance use, with preadolescent girls participating in less substance use than boys from fifth to seventh grades (Epstein, Botvin, Diaz, and Schinke, 1995). Gender has been identified as a powerful factor in substance-use decisions (Hecht et al., 1997; Moon et al., 1999; Moon, Jackson, and Hecht, 2000; McCabe et al., 2003; Oyserman and Fryberg, 2005). For example, Moon et al. (1999) reported that female middle school students were more likely to report that they received alcohol, tobacco, and other drug (ATOD) offers from other females or dating partners in a private sphere, while males were more likely to report that they received ATOD offers from parents or other males and in public. Furthermore, boys demonstrated a higher likelihood than girls of using substances to cope with social problems (Roberts, Fournet, and Penland, 1995). Thus, as with ethnic identity, gender affects substance use and there is reason to believe that gender and ethnic identity will act jointly or interact as well.

Research shows that it is important to consider gender when comparing substance use by members of various ethnic groups. Brown, Miller, and Clayton (2004) reported that predictors of substance use among ethnic minority adolescents differed by gender. The Mexican culture, which holds strong social norms against drinking and drug abuse by women (Canino, 1994; Van Wilkinson, 1989), makes gender differences in substance use particularly salient among Mexican-heritage youth. Previous research has shown that Mexican-heritage adolescent boys report more substance use than girls (Marsiglia et al., 2004) and when transitioning from fifth to sixth grade, Hispanic boys displayed more at-risk behaviors than girls (Morrison, Robertson, Laurie, and Kelly, 2002). These gender differences within Hispanics generally, and Mexican-heritage youth more specifically, make sense given the males' and females' substance-use norms within these cultures. Thus, there are good reasons to believe that gender will moderate the relationship between Mexican-heritage preadolescents' ethnic identity and substance-use behaviors and cognitions since we know that when examining effects on substance use, ethnicity and gender interact, and we also know that ethnic identity, an aspect of ethnicity, is related to substance-use behaviors and cognitions. However, it is unclear how or if these findings apply to younger populations such as preadolescents. Given the previous research reviewed earlier, we speculate that ethnic identification will be a stronger protective factor for Mexican-heritage girls than boys because their culture places a stronger prohibition on use among females. We pose the following hypothesis:

H2: Ethnic identification will be more strongly related to the outcomes among girls than among boys.

Country of Origin—Country of origin may act as a second potential moderator of the relationship between ethnic identity and substance-use expectancies, substance-use norms, and reported availability of substances (Umaña-Taylor and Bámaca-Gómez, 2003). The limited research on the impact of country of origin on substance-use rates has focused on comparisons of the rates of adolescent substance use among those born in the United States with the rates of adolescent substance use among those not born in the United States (Brindis, Wolfe, McCarter, Ball, and Starbuck-Morales, 1995; Ebin et al., 2001; Hussey et al., 2007; Sneed, Morisky, Rotheram-Borus, Lee, and Ebin, 2004). For example, Sneed et al. (2004) studied 794 youth between the ages of 11 and 19 and found that foreign-born adolescents report lower rates of polydrug use than adolescents born in the United States. Amaro, Whitaker, Coffman, and Heeren (1990) found that a preference for English over Spanish and birth in the United States (versus in another country) predicted greater marijuana and drug use, and Marsiglia et al. (2004) reported that substance use was greater among English-speaking adolescents of Mexican descent than among those who are primarily Spanish-speaking (i.e., more likely to

have immigrated to rather than been born in the United States). We also know that youth who were born in Mexico were better able to resist peer pressure compared with youth of Mexican descent who were born in the United States (Umaña-Taylor and Bámaca-Gómez, 2003). This might lead us to expect that Mexican-born youth report less substance use than Mexican-heritage youth born in the United States. Moreover, we might expect that compared with Mexican-born participants, ethnic identification will be more salient for the Mexican-heritage participants born in the United States given their dual membership in U.S. and Mexican cultures as well as their position between their Mexican-born peers and peers from mainstream U.S. culture. However, it is unclear how or if these findings apply to younger populations such as preadolescents. Without adequate prior research among this younger group, there still remain questions as to the extent to which country of birth impacts substance-use norms and intentions and, as a result, we cannot advance a directional hypothesis. Rather, we posit this second research question:

RQ1: Country of origin moderates the relation between ethnic identification and substance-use intentions, substance-use expectancies, substance-use norms, and reported availability of substances.

Method

Study Design

Cross-sectional, self-report data were collected over a 5-month period during the first half of the 2004–2005 school year as part of an NIDA-funded baseline questionnaire to assess a multicultural substance-use prevention intervention (*keepin' it REAL*). The 1,934 participating fifth-grade students attended 29 different public schools (105 fifth-grade classrooms) in Phoenix, Arizona.

Participants

Study personnel obtained informed parental consent a few weeks before the baseline questionnaire. Parental consent forms emphasized the voluntary and confidential nature of each student's participation. Students provided their assent on the day they completed the questionnaires. Student assent and parent consent forms were printed in both English and Spanish. Approximately 84% of the students attending the study schools received parental consent, and 96% of those students completed questionnaires. University-trained proctors administered the 45-minute questionnaire (written in English on one side and Spanish on the other) during regular school hours in science, health, or homeroom classes; students in a few schools assembled together for questionnaire administration. Students recorded their responses on a separate, scannable form. The present analyses excluded 588 students who did not self-identify as Mexican or Mexican American. The age of the remaining 1,346 students ranged from 9 to 13 years (mean age = 10.39 years; *SE* = 0.02 years). Forty-nine percent reported their gender as female and 49% reported their gender as male. (The remaining 2% did not report their gender.) Approximately 33% of the students self-identified as Mexican, and 67% as Mexican American; 29% reported that they were born in Mexico and 70% reported that they were born in the United States. As an indicator of low socioeconomic status, 91% of the students reported taking part in the free or reduced-price lunch program. The homogeneity in SES precluded using it as a moderator variable in the analyses, although it does indicate the unique and valuable nature of this sample.

Data Collection

Students completed the 104-item questionnaire administered by university-trained proctors. The items on the questionnaire were pilot tested prior to administration and in some cases modified to enhance readability; a readability analysis of the finalized questionnaire placed the

items at a fifth-grade instructional reading level. Questions focused on demographic characteristics, ethnic identification, recent use of alcohol, cigarettes, and marijuana, and lifetime use of alcohol, cigarettes, and marijuana, as well as substance-use norms and expectancies. Students had the opportunity to complete the questionnaires in either Spanish or English; 9.6% completed the Spanish version of the questionnaire.

Measures

Relevant demographic characteristics were assessed with six items. Students filled in the response choice indicating whether they were a boy or a girl. In response to the question "How old are you now?" students marked one of the following nine choices: 1 = 7 years; 2 = 8 years; 3 = 9 years; 4 = 10 years; 5 = 11 years; 6 = 12 years; 7 = 13 years; 8 = 14 years; and 9 = 15 years or older. Students also indicated whether they received free or reduced lunch. In response to the question "Where were you born?" students marked one of the following four choices: 1 = United States; 2 = Mexico; 3 = Other country. . . ; and 4 = Don't know. Two questions (one forced choice and one allowing multiple selections) were used to implement the present study's criteria of including only students who self-identified as Mexican or Mexican American/ Chicano. The first question forced the students to "Choose *one best* ethnic category which describes you." In response to the second ethnicity question, "What is your ethnicity?" students were asked to select one or more of the following seven choices: American Indian or Alaskan Native; African American or Black; Asian or Pacific Islander; White or Anglo; Mexican, Mexican American, or Chicano; Some other Latino or Hispanic Group; and Other ethnicity. For inclusion in this study, the students needed to choose either Mexican or Mexican American or Chicano on the first question, along with choosing Mexican, Mexican American, or Chicano for the second question.

Ethnic Identification—Directly after responding to the forced-choice ethnicity item, students replied to a six-item scale that assessed the extent to which they identified with their selected ethnic group. The items were selected and modified from those used by Phinney (1992) for developmental reasons (i.e., based on their adequacy for the preadolescent sample). Pilot testing assisted in this process and helped with the evaluation of whether participants would understand each item. The pilot testing resulted in excluding more abstract items and making others more concrete; however, the resultant measure included items from each component of the Phinney scale. The items included "I have tried to learn more about my own ethnic group, such as its history and customs" (The full list of items for all the measures is included in Table 1). The response choices consisted of (1) = Strongly agree; (2) = Agree; (3) = Disagree; and (4) = Strongly disagree. The responses were recoded so that higher scores on the ethnic identification scale represent stronger identification with one's ethnic group.

Parents' antidrug injunctive norms were assessed with three items (Hansen and Graham, 1991) measured with the same 4-point scale (1 = Not at all angry; 2 = A little angry; 3 = Pretty angry; and 4 = Very angry). The common stem consisted of "How angry would your parents be if they found out you . . . " (see Table 1).

Friends' antidrug injunctive norms were assessed with three items measured with the same 5-point scale (1 = Very positively; 2 = Positively; 3 = No reaction; 4 = Negatively; and 5 = Very negatively) and based on items used by Hansen, Johnson, Flay, Graham, and Sobel (1988). The common stem was "How would your best friend react if you . . . " (see Table 1).

Personal antidrug norms were assessed with three items (Hecht et al., 2003) measured with the same 4-point scale (1 = Definitely OK; 2 = OK; 3 = Not OK; and 4 = Definitely not OK). The common stem was "Is it OK for someone your age to . . . " (see Table 1).

Descriptive antidrug norms were assessed with two items (Hansen and Graham, 1991) measured with the same 4-point scale (1 = All or most; 2 = Half; 3 = Some; and 4 = Hardly any or none) modified. Items included "About how many kids in your school would you guess have used alcohol, cigarettes or marijuana at least once?" (see Table 1).

Refusal efficacy was assessed with three items based on Kasen, Vaughan, and Walter (1992) and measured with a 4-point scale (1 = Very sure; 2 = Sure; 3 = Not sure; and 4 = Not at all sure). Scale scores were recoded and calculated by taking the mean of the item scores with increasing values indicating more confidence that one would refuse a drug-use offer. The common stem was "Are you sure you would say no if . . . " (see Table 1).

Substance-use intentions were assessed with three items created for this study and measured on the same 4-point scale (1 = Definitely; 2 = Probably; 3 = Probably not; and 4 = Definitely not). The items were recoded so higher scores reflected greater intentions to use substances (see Table 1).

Positive substance-use expectancies were assessed with three items measured with the same 4-point scale (1 = Strongly agree; 2 = Agree; 3 = Disagree; and 4 = Strongly disagree; Hecht et al., 2003). The item scores were recoded so scale scores consisted of the mean of the three items, and high scores represented more positive substance-use expectancies. Items included "Drinking alcohol makes parties more fun" (see Table 1).

Ease of getting and availability of substances were assessed with two items. The first item asked the student "How easy would it be to get alcohol, cigarettes, marijuana, or other drugs, if you wanted to try them?" The four response choices consisted of (1) = Very hard; (2) = Sort of hard; (3) = Sort of easy; and (4) = Very easy for the first item; and (1) = Never; (2) = Hardly ever; (3) = Sometimes; and (4) = Often for the second item (see Table 1).

Statistical Analyses

To obtain descriptive statistics, we used Stata's svymean and svyregress programs for complex survey samples (StataCorp., 2003). These routines allowed us to account for the fact that we had obtained data from intact groups of students who were attending 29 different schools. With intact social groups, we would not expect the observations reported by any two randomly selected students attending the same school to be statistically independent. Failure to account for this statistical dependence as reflected in a nonzero intraclass correlation coefficient (ICC) has been shown to contribute to standard errors that are underestimated, test statistics that are inflated, and significance levels that are smaller than they would be if an appropriate statistical method had been used (see Cornfield, 1978; Korn and Graubard, 1999). In the present study, the 10 ICCs ranged in value from 0.002 to 0.030 and had a mean of 0.013. The complex survey sample programs exploit the theory and methods that survey statisticians have developed to address the analytic challenges that arise when observational units are sampled from a finite population and the study design involves the selection of clustered units (LaVange, Koch, and Schwartz, 2001).

To address our missing data, we used the freeware program NORM (Schafer, 2000) to generate 10 multiply imputed data sets. Schafer and Olsen (1998) provide a highly accessible account of multiple imputation and the concepts behind NORM. They indicate that three imputations can achieve an efficiency of 86% with respect to estimating the quantity of interest when the percent of missing information is 30%. They characterize the latter as a moderately high rate of missing information. For the cited measures, the percent of missing information ranged from 1.9% (gender) to 11.4% (substance-use expectancies). Each missing value in the original data set was replaced by 1 of the 10 plausible values to create 10 complete data sets. By addressing our missing data, we eliminated the interpretative distractions that might have arisen had our

sample sizes varied across the 18 sets of moderated multiple regression models that we fitted. The 10 ASCII data sets written by NORM were ported to Excel and converted to Stata data files using Stat/Transfer, a commercial software program. We then used one user-contributed Stata command (Carlin, Greenwood, and Coffey, 2003) to initialize the 10 Stata data sets and another user-contributed Stata command (Royston, 2004) to fit a series of regression models to each imputed data set and apply Rubin's Rules (Little and Rubin, 2002) to calculate (a) the combined estimates of the modeled regression coefficients, (b) the standard errors of the combined estimates, (c) test statistics associated with the null hypothesis that the value of modeled regression parameter equals zero, and (d) *p* values.

Before each series of regression models was fit, the two explanatory variables (ethnic identification and gender, or ethnic identification and country of origin) were mean centered prior to forming the first-order interaction in the standard manner. Mean centering was used for two reasons. First, we wanted to minimize the colinearity that would otherwise exist because there was imbalance with respect to the number of students at each level of the potential moderator. Although the gender split was close to 50:50 and there were only 26 students who did not report gender, the split for country of origin was 70:30. Eleven students or 0.8% of the sample did not report their country of origin. Second, we wanted to minimize the colinearity that would otherwise exist between the two explanatory variables and the product interaction term (see Frazier, Tix, and Barron, 2004; Holmbeck, 1997). Finally, we used Stata's empirical sandwich estimator of the variance–covariance matrix (Huber, 1967; White, 1980, 1982) to address the clustering of students within schools and the intraclass correlation among the responses of students from the same school.

To test our hypothesis and assess our research questions, we fit a sequence of three regression models to each outcome variable. With the first model, we regressed the outcome variable on ethnic identification. With the second model, we regressed the outcome variable on ethnic identification and the potential moderator. Admittedly, we could have skipped this fit as it does not directly address our hypothesis or research questions. However, we included it to help diagnose any problems we might have had with model fitting. With the third model, we regressed the outcome variable on ethnic identification, the potential moderator, and the interaction between ethnic identification and the potential moderator. The latter reflects the standard regression-based approach to assessing moderation (Baron and Kenny, 1986; Kenny, 2004; Nicholson, Hursey, and Nash, 2005). We fit the series of regression models with gender as the potential moderator and then with country of origin as the potential moderator (i.e., 3 models per set × 9 sets × 2).

Results

Table 2 presents the regression coefficients, robust standard errors, test statistics, and *p* values associated with Model 1, which regressed each outcome on ethnic identification within each of the 10 multiply imputed data sets. The results for the sample suggested that ethnic identification was positively related to students' parental antidrug injunctive norms, personal antidrug norms, descriptive antidrug norms, and refusal self-efficacy. This signified that more ethnically identified students perceived greater parental antidrug norms and less peer substance use along with reporting less approval of peers their age engaging in substance use, and more confidence in refusing substance-use offers. Ethnic identification was negatively related to students' positive substance-use expectancies and substance-use intentions; more ethnically identified students expressed less positive expectations of substance use and less likelihood of using substances on the upcoming weekend.

Among female students, ethnic identification was positively related to parental antidrug injunctive norms ($\beta = .13$, $SE = .06$, $p < .05$) and personal antidrug norms ($\beta = .10$, $SE = .05$,

$p < .05$), and negatively related to positive substance-use expectancies ($\beta = -.21$, $SE = .07$, $p < .01$), and substance-use intentions ($\beta = -.07$, $SE = .03$, $p < .05$). Among male students, ethnic identification was positively related to students' personal antidrug norms ($\beta = .10$, $SE = .03$, $p < .01$), descriptive antidrug norms ($\beta = .10$, $SE = .05$, $p < .05$), and refusal self-efficacy ($\beta = .18$, $SE = .09$, $p < .05$). Ethnic identification was negatively related to male students' positive substance-use expectancies ($\beta = -.11$, $SE = .05$, $p < .05$) and substance-use intentions ($\beta = -.10$, $SE = .04$, $p < .05$).

The results for the Mexican-born students suggested that ethnic identification was positively related to parental antidrug injunctive norms ($\beta = .21$, $SE = .08$, $p < .01$), friends' antidrug injunctive norms ($\beta = .32$, $SE = .16$, $p < .05$), personal antidrug norms ($\beta = .10$, $SE = .05$, $p < .05$), and descriptive antidrug norms ($\beta = .16$, $SE = .06$, $p < .01$). Ethnic identification was negatively related to Mexican-born students' positive substance-use expectancies ($\beta = -.16$, $SE = .04$, $p < .001$) and substance-use intentions ($\beta = -.12$, $SE = .06$, $p < .05$). The results for the U.S.-born students suggested that ethnic identification was positively related to students' personal antidrug norms ($\beta = .11$, $SE = .03$, $p < .01$) and negatively related to students' positive substance-use expectancies ($\beta = -.13$, $SE = .05$, $p < .05$) and substance-use intentions ($\beta = -.08$, $SE = .03$, $p < .01$).

Tables 2 and 3 present the regression coefficients, robust standard errors, test statistics, and *p* values associated with the moderated multiple regression models. The regression coefficient for the interaction between ethnic identification and gender was not statistically different from zero in any of the regressions (see Table 3). Although the results presented in the preceding two paragraphs show instances where (a) one slope was significantly different from zero when the other slope was not and where (b) both slopes were significantly different from zero and apparently different from one another, the formal statistical test findings presented in Table 3 indicate that gender did not moderate the relation between ethnic identification and any one of our nine outcomes. Examination of the coefficients presented in the preceding two paragraphs revealed that the direction of the effects (e.g., positive or negative) was identical for females and males and the largest difference in coefficients was .1 for the analysis using positive substance-use expectancies. This suggests that the failure to detect moderation effects accurately reflects these data rather then a lack of power.

Table 4 presents the regression coefficients, robust standard errors, test statistics, and *p* values associated for the models that included country of birth as the potential moderator. The regression coefficient for this interaction term was statistically different from zero in the model for students' descriptive antidrug norms. The analysis presented above indicate that ethnic identification was positively related to these norms for the students who were born in Mexico; that is, that the more ethnic identified Mexican-born students perceived that less of their peers have tried alcohol, cigarettes, and other drugs. However, ethnic identification was not significantly related to these norms among students who were born in the United States ($\beta = .03$, $SE = .04$, $p = ns$). Examination of the coefficients for the significant interaction effects also reveals differences in the direction of effects for friend injunctive norms, where the coefficient was positive for Mexican-born participants and negative (but not significant) for those who were U.S.-born ($\beta = -.09$, $SE = .09$, $p = ns$). More ethnically identified Mexican-born preadolescents perceived more antidrug friend norms, while more ethnically identified American-born preadolescents perceived weaker antidrug friend norms. In addition, the coefficients for friend injunctive norms differed by .41 and that for descriptive norms differed by .13. These findings suggest that country of origin and ethnic identity may interact in influencing some substance-use-related outcomes.

Discussion

Mexican-heritage youth represent an at-risk, understudied, and underserved ethnic minority group. Although these youth possess unique resiliencies, they report substance use at higher rates than other ethnic/racial groups. The present study attempted to fill this research void by examining the relation between ethnic identification and selected substance-use-related outcomes among preadolescent Mexican-heritage youth. In addition, the analyses looked at the impact of gender and country of origin as moderators of the relationships of interest.

Stronger ethnic identification appears related to stronger antidrug personal and descriptive norms, greater confidence in refusing drugs, less positive substance-use expectancies, and less intent to use substances. In other words, participants who had a strong identification with their Mexican heritage were more likely to hold antisubstance beliefs. Such findings suggest that ethnic identification may act as an important protective factor against substance use in these groups. In the last 50 years, countless prevention efforts have been directed to adolescents. Unfortunately, many of these campaigns failed to account for the myriad of cultural factors that influence their substance-use norms, expectancies, and intentions. Our findings suggest that a well-developed sense of identity influences these variables, potentially reducing future substance use. Since substance use is often related to other risky behaviors (Baskin-Sommers and Sommers, 2006; Tapert, Aarons, Sedlar, and Brown, 2001), this approach may have even broader application.

Gender did not moderate the effects of substance use. Such finding might be related to the age of the participants. It may be that preadolescents may not have experienced strong ethnic socialization yet or that at this stage of development these identities are not linked (e.g., individuals at this age may develop one without the other, with the one emerging first developmentally and/or individually determined). As a result, gender and ethnic identity may have independent effects. Alternatively, a moderation effect might have been observed if we had measured gender identity rather than or in addition to gender. Recent research suggests that gender identity may interact with gender label to influence the substance use of Mexican-heritage adolescents (Kulis, Marsiglia, and Hurdle, 2003), and this pattern may hold for younger members of the group.

While gender does not appear to function as a moderator, country of origin does. Statistically significant interactions between the student's country of origin and the extent to which the student identified with an ethnic group also emerged for two substance-use-related outcomes: friends' antidrug norms and the student's descriptive antidrug norms. The extent to which preadolescents identified with their ethnic group was not significantly related to descriptive norms and was related to weaker friend antidrug norms among the larger group of students born in the United States. However, the extent to which preadolescents identified with their ethnic group was significantly related to perceptions of less peer use and stronger friend antidrug norms among the smaller group of students born in Mexico. These findings provide some support for examining the importance of country of origin as a factor in substance-use research. Preadolescents born in Mexico appear to maintain their more traditional norms, at least with respect to substance use, and this appears to be a protective factor in substance-use decisions. In addition, ethnic identification appears more important for maintaining some of these norms for Mexican-born than U.S.-born preadolescents. It is not clear from this work if these Mexican-born preadolescents have a different view of other layers of their identity (e.g., identities as sons/daughters, students, friends). As such it is important to continue to explore the extent to which country of origin interacts with ethnic identification as well as other identity layers.

Limitations

We note a number of limitations to this study. First, assessing ethnic identification with preadolescents can be challenging. These preadolescents may not understand the more abstract nature of ethnic identification. As a result, a truncated version of Phinney's ethnic identity scale was used. This limits comparison to studies with older populations. In addition, the degree of identification is likely to change as they age and thus longitudinal analyses are needed to examine the role of identification as they emerge into adolescence and beyond. Our previous research does suggest that ethnic pride, which is similar to the current conceptualization of identification, continues to be negatively associated with substance use among Mexican American adolescents (Marsiglia et al., 2001). Next, the study's generalizability is limited to lower-socioeconomic status Mexican-heritage preadolescents. Relationships and moderating effects of gender and country of origin may vary greatly at other developmental stages and for children of other ethnic or racial backgrounds or differing socioeconomic status. Finally, the cross-sectional nature of these data limits our ability to examine causal relationships and the linearity of the analyses may not accurately represent nonlinear processes.

Conclusion

This study adds to the growing body of knowledge about Mexican-heritage youth, extending our knowledge to a younger sample. The increasing size of this population and their propensity for substance use makes research of this type essential. Our findings indicate that enhancing ethnic identity may provide a promising route for prevention interventions with Mexican-heritage preadolescents, although it may prove a more effective strategy for Mexican-born members of the group. Perhaps there are different aspects of identity that function differently for each group that can be examined in future research. Work with adolescents, for example, suggests that minority youth who are proud of their ethnic group are less likely to consume substances, while majority youth who feel this way are more likely to do so (Marsiglia et al., 2001). As a multilayered construct (Hecht et al., 2004), identity appears to function differently for U.S.-born and Mexican-born Mexican-heritage youth. Moreover, while in some limited circumstances, strong identification may be stressful and lead to a complex mix of positive and negative outcomes for minority youth (Oetting, 1993), our sample appears encouraged to adopt a bicultural orientation (Matsunaga, Hecht, Elek, and Ndiaye, 2007), emphasizing both their own ethnic minority culture and the general U.S. culture. This seems to require an even more sophisticated analysis in future research that also considers a broader range of both individual and societal factors and recognizes the diversity within groups. For instance, high ethnic identification may be related to less substance use but only for those individuals in groups that face prejudice or in groups that emphasize antisubstance-use norms. This study also points to the relationship of ethnic identity to substance-use norms and expectations, and future research should address how these norms and expectations emerge in this cultural context. Finally, these findings may suggest that prevention interventions addressing identity issues such as ethnic identity may need to adopt individually tailored (Kreuter, Lukwago, Bucholtz, Clark, and Sander-Thompson, 2003) or adaptive (Collins, Murphy, and Bierman, 2004) approaches rather than universal strategies that target group membership. For instance, interventions may emphasize identification with antidrug cultural norms more for Mexican-born adolescents while emphasizing other strategies for U.S.-born Mexican-heritage individuals. We, of course, are indebted to our participants for their contributions to knowledge that we hope will benefit future generations of Mexican-heritage youth.

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Glossary

Communication theory of identity	the Communication Theory of Identity (CTI; Hecht et al., 2003) proposes four layers of identity: personal layer (individual locus of identity), enactment layer (communication locus of identity), relational layer (relationship locus of identity), and communal layer (group-based identity). By addressing these layers and the interpenetration of between layers, CTI points to the complexity of identity and the important role of communication as a means of "externalizing" identity
Ethnic identification	the extent to which individuals associate themselves with attitudes and values of a particular ethnic group and feel like a member of that group
Mexican heritage	individuals of Mexican descent (born in the United States or Mexico)
Preadolescents	participants who are in the period of adolescence and have not reached 13 years. Preadolescence most often includes children between the ages of 9 and 12
Substance-use expectancies	expectations and anticipations regarding the consequences of substance use
Substance-use norms	beliefs and values regarding substance use
Substance-use intentions	intent to use substance if given an opportunity

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Biographies

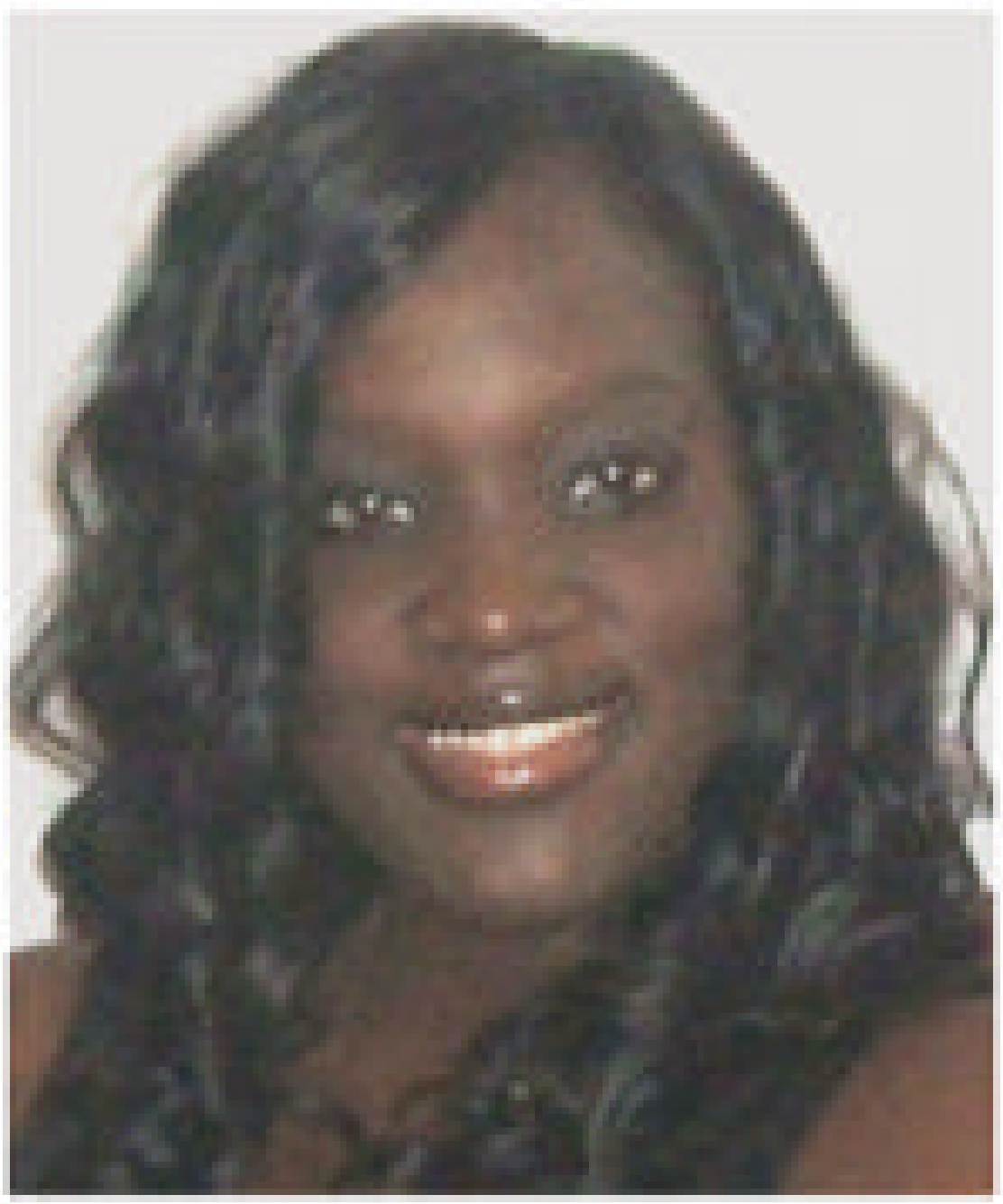

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Table 1

Measures information

Measure	Full list of items	Additional information
Ethnic Identification α = .82	**1** I have tried to learn more about my own ethnic group, such as its history and customs. **2** I have often talked to other people, like my parents, to learn more about my ethnic group. **3** I am happy to be part of my ethnic group. **4** I feel like I really belong to my own ethnic group. **5** I am very proud of my ethnic group and its accomplishments. **6** I am involved in the customs, such as food, music, or celebrations, of my own ethnic group.	The ethnic identification scale items are modified versions of items used in the Multigroup Ethnic Identity Measure (Phinney, 1992). The items were modified to better suit the reading ability of the DRS4 study fifth-grade students.
Parents' antidrug injunctive norms α = .92	How angry would your parents be if they found out you: . . . drank alcohol? . . . smoked cigarettes? . . . smoked marijuana?	These items were based on one alcohol-related item used on the AAPT questionnaires (Hansen and Graham, 1991)
Friends' antidrug injunctive norms α = .88	How would your best friend react if you: . . . got drunk? . . . smoked cigarettes? . . . smoked marijuana?	The cigarette and marijuana items were used in Project SMART (Hansen et al., 1988), while the alcohol item was used in both Project SMART and on the AAPT questionnaires (Hansen and Graham, 1991).
Personal norms (against use) α = .93	Is it OK for someone your age to: . . . drink alcohol? . . . smoke cigarettes? . . . smoke marijuana?	The alcohol item is taken loosely from a question on the AAPT questionnaire (Hansen and Graham, 1991), but all of the items were essentially created for the project.
Descriptive norms (against use) r = .82	**1** About how many kids in your school would you guess have used alcohol, cigarettes, or marijuana at least once? **2** Now think about the friends you hang out with. How many do you think have used alcohol, cigarettes, or marijuana at least once? **3** About how many kids in your school would you guess use alcohol, cigarettes, or marijuana regularly? **4** Now think about the friends you hang out with. How many do you think use alcohol, cigarettes, or marijuana regularly?	(Hansen and Graham, 1991). The DRS3 questions were a shortened version of what appeared in the AAPT questionnaires.
Refusal efficacy α = .97	Are you sure you would say no if: . . . a family member offered you alcohol? . . . a close friend offered you marijuana? . . . a kid at school offered you a cigarette?	The DRS3 items were modified from those used by Kasen et al. (1992) to assess self-efficacy for refusing sexual intercourse.
Substance-use intentions α = .93	If you had a chance this weekend, would you use: . . . alcohol? . . . cigarettes? . . . marijuana?	These items were created specifically for DRS4 to provide a more concrete time frame for the students.
Positive substance-use expectancies α = .81	Do you agree or disagree:	The alcohol item was one from the ADAPT questionnaire (Hansen and

Measure	Full list of items	Additional information
	Drinking alcohol makes parties more fun. Smoking cigarettes makes people less nervous. Smoking marijuana makes it easier to be part of a group.	Graham, 1991), although the others were apparently created for the project.
Ease of getting and availability of substances	**1** How easy would it be to get alcohol, cigarettes, marijuana, or other drugs, if you wanted to try them? **2** About how often are you in situations where alcohol, cigarettes, marijuana, or other drugs are available to you, even if you don't want to use them?	The two items were created for this study.

Table 2

Models regressing substance-use-related outcomes on ethnic identification

Outcome	Regressor	Coefficient	*SE*	*p* > |z|
Parental antidrug injunctive norms	Ethnic identification	0.097	0.035	**
	Constant	3.678	0.035	
Friend antidrug injunctive norms	Ethnic identification	0.039	0.080	
	Constant	4.061	0.055	
Personal antidrug norms	Ethnic identification	0.103	0.026	***
	Constant	3.783	0.017	
Descriptive antidrug norms	Ethnic identification	0.073	0.034	*
	Constant	3.549	0.023	
Refusal confidence/efficacy	Ethnic identification	0.150	0.064	*
	Constant	1.926	0.045	
Intentions to use substances	Ethnic identification	−0.092	0.027	**
	Constant	3.762	0.016	
Positive substance-use expectancies	Ethnic identification	−0.156	0.044	***
	Constant	3.595	0.021	
Opportunities to use drugs are easy to get	Ethnic identification	−0.054	0.050	
	Constant	1.401	0.030	
Opportunities to use drugs are available	Ethnic identification	−0.030	0.045	
	Constant	1.359	0.024	

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Table 3

Models regressing substance-use-related outcomes on ethnic identification, gender, and their interaction

Outcome	Regressor	Coefficient	*SE*	*p* > |z|
Parental antidrug injunctive norms	Ethnic identification	0.097	0.036	**
	Gender	−0.105	0.049	*
	Interaction	0.057	0.083	
	Constant	3.677	0.035	
Friend antidrug injunctive norms	Ethnic identification	0.028	0.083	
	Gender	−0.357	0.083	***
	Interaction	0.015	0.177	
	Constant	4.060	0.054	
Personal antidrug norms	Ethnic identification	0.100	0.028	***
	Gender	−0.113	0.034	***
	Interaction	0.007	0.060	
	Constant	3.783	0.017	
Descriptive antidrug norms	Ethnic identification	0.068	0.034	*
	Gender	−0.029	0.036	
	Interaction	−0.072	0.068	
	Constant	3.550	0.022	
Refusal confidence/efficacy	Ethnic identification	0.138	0.063	*
	Gender	−0.263	0.068	***
	Interaction	−0.085	0.116	
	Constant	1.925	0.045	
Intentions to use substances	Ethnic identification	−0.087	0.026	***
	Gender	0.131	0.031	***
	Interaction	0.025	0.050	
	Constant	3.762	0.015	
Positive substance-use expectancies	Ethnic identification	−0.158	0.045	***
	Gender	0.088	0.039	*
	Interaction	−0.103	0.083	
	Constant	3.594	0.021	
Opportunities to use drugs are easy to get	Ethnic identification	−0.049	0.049	
	Gender	0.125	0.054	*
	Interaction	0.042	0.102	
	Constant	1.401	0.030	
Opportunities to use drugs are available	Ethnic identification	−0.025	0.045	
	Gender	0.084	0.043	*
	Interaction	0.057	0.076	
	Constant	1.358	0.024	

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Table 4

Models regressing substance-use-related outcomes on country of origin, gender, and their interaction

Outcome	Regressor	Coefficient	*SE*	*p* > |z|
Parental injunctive norms	Ethnic identification	0.106	0.035	***
	Country of origin	0.097	0.055	
	Interaction	0.150	0.083	
	Constant	3.675	0.035	
Friend injunctive norms	Ethnic identification	0.030	0.078	
	Country of origin	−0.198	0.085	*
	Interaction	0.415	0.188	*
	Constant	4.051	0.055	
Personal substance-use norms	Ethnic identification	0.105	0.026	***
	Country of origin	0.026	0.036	
	Interaction	−0.002	0.061	
	Constant	3.783	0.017	
Descriptive antidrug norms	Ethnic identification	0.065	0.033	*
	Country of origin	−0.127	0.035	***
	Interaction	0.136	0.068	*
	Constant	3.546	0.022	
Refusal confidence/efficacy	Ethnic identification	0.175	0.066	**
	Country of origin	0.379	0.098	***
	Interaction	−0.110	0.156	
	Constant	1.923	0.042	
Drug use intentions	Ethnic identification	−0.094	0.027	***
	Country of origin	−0.014	0.032	
	Interaction	−0.041	0.064	
	Constant	3.761	0.016	
Positive drug use expectancies	Ethnic identification	−0.152	0.043	***
	Country of origin	0.074	0.045	
	Interaction	−0.084	0.075	
	Constant	3.593	0.021	
Opportunities to use drugs are easy to get	Ethnic identification	−0.052	0.050	
	Country of origin	0.050	0.048	
	Interaction	−0.083	0.112	
	Constant	1.403	0.029	
Opportunities to use drugs are available	Ethnic identification	−0.029	0.045	
	Country of Origin	0.024	0.045	
	Interaction	−0.036	0.077	
	Constant	1.360	0.024	

* $p < .05$,

** $p < .01$,

*** $p < .001$.