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The influence of acculturation on drug and alcohol use in a sample of adolescents

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Abstract

This article reports on the associations between acculturation and substance use among 198 ninth-grade Southern California adolescents (mean age = 13.8 years). Substance use measures included 30-day (current) and lifetime use of alcohol and other drugs. Acculturation was measured using the Acculturation, Habits, and Interests Multicultural Scale for Adolescents (AHIMSA) acculturation scale, a multi-dimensional acculturation scale yielding four acculturation strategy scores. Linear regression analyses evaluated the association between acculturation on alcohol and drug use, adjusting for several covariates. Results revealed that the assimilation acculturation strategy was significantly, but negatively associated with current alcohol use, especially among males. The separation acculturation strategy was significantly and positively associated with current alcohol use, especially among females. Marginalization was associated with greater risk for lifetime alcohol and drug use, especially among males, and a greater risk of current drug use among females. The social influence covariates were predictive of both current and lifetime alcohol and drug use. Future studies should incorporate multidimensional acculturation scales in adolescent substance use to understand how different acculturation strategies impact different populations.

Keywords

acculturation; drug use; alcohol use; adolescents

1. Introduction

The efforts to curtail the adoption of alcohol and drug use among adolescents in the United States have yielded some promising results (Botvin et al., 2001; Lalonde et al., 1998). However, when examining certain substances, ethnic differences are strikingly apparent (Johnston et al., 2002, 2003). Rates of current inhalant use, current cocaine use, lifetime heroin use, and lifetime MDMA use are highest among Latino (4.3%, 5.7%, 3.9%, 13%; respectively) compared to White (3.6%, 3.8%, 2.6%, 11%; respectively) and Black (3%, 2.2%, 2.6%, 6%; respectively) adolescents (Centers for Disease Control and Prevention, 2004). Another study reports that Latino 12th graders had the highest rates of alcohol, crack, heroin (both intravenous (IV) and

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non-IV), and Rohypnol use (Centers for Disease Control and Prevention, 2004; Johnston et al., 2005). Among 8th graders, trend data reveal similar results. In a study that measured elevated prevalence of alcohol, marijuana, MDMA, and heroin use over the past decade, Latinos reported the highest use of almost all classes of drugs except amphetamines (Johnston et al., 2003; Johnston et al., 2005). The Monitoring the Future study showed a similar pattern, with Latino high school seniors reporting the highest rates of lifetime cocaine (all forms) and crystal methamphetamine use compared to White and Black seniors (National Institute of Drug Abuse and University of Michigan, 2004).

Reasons for these differences have been in part explained by cultural variations, specifically acculturation, which is defined as the “dual process of cultural and psychological change that takes place as a result of contact between two or more cultural groups and their individual members” (p698; Berry, 2005). As immigrants become more acculturated, a change in behavior can ensue as they adopt the attitudes and practices of the host country (Epstein et al., 1996). However, not all individuals undergo acculturation in the same fashion, since acculturation is a long-term (Berry, 2005), complex and multidimensional process (Padilla, 1980). Berry (2005) mentions two fundamental dimensions of acculturation, including 1) the maintenance of original cultural identity and 2) having contact with and participating in the host society. This second dimension also includes the maintenance of relationships with individuals from other cultural groups. These two dimensions yield four general acculturation strategies: integration, assimilation, separation, and marginalization (Berry, 1998, 2005). Integration occurs when individuals maintain their original culture, yet seek intergroup relationships. Assimilation takes place when individuals are relatively unconcerned with maintaining their original culture, but seek intergroup relationships. Conversely, separation involves the preservation of the original culture while avoiding intergroup relationships. Finally, marginalization occurs as individuals do not maintain original cultural identity nor desire intergroup relationships, rejecting both cultures (Berry, 1998).

Acculturation to the U.S. culture has been associated with a number of negative health outcomes for Latino adolescents, specifically a rise in alcohol and other drug use (Epstein et al., 1998; Epstein et al., 2003; Unger et al., 2000). Research suggests that although alcohol and drug use have been traditionally low in immigrant populations residing in the U.S., acculturation may be an important predictor of substance use among Latino youth (Austin and Gilbert, 1989; De la Rosa et al., 1990; Epstein et al., 1998, 2001; Epstein et al., 2003; Farabee et al., 1995; Vega et al., 1997; Velez and Ungemack, 1995). Currently, Latino immigrants living in the U.S., irrespective of country of origin, report higher rates of substance and alcohol use when compared to Latinos still living in the country of origin (Caballero-Hoyos et al., 2005; Caetano and Mora, 1988; Cherpitel and Borges, 2001; Fosados et al., 2005; Vega et al., 1998a). What's more, the risk for substance use increases the longer they remain in the United States (Epstein et al., 1996).

There are two dominant hypotheses in the literature explaining for the association between acculturation and substance use (Vega et al., 2003). One hypothesis is that exposure to the U.S. culture increases the opportunities for drug use in peer group situations as well as familiarity with drug use norms (Burnam et al., 1987; Vega et al., 2003). Since an important component of acculturation is acquiring English speaking proficiency, as Latino youth acculturate, they may be more likely to spend time with highly acculturated or U.S.-born peers who have incorporated the mainstream norms of the American youth culture (Unger et al., 2000). As a result, greater association with U.S.-born peers or significant adults may expose acculturating youth to relatively more pro-substance peer influences (Rai et al., 2003; Rice et al., 2003; Unger et al., 2000; Urberg et al., 1997; Windle, 2000) and perhaps convey a belief that substance use is normative. Acculturating youths may also find themselves more often in

circumstances where peers offer or are using substances because they now can communicate in English with others that have access to drugs in the environment (Unger et al., 2000).

A second hypothesis is attributed to the stress and conflict involved in the acculturation process (Szapocznik et al., 1989; Vega et al., 2003). This acculturative stress is rooted in the stress/coping paradigm (Unger et al., 2004; Vega et al., 1998b), whereby if stressors encountered during the acculturative process exceed an individual's coping skills, and if the individual considers the stressors as uncontrollable, the individual may engage in rebellion, delinquency and/or drug use (Unger et al., 2004; Vega et al., 2003). Literature on acculturative stress indicates that the integrated acculturation strategy is least stressful, providing access to more social resources and a wider array of coping skills. Marginalization, on the other hand, results in the most stress (Berry, 2005). Assimilation and separation strategies tend to lie somewhere in between, with one being less stressful than the other at times (Berry, 2005).

To date, most of the literature on acculturation has focused on unidimensional models that measure language preference. Although language use accounts for a considerable portion of the variance in several acculturation measures (Cuellar et al., 1980; Epstein et al., 1996; Lessenger, 1997), acculturation is a complex process, involving multiple dimensions. Therefore, multidimensional models that measure biculturalism may be more accurate in assessing individuals who identify with more than one culture (Coatsworth et al., 2005; Marsiglia and Waller, 2002; Unger et al., 2000). Plus, multidimensional models do not assume the loss of the native culture once the new culture has been integrated (Oetting and Beauvais, 1990). The current study builds on prior literature by implementing the Acculturation, Habits, and Interests Multicultural Scale for Adolescents (AHIMSA; Unger et al., 2002), a new multidimensional acculturation scale providing scores of four acculturation strategies to examine the relationship between acculturation and alcohol and drug use among Latino adolescents. We hypothesize that among the four acculturation strategies, the marginalized acculturation strategy will be associated with greater alcohol and drug use.

2. Methods

2.1. Procedures

This study was conducted as one of two pilot tests designed to develop measures for a larger study of acculturation patterns and substance use among Southern California Latino adolescents. The data collected for this pilot study was conducted in a single high school with a large Latino student body population during the month of August 2005. Although the majority of participants were born in the U.S. (86.8%), most of their parents were not (88.4%), indicating a preponderance of U.S.-born second generation Latinos in our sample (Portes and Rumbaut, 2001). Country of origin was mostly from Mexico (85.3%), which is consistent with U.S. Census data on Latinos living in California (U.S. Census Bureau, 2001). Almost 94% of the sample reported speaking another language other than English at home. Of these, the majority were bilingual (65.8%; spoke English and another language equally), 20.2% reported speaking only or mostly another language, and 14% spoke mostly English at home. Although participants who reported speaking another language were not asked about the other language, it is likely that the other language is Spanish given the country of origin. Census data indicate that 65.4% of Californians over the age of 4 who speak another language at home speak Spanish (Shin and Bruno, 2003). Furthermore, Mexican census data indicate that less than 7% of the population speak an indigenous language (INEGI, 2006), indicating that Mexican immigrants are more likely to speak Spanish than an indigenous dialect. The socioeconomic status of the student body was low, with 95% of students participating in the free/reduced price lunch program (GreatSchools, 2005). Trained research assistants visited the classrooms to explain the study to students, and to distribute parental consent forms and student assent forms. To increase the return rate of consent forms, each classroom was offered a pizza party if every

student in the class returned the forms, regardless of whether the parents said yes or no. Students were allowed to participate if they provided written parental consent and student assent. All ninth-grade classrooms at the school were invited to participate. Of the 317 students who were invited to participate, 291 (92%) provided written student assent and 213 (67%) provided written parental consent. A total of 198 (62%) completed the survey, but 8 students were excluded from analyses because gender was not reported. The University of Southern California Institutional Review Board approved study procedures and survey instruments.

2.2. Measures

Participants completed a self-administered paper-and-pencil questionnaire. The survey took approximately 50 minutes to complete and included both an English and Spanish version within the same booklet, so that students could complete the survey in their preferred language without experiencing any stigma (only 2 students chose to complete the survey in Spanish). The survey consisted of demographic questions (such as age, gender, ethnicity, academic performance); several measures of acculturation, culture, and generation status; measures of family and peer characteristics (e.g. who participant lives with most of the time, etc.); tobacco, alcohol, and drug use (30-day and lifetime use); peer influence; and various other health behavior related questions.

2.2.1. Independent variable—Several measures of acculturation were included in the survey (e.g. AHIMSA; Unger et al., 2002), Marin acculturation scale (Marin et al., 1987), Oetting and Beauvais ethnic identity measure (Oetting and Beauvais, 1990), Phinney multi-group ethnic identity measure (Phinney, 1992), and Acculturation Rating Scale for Mexican-Americans (ARSMA-II; Cuellar et al., 1995), yet only the AHIMSA (Unger et al., 2002) was used in the analyses because of its brevity, age-appropriateness, multicultural relevance, and the ability to assess multiple dimensions of acculturation. In addition, the AHIMSA has been shown to correlate with other subscales, providing evidence for its validity. Furthermore, AHIMSA has been validated in adolescents, is bi-dimensional, and is based on factors other than language, providing a more comprehensive acculturation measure. The AHIMSA is an 8-item scale (additional information on the AHIMSA is reported elsewhere; Unger et al., 2002) with 4 response options for each question: “the U.S. (indicating assimilation), “the country my family is from” (indicating separation), “both” (indicating integration), and “neither” (indicating marginalization). Scores for each of these four orientations range from 0 to 8. Due to the forced-choice format, the sum of the four orientations will always equal eight (the total number of questions in the scale), therefore it is not possible to include all four orientation scores as independent variables in regression analysis because otherwise linear dependence will be created (Unger et al., 2002). In other words, once the scores on three of the subscales are known, the fourth subscale will be 8 minus the sum of the previous three. By examining more than just one dimension, the AHIMSA may provide a more accurate picture of the acculturation strategies adopted by adolescents.

2.2.2. Dependent variables—Current alcohol use was measured with “During the past 30 days, on how many days did you have at least one drink of alcohol?” Response categories include: 0 days; 1 or 2 days; 3 to 5 days; 6 to 9 days; 10 to 19 days; 20 to 29 days; and all 30 days. Lifetime alcohol use was measured with “During your life, on how many days have you had at least one drink of alcohol?” Seven response categories were available: 0 days; 1 or 2 days; 3 to 9 days; 10 to 19 days; 20 to 39 days; 40 to 99 days; and 100 or more days.

In order to assess current and lifetime drug use, students were asked, “How many times have you used any of these drugs?” for both current (last 30 days) and lifetime drug use. The six drug categories include: marijuana (grass, pot, weed); any form of cocaine (powder, crack, freebase); methamphetamines (speed, crystal, crank, ice); ecstasy (MDMA); any kind of

hallucinogens (LSD, mushrooms); and any kind of inhalants (glue, paint, or anything that can be huffed). Responses were given on a 6-point rating index ranging from 0 to 40+ in increasing intervals (e.g. 0 times; 1 or 2 times; 3 to 9 times; 10 to 19 times; 20 to 39 times; and 40 or more times). The reliability and predictive validity of this format has been previously established (Sussman et al., 1995; Sussman et al., 1998). By averaging across responses, a drug use index was created ($\alpha = 0.67$ for current use; $\alpha = 0.67$ for lifetime use). A higher mean on drug use indicates greater use of those substances.

2.2.3. Covariates—An indicator for socioeconomic status (SES) was created from two questions: “How many people live in the home where you spend most of your time (including you)?” and “How many rooms does your house or apartment have (excluding kitchen and bathroom)?” SES was calculated by dividing the number of rooms in the home by the number of people living in the home (Baer et al., 1996). Ethnicity was self-reported, using the question: “What would you consider yourself to be...” with 15 ethnic groups listed (American Indian or Alaska Native; Asian; Black or African American; Hispanic; Latino or Latina; Native Hawaiian or Pacific Islander; White; Mexican; Central American; South American; Mexican-American; Chicano or Chicana; Mestizo; La Raza; and Spanish). Responses for each of these ethnic groups included: yes, no, and don't know. Because peer relationships are considered an important factor involved in whether or not youths decide to engage in and maintain alcohol and drug use (Ennett and Bauman, 1993, 2000; Kobus, 2003; Valente, 2003), we adjusted for alcohol or drug peer influence and modeling of alcohol or drug use by adults. According to social learning theory, learning occurs through modeling, which is based on the direct observation and imitation of role models' behavior, or through vicarious learning and reinforcement (Bandura, 1977). Peer influence was measured with two questions: Think of your five best friends at this school, 1) “Have you ever drunk alcohol with him/her?”; 2) “Have you ever done any drugs with him/her?” Response options were yes or no. However, due to the ego-centric nature of this question, the two questions were asked of each of their five best friends, for a total of 10 responses. The results per question were summed, with a range of 0 to 5 where 0=none of their five friends used and 5=all five of their friends used respective substance with the participant. Adult modeling was measured with two questions: “Think of the two adults that you spend the most time with. How many of them drink alcohol at least once per week?” and “Think of the two adults that you spend the most time with. How many of them use marijuana?” Response options included: none or 0, 1 of them, and 2 of them.

2.3. Analytic approach

Transformations to the data include recoding ethnicity as Hispanic (participant indicated yes to any of the following: Hispanic; Latino or Latina; Mexican; Central American; South American; Mexican-American; Chicano or Chicana; Mestizo; La Raza; or Spanish) versus other; socioeconomic status (less than 1 room per person versus 1 or more rooms per person); and modeling of alcohol or drug use by adults (none versus one or both adults modeling respective behavior) separately for alcohol and drug use.

Because research suggests gender differences in substance use, the results were tabulated by gender with respective frequencies and percentages. Chi-square and t-tests were conducted to determine significant differences between genders. In order to examine the association between the alcohol and drug use variables (both current and lifetime) and the AHIMSA acculturation subscales, linear regressions were conducted, adjusting for covariates. After checking for regression assumptions, the alcohol and substance use variables (dependent variables) were transformed by their natural log (Frank, 1966). A one-tailed alpha of 0.05 was used to determine level of significance and analyses were conducted with the Statistical Analysis System software (SAS Institute, 1990).

3. Results

3.1. Demographic characteristics of the sample

The demographic characteristics of our study sample are shown in Table 1. Average age for the sample was 13.8 years and there were slightly more female than male participants (53.7% female). Most participants lived with both parents (66%), were Hispanic (95.3%), and were born in the U.S. (86.8%). The results of the AHIMSA subscales indicate a greater proportion of students as being integrated (both countries orientation), followed by assimilated (U.S. orientation). With respect to alcohol use, results indicate that lifetime use was 41.4% while current use was 14.9%. Lifetime drug use was 15.5% for marijuana, 9.8% cocaine, and 7.1% methamphetamines while current drug use was 9.5%, 6.4%, and 4.3%, respectively (these results not shown). There were few significant gender differences.

3.2. Factors associated with current and lifetime alcohol and drug use

Table 2 shows the standardized coefficients testing the association between AHIMSA acculturation subscales and lifetime and current alcohol use, adjusting for ethnicity, SES, peer influence, and adult modeling. With respect to lifetime alcohol use, marginalization was associated with lifetime alcohol use ($\beta=0.14$; $p<.05$). Furthermore, both social influence items (peer influence and adult modeling) were significantly associated with lifetime alcohol use ($\beta=0.29$; $\beta=0.16$; respectively; $p<.05$). Among females, there were no significant associations between AHIMSA subscales and lifetime alcohol use at the $p<.05$ level. However, peer influence and adult modeling were predictive of lifetime alcohol use. Among males, marginalization was significantly associated with greater lifetime alcohol use ($\beta=0.21$; $p<.05$).

Assimilation was protective of current alcohol use ($\beta=-0.17$; $p<.001$), while separation was associated with greater use ($\beta=0.11$; $p<.05$). Adult modeling and peer influence were significant predictors of current alcohol use ($\beta=0.30$; $\beta=0.34$; $p<.05$; respectively). After stratifying by gender, separation remained positively associated with current alcohol use only among females ($\beta=0.21$; $p<.05$) while assimilation was protective among males ($\beta=-0.22$; $p<.05$). Peer influence and adult modeling remained significant predictors of current alcohol use among both males and females.

Table 3 illustrates the factors associated with lifetime and current drug use, adjusted for ethnicity, SES, peer influence, and adult modeling. Marginalization was positively and significantly associated with lifetime drug use ($\beta=0.16$; $p<.01$). Additionally, peer influence and adult modeling were significantly associated with lifetime drug use. After stratifying by gender, marginalized males were significantly more likely to be at risk for lifetime drug use ($\beta=0.21$; $p<.05$), but not females ($\beta=0.08$; $p>.05$). Peer influence and modeling remained significant among females while only modeling was significant among males.

None of the AHIMSA subscales were significantly associated with current drug use. However, gender stratification revealed marginalized females were more likely to report current drug use ($\beta=0.16$; $p<.05$). In addition, peer influence had the greatest impact on current drug use ($\beta=0.70$; $p<.01$), followed by modeling ($\beta=0.24$; $p<.01$). Hispanic females were also more likely to use report current drug use ($\beta=0.12$; $p<.05$). Among males, although no significant associations were observed with any of the AHIMSA subscales, adult modeling and being non-Hispanic were significantly predictive of current drug use ($\beta=0.34$, $p<.01$; $\beta=-0.20$, $p<.05$; respectively).

4. Discussion

This study was designed to assess whether lifetime and current alcohol and drug use varied by acculturation strategy, as measured by the AHISMA subscales, among a sample of Latino

adolescents in Southern California. Previous studies have established a positive association between acculturation and alcohol and drug use, indicating that as acculturation increases, a subsequent increase in the use of alcohol and drugs follows (Blake et al., 2001; Epstein et al., 2001; Epstein et al., 1996; Epstein et al., 2003; Farabee et al., 1995; Vega and Gil, 1998; Vega et al., 1993). However, many of these studies measured acculturation unidimensionally, either linguistically (Epstein et al., 2003), by country of origin, or by length of stay in the U.S. (Blake et al., 2001). Most of these previous studies have conceptualized acculturation as an increase in orientation to the U.S. culture combined with a decrease in orientation to the culture of origin. Very few studies have used a multidimensional scale, such as the AHISMA acculturation scale, to examine how different acculturation strategies are associated with adolescent drug use. In fact, many of the studies that incorporate the four acculturation strategies have focused on how these variables are related to individual psychological adaptation, including mental health, however not substance use (Organista et al., 2003; Searle and Ward, 1990; Ward and Rana-Deuba, 1999).

In this study, there is a general trend for marginalized individuals to be at greatest risk for lifetime use of alcohol and drugs compared to the other AHISMA subscales. According to some of the acculturative stress literature, marginalized individuals exhibit greater levels of stress and fewer coping strategies (Berry, 2005). When coupled with maladaptive coping styles, life stressors may increase vulnerability to substance use (Sussman et al., 1993). On the other hand, assimilated and separated individuals are reported to be intermediate in terms of the level of acculturative stress experienced, but it is unclear about which of these two levels is less stressful than the other (Berry, 2005). Our results indicate that assimilated Latino adolescents, in particular males, were significantly less likely to report current alcohol use, relative to integrated adolescents. One article, however, reports the opposite, where assimilated youth had greater problem behaviors, including substance use, compared to integrated/bicultural youths (Coatsworth et al., 2005). Further, our results indicate that separation, especially among females, was associated with great current alcohol use. Studies have reported that the further away the individual deviates from the culture of origin, the greater the risk for alcohol or drug use (Epstein et al., 1996; Vega and Gil, 1998; Vega et al., 1993).

One might ask whether acculturation could have been confounded by SES. If higher-SES adolescents were more likely to be assimilated and lower-SES adolescents were more likely to be integrated/bicultural, the higher risk of substance use among the integrated adolescents might have been a consequence of low SES rather than acculturation. This study attempted to control for SES confounding by including the rooms-per-person ratio as a covariate. However, because SES is a complex construct that is not easily measured with adolescents' self-reports, it is possible that other aspects of SES were not controlled for and influenced the results.

Conversely, our results indicate that separation, where the individual maintains the culture of origin but chooses not to maintain relationships with individuals from the host culture, was positively and significantly associated with current alcohol use. Katims et al. (1996) and Vega et al. (1998b) both reported that Latino adolescents with low levels of acculturation (i.e., high levels of separation) had higher substance use initiation and continued experimentation than their bicultural or highly acculturated counterparts. Other studies have found less acculturated immigrants at increased risk for substance and alcohol use (Brindis et al., 1995; Cervantes et al., 1990-91; Markides et al., 1988; Neff and Hoppe, 1992; Sommers et al., 1993). Additional research is needed to understand the nature of separation among adolescents living in ethnic enclaves within a multicultural society. Unlike adults who make the decision to avoid the host culture and remain separated in ethnic enclaves, children and adolescents who grow up in those ethnic enclaves are not exposed to other options. Therefore, separation among adolescents may be more of a reflection of the opportunities and experiences offered to them, rather than their conscious decision to hold on to their culture of origin and reject the host culture. Lacking

opportunities to succeed in the host culture, separated adolescents may turn to substance use or other problem behaviors.

While the mechanism for how acculturation affects the adoption of alcohol and drugs is unclear, these somewhat inconsistent findings point to the complexities of acculturation. Alternative explanations to our counterintuitive findings may lay in the fact that our study employed the AHIMSA scale, a fairly new acculturation scale, whereas prior research has usually relied on language or place of birth as proxy indicators for acculturation. In addition, our sample was predominantly bicultural, U.S.-born to foreign-born parents, attending a predominantly Latino high school located within a Latino ethnic enclave. Although the influx of recent immigrants into the community may be common, assimilated schoolmates may be less inclined to incorporate newcomers into their friendship peer networks. Given the fact that adolescents in any single peer group tend to be similar in many aspects, including substance use (Ennett and Bauman, 2000), perhaps the assimilated students, in their respective cliques, reinforce pro-social behavior and have more exposure to educational and occupational opportunities that could divert them from drug use. The separated and marginalized students, in contrast, may not have access to alternative pro-social activities and institutions and may be more influenced by the local gang and drug culture. Marginalized students also could be involved with peers that promote deviant behaviors. Or, these students may be social isolates, individuals who are not involved in any peer groups and interact with peers to a lesser extent (Ennett and Bauman, 2000) as a result of their non-bicultural orientation. There is evidence to suggest that a significantly higher percentage of current smokers are social isolates (Ennett and Bauman, 1993, 2000; Ennett et al., 1994). This may be due to isolates being connected to another group of friends outside the school, and these friendships may influence the student toward deviant behaviors such as drug use (Valente et al., 2004).

The possibility remains that our findings are an isolated occurrence or an error. The AHIMSA acculturation scale is a new measure, even though some of the subscales have been proven to be highly correlated with gold standards such as the Cuellar acculturation scale (Unger et al., 2002). In fact, the AHIMSA assimilation subscale was positively correlated with both the Cuellar ARSMA-II U.S. Orientation subscale and with English language usage. Further, when examining generational status, as expected, third-generation students had higher assimilation scores whereas separation (other country orientation) was highest among first-generation adolescents. On the other hand, the AHIMSA marginalization subscale was found to have low internal consistency and variance (Unger et al., 2002), similar to that found in the ARSMA-II Marginalization scale (Cuellar et al., 1995). According to Cuellar and colleagues (1995), marginalization may be domain specific, varying from day to day depending on experiences. When such experiences occur, the individual may consequently explore the cultural conflict that arises, in turn failing to identify with one or both cultures (Cuellar et al., 1995). Despite this, taking into account the evidence for the construct validity, AHIMSA tries to create the best possible way to measure acculturation.

Our findings highlight important gender differences. For instance, separated (other country) females had a greater risk for current alcohol use than did males. In addition, marginalized (neither country) females were at risk for current drug use than males. Marginalized males, on the other hand, were more likely to report lifetime alcohol and drug use than females. Assimilated males were less likely to currently use alcohol than females. Although the literature indicates that males may be more likely to use substances than their female counterparts, the acculturation literature suggests that the association between acculturation and substance use remains significant for females, but not for males (Bethel and Schenker, 2005; Caetano and Mora, 1988). The reasons behind this discrepancy remain largely unknown (Bethel & Schenker, 2005) but it is hypothesized that differing exposures to acculturative stress, especially the loss of cultural identity, by gender may assist in explaining why the relationship

between acculturation and substance use is significant for females but not males (Bethel & Schenker, 2005; Szapocznik et al., 2003).

Our results also emphasize the importance of social influences in adolescent substance use. Both peer influences and adults modeling of substance use are highly predictive of use. These results are corroborated by the literature (Ennett and Bauman, 1993; Hoffman et al., 2006; Kobus, 2003; Sieving et al., 2000; Sussman et al., 1995). Substance use behaviors may occur as a result of peers and/or adults modeling substance use, making substances more readily available, exerting mutual influence to use substances, and/or exposure to norms that encourage substance use (Bandura, 1977; Gaughan, 2003; Oetting and Donnermeyer, 1998; Perry and Jessor, 1985).

Several noteworthy limitations exist in the explanation or application of these data, including the small sample size and the self-reported risk behaviors. In addition, our findings can only be generalized to Latino adolescents attending a public high school with a predominantly low socioeconomic Latino student body. Further, most of our sample preferred English to Spanish when answering the survey, given that only two students chose to complete the survey in Spanish. Therefore, findings may not apply to the least acculturated Latino adolescents.

Due to the complex nature of the acculturation process, additional research might benefit from the inclusion of the AHIMSA, which is a measure designed to assess several aspects of acculturation. Future research should also investigate the role of school norms and peer social networks in order to explore how these influence acculturation and substance use, given that such information is often communicated among peers. Furthermore because culture constantly evolves and is created, interpreted, and communicated among members, it is important to revisit what acculturation and “being like the U.S.” means to a generation. For example, today's generation has improved access to widespread communication, information, and exposure due to the internet which gives them access to individuals of various ethnic and cultural backgrounds by mediums such as web-based peer network groups (e.g. MySpace). These findings, though limited, simply point out the complexities in acculturation and indicate a need for further research, including the incorporation of a more comprehensive acculturation scales such as the AHIMSA.

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Table 1
Sociodemographic characteristics by gender (n=190)

Variables	Female n = 102	Male n = 88	p- value
Age ¹	13.8 (0.53)	13.8 (0.61)	0.95
Socioeconomic Status			
People per rooms ¹	0.69 (0.38)	0.70 (0.27)	0.87
Self-reported ethnicity, n (%)			0.42
Hispanic/Latino	96 (94.1%)	85 (96.6%)	
Other	6 (5.9%)	3 (3.4%)	
Participant's country of birth			0.54
United States	90 (88.2%)	75 (85.2%)	
Other	12 (11.8%)	13 (14.8%)	
Number of parents born in the US			.05
None	89 (87.3%)	79 (89.8%)	
One	5 (4.9%)	8 (9.1%)	
Both	8 (7.8%)	1 (1.1%)	
AHIMSA Subscales ¹			
Other country (separation)	0.7 (1.1)	0.94 (1.2)	0.24
US orientation (assimilation)	2.6 (2.2)	2.3 (1.9)	0.31
Both countries (integration)	4.4 (2.2)	4.2 (2.3)	0.64
Neither country (marginalization)	0.14 (0.4)	0.24 (0.7)	0.27
Alcohol use			
Current	14 (13.4%)	14 (16.1%)	0.67
Lifetime	38 (38.0%)	39 (45.4%)	0.31
Drug use			
Current	18 (17.7%)	16 (18.2%)	0.92
Lifetime	27 (26.5%)	19 (21.6%)	0.43
Have you ever drunk alcohol with any 5 best friends?			
Yes (with at least one friend)	16 (15.7%)	8 (9.1%)	0.17
Have you ever done any drugs with any 5 best friends?			
Yes (with at least one friend)	11 (10.8%)	5 (5.7%)	0.21
How many of the two adults you spend most of your time with drink alcohol at least once a week?			
None	55 (53.9%)	36 (40.9%)	0.20
One	37 (36.3%)	40 (45.4%)	
Two	10 (9.8%)	12 (13.6%)	
How many of the two adults you spend most of your time with use marijuana?			
None	91 (89.2%)	80 (90.0%)	0.03
One	3 (2.9%)	7 (8.0%)	
Two	8 (7.8%)	1 (1.7%)	
Living arrangement			
Lives with both mother and father	61 (59.8%)	64 (72.7%)	0.06
Other	41 (40.2%)	24 (27.3%)	

¹ Mean (Standard Deviation)

Table 2
Factors associated with lifetime and current alcohol use (standardized beta)

Variables	Lifetime alcohol use			Current alcohol use		
	All	Female	Male	All	Female	Male
Hispanic	-0.01	-0.05	0.11	0.06	0.02	0.12
Socioeconomic status ¹	0.11 [†]	0.06	0.15 [†]	-0.08	-0.08	-0.10
Peer influence	0.29 ^{**}	0.51 ^{**}	0.06	0.34 ^{**}	0.32 ^{**}	0.29 ^{**}
Adult modeling	0.16 [*]	0.15 [*]	0.18 [†]	0.30 ^{**}	0.31 ^{**}	0.29 ^{**}
AHIMSA Subscales						
Both countries (integration)	Ref.	-	-	Ref.	-	-
US orientation (assimilation)	-0.04	-0.14 [†]	0.01	-0.17 ^{**}	-0.12	-0.22 [*]
Other country (separation)	0.04	-0.04	0.05	0.11 [*]	0.21 [*]	0.00
Neither country (marginalization)	0.14 [*]	0.05	0.21 [*]	0.09 [†]	0.11	0.12
R ²	14.9%	32.1%	10.6%	27.9%	30.2%	23.8%

¹ Low = < 1 room per person; Med-High SES = ≥ 1 room per person

^{**} p<0.01

^{*} p<0.05

[†] p<0.10

Table 3
Factors associated with lifetime and current drug use (standardized beta)

Variables	Lifetime drug use			Current drug use		
	All	Female	Male	All	Female	Male
Hispanic	-0.00	0.02	-0.04	0.00	0.12*	-0.20*
Socioeconomic status ¹	0.05	0.10 [†]	-0.02	-0.01	0.00	-0.08
Peer influence	0.44**	0.59**	0.16 [†]	0.45**	0.70**	0.11
Adult modeling	0.30**	0.34**	0.22*	0.29**	0.24**	0.34**
AHIMSA Subscales						
Both countries (integration)	Ref.	-	-	Ref.	-	-
US orientation (assimilation)	-0.03	-0.12 [†]	0.08	-0.03	-0.07	0.10
Other country (separation)	0.10 [†]	0.03	0.11	0.02	-0.03	0.04
Neither country (marginalization)	0.16**	0.08	0.21*	0.03	0.16**	-0.10
R ²	37.7%	60.0%	11.8%	35.3%	63.2%	16.2%

¹Low = < 1 room per person; Med-High SES = ≥ 1 room per person
** p<0.01
* p<0.05
[†] p<0.10