The Hispanic Americans Baseline Alcohol Survey (HABLAS): The association between acculturation, birthplace and alcohol consumption across Hispanic national groups

Patrice A.C. Vaeth[*], **Raul Caetano**, and **Lori A. Rodriguez**
University of Texas, School of Public Health, Dallas Regional Campus, 6011 Harry Hines Blvd. Room V8.112, Dallas, Texas 75390-9128, United States

Abstract

Acculturation to U.S. society has been associated with an increase in drinking and binge drinking among Hispanics. This paper examines the association between acculturation and three drinking-related outcomes: average number of drinks consumed, binge drinking, and drinking 12 drinks or more in a single day in four major Hispanic national groups. The 2006 Hispanic Americans Baseline Alcohol Survey used a multistage cluster sample design to interview 5224 adult Hispanics (18+ years) in five selected U.S. metropolitan areas: Miami, New York, Philadelphia, Houston, and Los Angeles. The four national groups interviewed were: Puerto Ricans, Cuban Americans, Mexican Americans, and South/Central Americans. The survey response rate was 76%. Data on drinking behavior were collected and the analyses include bivariate and multivariate regression techniques. Multivariate analysis did not show an association between acculturation and volume of drinking, binge drinking, or drinking 12 or more drinks in a single day among men. Acculturation stress, however, was associated with drinking 12 or more in a day among men. Among women, high acculturation was associated with a higher volume of drinking, and it also interacted with national group to increase the likelihood of binge drinking. Acculturation does not have a homogeneous effect on drinking across gender and Hispanic national groups. The results confirm that acculturation has a more consistent association with increased drinking and binge drinking among women than among men. The effect of acculturation is therefore gender-specific. This heterogeneity across Hispanic national groups must be considered in future research, treatment, and prevention efforts.

Keywords

Hispanic groups; Acculturation; Drinking; Binge drinking

1. Introduction

This paper examines the association between acculturation and drinking among four Hispanic national groups in the United States: Puerto Ricans, Cuban Americans, Mexican

[*]Corresponding author. Tel.: +1 214 648 0740; fax: +1 214 648 1081. patrice.vaeth@utsouthwestern.edu. .

Americans, and South/Central Americans. Acculturation is a process that leads to the adoption of cultural traditions and values of the host society by immigrant groups. This paper is one in a series of analyses of the same data set, the Hispanic Americans Baseline Alcohol Survey (HABLAS), which have examined various aspects of drinking and alcohol-related problems across these national groups (see Caetano, Ramisetty-Mikler, & Rodriguez, 2009a; Ramisetty-Mikler, Caetano, & Rodriguez, 2010; Vaeth, Caetano, Ramisetty-Mikler, & Rodriguez, 2009). The focus on Hispanics is, in part, because of their growing importance in the U.S. national population. The Hispanic population represents 15% of the U.S. population and this is expected to increase to approximately 30% by 2050 (U.S. Census Bureau, 2008). These analyses also focus on Hispanics because they are linked by birthplace and/or cultural ties to the many heterogeneous countries of Latin America. This cultural heterogeneity has implications for alcohol consumption and for acculturation to U.S. society.

However, in spite of widespread recognition that these groups are culturally different, most of the previous research in this field report findings for Hispanics as a whole (see for instance, Caetano & Clark, 1998a,1998b) or focus only on one national group, usually Mexican Americans (Grant et al., 2004; Markides, Ray, Stroup-Benham, & Treviño, 1990; Neff, Prihoda, & Hoppe, 1991). Some studies with relatively small samples have provided data on more than one national group (e.g., Black & Markides, 1993; Caetano & Galvan, 2001; Dawson, 1998). These papers have all reported considerable variation in drinking and alcohol-related problems across Puerto Ricans, Mexican Americans, and others. Previous analyses of HABLAS also show considerable national group variation. For instance, assessments of beverage preference indicate that beer is the beverage most often consumed and most often associated with binge drinking among men in all groups (Caetano, Vaeth, Ramisetty-Mikler, & Rodriguez, 2009b). However, among Cuban American and South/Central American women, wine is also associated with a considerable proportion of binge drinking (54.6% and 59.4%, respectively). Rates for drinking and driving, regardless of whether or not there is an arrest, also vary considerably across national groups. Among men, 6.2% of Cuban Americans, 7.8% of Puerto Ricans, 14.5% of South/Central Americans, and 17.3% of Mexican Americans report driving after having too much to drink in the past 12 months (Caetano, Ramisetty-Mikler, & Rodriguez, 2008c). Hispanic national group heterogeneity is also reflected in rates of alcohol abuse and dependence. The 12-month prevalence rates for DSM-IV (i.e., Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition) alcohol abuse vary from 1.8% (Cuban Americans) to 5.6% (Mexican Americans) among men, and from 0.2% (South/Central Americans) to 1.1% (Cuban Americans) among women. Twelve-month rates for DSM-IV alcohol dependence among men vary from 5.3% (Cuban Americans) to 15.3% (Puerto Ricans). Among women, the rates range from 0.8% (South/Central Americans) to 6.4% (Puerto Ricans) (Caetano, Ramisetty-Mikler, & Rodriguez, 2008b).

Acculturation has been consistently associated with increased drinking among women but not among men (Caetano, 1987b; Gilbert, 1987; Markides et al., 1990; Zemore, 2005). Acculturation effects on various dimensions of drinking in different national Hispanic groups also differ across studies. Marín and Posner (1995) reported a uniform association between high acculturation and lower abstention rates for Mexican Americans and Central Americans but did not detect any effects on pattern of drinking. Black and Markides (1993) found a positive association between acculturation and frequency of drinking among Cuban American, Puerto Rican and Mexican American women. An association for total number of drinks was found among Cuban and Mexican American women, and for drinks per occasion only among Mexican American women. In an analysis of HABLAS data on DUI and acculturation, Caetano et al. (2008b) reported that both medium and high levels of acculturation are risk factors for DUI among Mexican Americans but not among other

groups. In contrast, these investigators found no association between level of acculturation and the likelihood of having one or more alcohol-related social problem in this data set (Caetano, Vaeth, & Rodriguez, 2012). Regarding alcohol abuse and dependence, and again analyzing HABLAS data, Caetano, Ramisetty-Mikler, and Rodriguez (2009a) reported that high acculturation is a risk factor for abuse but not dependence, independent of sociodemographic factors, national origin, and birthplace.

The mechanisms by which acculturation is associated with the adoption of different drinking patterns are not well understood. Many have proposed that acculturation has a general effect of liberalizing norms and attitudes towards drinking (Caetano, 1987a,1987b; Markides, Krause, & Mendes de Leon, 1988; Neff, Hoppe, & Perea, 1987) which would lead to increased drinking. However, acculturation has been identified as a difficult process which involves learning a new language and adapting to new and challenging cultural mores. This adaptation can produce stress – acculturation stress – which could then lead to increased drinking as a coping response to the difficulties inherent to the process (Berry, 2003; Born, 1970). Among Hispanics, acculturation stress has been linked to self-rated health status, depression, suicidal ideation, adolescents' self-esteem, family conflicts, and intimate partner violence (Caetano, Ramisetty-Mikler, Vaeth, & Harris, 2007; Finch & Vega, 2003; Finch, Hummer, Kolody, & Vega, 2001; Firestone, Harris, & Vega, 2003; Gil, Vega, & Dimas, 1994; Hovey & Magana, 2000; Romero & Roberts, 2003). Support for a particular mechanism linking acculturation and drinking does not automatically rule out the existence of others. Thus, there may be an increase in drinking among Hispanics through the adoption of more liberal norms as well as through use of alcohol as a coping mechanism to deal with stress.

The objective of this paper is to continue this examination of the association between drinking and acculturation, with a focus on comparisons across four large Hispanic national groups in the U.S.: Puerto Ricans, Cuban Americans, Mexican Americans, and South/ Central Americans. Three different drinking outcomes are considered: the mean number of drinks per week because of its association with the patterns of drinking and because of its dose–response and J-shaped associations with several diseases (Rehm et al., 2003); the frequency of binge drinking because of its adverse health and social outcomes (Dawson, 2011); and drinking 12 or more drinks in a single day because it is an indicator of very heavy drinking which has been recommended as an indicator of high volume drinking (Greenfield, Nayak, Bond, Ye, & Midanik, 2006; NIAAA, 2003). Based on the existing literature reviewed above, the association between acculturation and drinking should be stronger among women than among men. Because the effect of acculturation on drinking can be confounded by birthplace, the analyses will control for the effects of this variable. Research on the effects of birthplace consistently shows that U.S.-born Hispanics are at greater risk than foreign-born Hispanics for reporting a number of alcohol-related problems, including alcohol abuse and dependence (Alegria et al., 2007a,2007b; Grant et al., 2004; Vega et al., 1998). The analyses will also control for the effects of sociodemographic variables with well-known effects on drinking (i.e., gender, age, education, employment, marital status, and income).

The current analysis extends previous analyses using the HABLAS data set. First, the current analysis will assess the effect of acculturation stress on drinking. This is a construct that is independent of acculturation and may represent an independent mechanism associated with increased drinking among Hispanics. Second, the heterogeneous cultural and socioeconomic nature of different Hispanic national groups in the U.S. suggests that acculturation should not have a homogeneous effect on drinking across these groups. This analysis will therefore examine the potentially modifying effect of Hispanic national group

on the association between acculturation and drinking by testing national group by acculturation interactions.

2. Methods

2.1. Sampling and data collection

These data are from the 2006 HABLAS survey. The HABLAS employed a multistage cluster random sample design in five selected metropolitan areas of the U.S.: Miami, New York, Philadelphia, Houston, and Los Angeles. These sites were chosen because of the large proportion of Hispanics of specific national groups in their population. Respondents are a representative sample of the Hispanic civilian non-institutionalized population aged 18 and older in these sites. A total of 5224 individuals were interviewed, for a design adjusted response rate of 76%. This rate was estimated by taking into consideration the proportion of housing units with unknown eligibility that, based on Census data, are likely to be eligible. Face-to-face Computer Assisted Personal Interviews (CAPI) lasting approximately one hour, were conducted in respondents' homes by trained bilingual (English/Spanish) interviewers. About 71% of the interviews were conducted in Spanish. Respondents received a $25 incentive for their participation in the study. All respondents signed a written informed consent and the Committee for the Protection of Human Subjects of the University of Texas Health Science Center at Houston approved the HABLAS survey.

2.2. Questionnaire translation

Once the English questionnaire was pre-tested and finalized, it was translated into Spanish by a lead translator and then independently translated back to English. The two versions of the questionnaire, original English and Spanish, were then harmonized by a group of seven translators from different parts of Latin America (Cuba, Puerto Rico, Venezuela, Argentina, Peru, Mexico, and the Dominican Republic) to take into account the possibility that respondents in different Hispanic national groups would use different idioms and words in their daily use of Spanish. This group of translators, working together, created a roster of terms and words that appeared in the questionnaire that had different usage across the Spanish spoken by different Hispanic national groups. This roster was provided to the interviewers, who then used it when necessary during interviews in the field.

2.3. Measures

2.3.1. Average number of drinks per week—This was assessed by combining the self-reported frequency and quantity of drinking wine, beer, liquor, and mixed drinks with liquor in the past 12 months. Using this total consumption for the past 12 months, the average number of drinks per week was calculated. The volume of consumption is an important measure of drinking because of its close association with the patterns of drinking and because of its dose–response, or J-shaped association with several diseases (see Rehm et al., 2003).

2.3.2. Binge drinking—This was defined as drinking four or more (women) or five or more (men) standard drinks per occasion within a two-hour period in the past 12 months. A drink was defined as a five ounce glass of wine, a 12 ounce can of beer, or a 1.5 ounce shot of liquor. For the analysis in Table 2, respondents were placed in three categories of binge drinking: a) current drinkers who binged once a month or more; b) current drinkers who binged less than once a month; and c) current drinkers who did not binge in the past 12 months/abstainers/ex-drinkers. For the regression analysis, we used a dichotomous variable (current drinkers who did not binge in the past 12 months/ex-drinkers/abstainers versus current drinkers who binged at least once in the past 12 months) because there were few respondents in the top most category of the binge variable as described in Table 2. Binge

drinking is an important measure of excessive drinking since it accounts for several adverse health and social outcomes (Dawson, 2011).

2.3.3. Drinking 12 or more in a single day—This was a measure of maximum consumption of alcohol in a single day. It was measured by the reported largest number of drinks consumed in a single day for any type of alcoholic beverage. Respondents were categorized based on the number of drinks as "yes" for current drinkers who drank 12 or more in a single day or "no" for ex-drinkers, abstainers, and current drinkers who did not drink 12 or more drinks in a single day during the past 12 months. This measure is an indicator of very heavy drinking, which has been recommended as an indicator of high volume drinking (see Greenfield et al., 2006; NIAAA, 2003).

2.3.4. Ethnicity and Hispanic national origin—This was assessed in two steps and is based on self-identification. The first step included screening households by asking the household informant whether there were any adult household members that were Hispanic/ Latino. Once these adults were identified, one was randomly selected to be interviewed. In the second step, during the survey interview, the ethnicity of the adult selected into the survey was confirmed through self-identification. Respondents were asked "Which of these groups best describes your own ethnic identification: Puerto Rican, Cuban, Cuban American, Mexican, Mexican American (including Chicano/a), Dominican, South American, Central American." In this paper, Dominicans were grouped with South/Central Americans because of the small number of respondents in these groups (n=517, 325, and 432 for Dominicans, South Americans, and Central Americans, respectively).

2.3.5. Birthplace—Respondents were asked, "In what state, territory, or country were you born?" All of those who stated that they had been born in a country other than the U.S. or in a U.S. territory (including Puerto Rico) were coded as foreign-born.

2.3.6. Acculturation level—This scale was developed by Caetano (1987b). It is built from 12 questions covering the following information: daily use of and ability to speak, read, and write English and Spanish; preference for media (books, radio, and T.V.) in English or Spanish; ethnicity of people with whom respondents interact with at church, at parties, the neighborhood in which respondents currently live and lived while growing up; and finally, a series of questions about values thought to be characteristic of the Hispanic lifestyle. With the exception of the items used to assess language use, all other items were coded in a 4-point Likert scale (strongly agree to strongly disagree). The scale's reliability was assessed with Cronbach's Alpha (0.91) and the split-half method (0.87, Guttman split-half coefficient). The scale correlated positively with being U.S.-born (0.58) and with number of years of life in the U.S. (0.22), and correlated negatively with age (−0.36). It also had positive correlations with drinking and alcohol problems. All these correlations were in the expected direction and empirically confirmed the scale's construct validity. A continuous score of acculturation was computed, then subjects were grouped into three categories using tertiles to form low, medium, and high acculturation levels.

2.3.7. Acculturation stress—This was an 11-item scale covering topics such as conflicts with family members and friends due to changes in values, problems with communication in English, and adjustment problems associated with contradictions between U.S. and respondents' own ethnic culture. These items are from the work of Mena, Padilla, and Maldonado (1987), Vega and Gill (1999), and Straus and Smith (1990). Respondents assessed how stressful each situation had been to them using five categories ranging from "extremely stressful" to "not at all stressful". Principal components factor analysis of these items showed a main factor with an Eigenvalue of 6.2 accounting for 56% of the variance in

the data. Loadings on this factor varied from 0.61 to 0.82. Cronbach's alpha for the scale was 0.92. A continuous score of acculturation stress was computed, then subjects were grouped into three categories using tertiles to form low, medium, and high acculturation stress levels.

2.3.8. Other sociodemographic variables—Age was self-reported and: 18–29; 30–39; 40–49; and 50+ years (reference group). Level of education was grouped into five categories: a) less than high school; b) completed high school or GED; c) technical or vocational school; d) some college; and e) completed 4-year college or higher (reference group). Respondents' employment status was categorized as: a) employed part-time or fulltime (reference group); b) unemployed (looking/not looking for job); c) retired; d) homemaker (for women only); e) disabled; and f) temporary illness/in school/other. Income: respondents were asked to identify the category into which their total annual household income fell from a list of 12 categories, beginning with <$4000 ending with a highest category of >$100,000. However, nearly 20% of the total sample (n=1,069) either did not know or refused to provide this information. For these respondents, multiple imputations of log-transformed income were conducted using the Markov Chain Monte Carlo method (Schafer, 1997) as implemented in SAS PROC MI. Imputed incomes were transformed back to the 12 categories. Imputations were based on the respondent's education, employment status, marital status, household size, age, metropolitan area of residence, Hispanic nationality, whether the respondent was born in the U.S., how long respondent had lived in the U.S., acculturation, whether the respondent had driven an automobile in the past year, and annual wage and salary data for the respondent's occupation in the case of employed respondents. The source of the wage and salary estimates was the Occupational Employment Statistics (OES) program, a cooperative program between the Bureau of Labor Statistics (BLS) and State Workforce Agencies (SWAs). The OES program produces employment and wage estimates for various occupations, excluding self-employed individuals. These data were publicly available online through the BLS website (http://www.bls.gov/oes/). State and metropolitan estimates were used corresponding to the five locations where interviews were conducted for this study. In all, 10 imputed income values were generated. The mean of the 10 log-transformed imputations was used for purposes of running preliminary regression models.

2.4. Statistical analyses

To account for the multistage cluster sample design used in HABLAS, Stata 11.0 (StataCorp., 2009) was used for all analyses. Analyses were conducted on data weighted to correct for unequal probabilities of selection into the sample. In addition, a post-stratification weight was applied, which corrects for non-response and adjusts the sample to known Hispanic population distributions based on certain demographic variables (education, age, and gender for all sites; plus ethnicity for the Miami, New York, and Philadelphia samples) as per data from the 2000 Census. To minimize the possibility of type 1 errors, t tests in Table 1 were considered as statistically significant if p<0.01. The "n" in Table 2 represents the unweighted number of respondents in each acculturation group.

Preliminary models were fit using the average of the 10 imputed income values, and final model estimates were obtained by combining estimates from analyses on each of the 10 imputed datasets using Rubin's rules (Carlin, Galati, & Royston, 2008; Rubin, 1987). All models were run with and without an interaction term (Hispanic national group*acculturation level) representing the potential modifying effect of Hispanic national group on the association between acculturation and the outcomes. The interaction effects for the multivariate analyses predicting the mean number of drinks per week and the consumption of 12 or more drinks as the highest number of drinks in a day were not

significant and are therefore not presented. However, in the final multiple logistic regression model for binge drinking among women, the interaction effect was significant and is therefore reported.

3. Results

3.1. Sample description

There were approximately equal numbers of respondents in each Hispanic national group (Table 1). Those aged 50 years or older represented the largest age group in the sample. More than one third of respondents had less than a high school education. The median family income for men was twice that for women. Most respondents were employed full or part-time and most were married or cohabitating. About three fourths of the sample was foreign-born. Among foreignborn individuals, the mean number of years lived in the U.S. was slightly under 20 years. The level of acculturation among respondents was approximately equally divided between those of low, medium, and high acculturation. Just under one third of respondents reported high levels of acculturation stress.

3.2. Number of drinks per week and binge frequency by level of acculturation

In general, Mexican American men, followed by Puerto Rican men, consumed the highest mean number of drinks per week at each level of acculturation (Table 2). Within each national group, however, no statistically significant associations were found between the mean number of drinks and level of acculturation. Level of acculturation was not associated with the frequency of binging among men in any of the national groups. A statistically significant association between a high level of acculturation and the consumption of 12 or more drinks in a day was seen among Puerto Rican men. These associations were not statistically significant among men of other Hispanic national groups.

Among women, regardless of national group, the mean number of drinks consumed per week increased with level of acculturation. However, these associations were statistically significant only for Puerto Rican women (low versus high; medium versus high). The frequency of binge drinking one or more times per month among women was low, although higher frequencies were found among Puerto Rican women of low and high levels of acculturation. In general, among women of all national groups, a statistically significant stepwise increase with increasing level of acculturation is seen for binging less than once per month. Similar to the findings for men, a statistically significant association between level of acculturation and the consumption of 12 or more drinks in a day was only seen among Puerto Rican women, but not among women of other Hispanic national groups. And like men, those at the highest level of acculturation had the highest frequency of drinking 12 or more drinks in a day.

3.3. Multivariate results: mean number of drinks consumed per week

The linear multiple regression model for men showed that younger men in the 18–29 and 30–39 year old age groups, compared to those 50+ years, drank a higher mean number of drinks per week (Table 3). In addition, a lower mean number of drinks were consumed by retired and disabled men compared to employed men.

Among women, level of education, employment status, and level of acculturation were predictors of the mean number of drinks consumed per week in the previous year (Table 3). A lower mean number of drinks were consumed by women with less than a high school education, those with a high school diploma or GED, and those who attended a technical or vocational school in comparison to graduates of college and professional school. A lower mean number of drinks were also consumed by retired and disabled women, as well as by

homemakers, compared to employed women. Finally, women with a high level of acculturation drank a higher mean number of drinks per week compared to women with low acculturation.

3.4. Binge drinking one or more times a month in the past 12 months

Neither Hispanic national group nor level of acculturation was associated with binge drinking among men during the previous 12 months (Table 4). But like with the mean number of drinks consumed per week, age and employment status were associated with binge drinking. Compared to men aged 50+ years, men in the 18–29, 30–39, and 40–49 year old age groups had higher rates of binge drinking one or more time during the previous year. Regarding employment status, retired men, in comparison to employed men, were less likely to have binged in the previous year.

The multiple logistic regression analysis for women showed that age, level of education, and employment status were associated with the likelihood of binging one or more times in the previous year. In comparison to women 50+ years, younger women (30–39 years) were more likely to have binged. Women with technical or vocational school educations were less likely than their college or professional school educated counterparts to have binged. Homemakers were also less likely to have binged in comparison to women employed either full or part-time. The analysis also revealed several significant interactions between national group and acculturation level. In general, the odds of binge drinking increased most dramatically among women of high acculturation. Particularly, Puerto Ricans had higher odds of binge drinking that increased in a stepwise fashion, with those of high acculturation being more than 10 times more likely than Cuban Americans of low acculturation to have binged in the previous year. Both Cuban Americans and Mexican Americans of high acculturation versus Cuban Americans of low acculturation were more likely to have binged. The likelihood of having binged in the previous year for highly acculturated Cuban American women was more than 8 times higher than that of their Cuban American counterparts of low acculturation. Mexican Americans of high acculturation had a likelihood of having binged that was approximately five times higher than that of Cuban Americans of low acculturation. South/Central American women, however, showed a different pattern, with those of medium acculturation, followed by those of high acculturation, being more likely to have binged than Cuban American women of low acculturation.

3.5. Consumption of 12 or more drinks in a single day in the past 12 months

The logistic regression model predicting the consumption of 12 or more drinks in a single day in the past 12 months was run for men only, as the number of women in this category was too low to warrant such analysis (N=78). This analysis showed that age was associated with a higher likelihood of this high level of consumption, but only among those in the 18–29 year old age group, in comparison to those 50+ years of age (Table 5). Being retired, as opposed to being employed full- or part-time, had a protective effect for consumption of 12 or more drinks in a day. Interestingly, a medium, but not high, level of acculturation stress was associated with a higher likelihood of consuming 12 or more drinks in a day.

4. Discussion

These results confirmed the assumptions that guided these data analyses: acculturation did not have a homogeneous effect on drinking across Hispanic national groups or gender. The results show that acculturation has a stronger and more consistent association with increased drinking and binge drinking among women but not among men. These findings are discussed in detail below.

4.1. Average number of drinks per week

There were no significant differences in volume of drinking by acculturation among men. Among Puerto Rican women, the number of drinks consumed by both the low and medium acculturation groups was significantly lower than the consumption in the high acculturation group. In general, this finding was in accordance with previous results in the literature, which associate high acculturation with higher levels of drinking among women (Caetano, 1987b; Gilbert, 1987; Markides et al., 1990; Zemore, 2005).

The positive association between acculturation and number of drinks among women was confirmed in the multivariate analysis in the presence of controls for sociodemographic factors and acculturation stress. This confirmed results from previous research reporting similar effects of acculturation on drinking among women also in the presence of controls for sociodemographic factors (e.g., Caetano, 1987b; Zemore, 2005). In contrast, acculturation stress was not arisk factor for a higher volume of drinking among women. Together, these two findings suggest, as proposed by Caetano and Clark (1998b) and Zemore (2005), that the mechanism behind the association between acculturation and drinking is the adoption of liberal drinking norms characteristic of U.S. society during the acculturation process. Among men, acculturation stress was associated with drinking 12 or more drinks in a single day.

The multivariate model also showed that women with less than some college education drank less than those with a four-year college degree/professional school education. Thus, education, independent of income or acculturation, was associated with more drinking among women. More educated professional women may attend non-familyrelated social gatherings (professional or recreational) which may create more opportunities for drinking (Gilbert, 1987). Other unknown differences in the way in which women in different national groups acculturate to U.S. society, especially in regards to alcohol use, should also play a part in explaining these differences across national groups.

4.2. Binge drinking

Neither the bivariate nor multivariate analyses showed an association between binge drinking and national group among men. In addition, the testing of an interaction between acculturation and national group did not show a statistically significant effect. Younger age, on the other hand, was strongly associated with binging among men, suggesting that binging is associated with a youthful lifestyle (Arnett, 2005; White & Jackson, 2004).

Among women, binge drinking was strongly associated with acculturation. Crude rates for binge drinking, especially rates for binging less than once a month, were higher in the high acculturation group among women in all Hispanic national groups, with the exception of South/Central Americans. In this group, women of medium acculturation had the highest crude rate of binge drinking less than once per month, followed by those of high acculturation. This effect remained strong in the multivariate analysis, as seen in the interaction effect between national group and acculturation. Close inspection of this result showed particularly strong effects for Puerto Rican women, among whom the odds ratio doubled from the low/medium groups to the high acculturation group. Similar increases in odds ratios were also present among Cuban American and Mexican American women. An important aspect of this result was that the effect of acculturation was on the lower frequency of binge drinking (i.e. binging less than once a month). Thus, although these women were at higher risk for acute and maybe even chronic alcohol-related problems, the effect may not be too strong. What seems to have happened is that the change in women's drinking with acculturation was not affecting overall volume but actually the pattern with which alcohol was consumed. Zemore (2005) also reported a positive effect of acculturation

on the frequency of drunkenness among Hispanic women. Given that binge drinking could be reported as drunkenness by some women, Zemore's result confirms the results herein.

4.3. Drinking 12 or more drinks in a single day

The analysis of crude rates for consuming 12 or more drinks in a single day showed an association between this pattern of drinking and acculturation only among Puerto Ricans, irrespective of sex. Unfortunately, the multivariate analysis could not be conducted on women's data because of the small number of women reporting this pattern of drinking (N=78). Thus, it is impossible to say whether the association seen in the crude rates would hold in an adjusted analysis. Among men, the results did not show a statistically significant association between level of acculturation and drinking 12 or more drinks in a single day. The testing of an interaction between level of acculturation and national group was also not statistically significant. These results were surprising since previous analyses of acculturation based on the HABLAS data indicated that Puerto Ricans in the high acculturation group have a higher rate of alcohol abuse than those in the low acculturation group (4.2% versus 0.1%). Acculturation also had a general effect of increasing twofold the risk of alcohol abuse in comparison to the low acculturation group, irrespective of national group (Caetano, Ramisetty-Mikler, & Rodriguez, 2009a). Other reports in the literature have also found acculturated Puerto Rican men to be more at risk for substance use disorders than those not acculturated (Ortega, Rosenheck, Alegria, & Desai, 2000). Driving under the influence of alcohol was also associated with high acculturation among Mexican Americans (Caetano, Ramisetty-Mikler, & Rodriguez, 2008a).

Medium acculturation stress is a factor of risk for drinking 12 or more drinks in a day. This suggests that men may use alcohol as a coping mechanism to deal with stress. Acculturation stress, however, was not associated with a higher volume of drinks consumed per week or binge drinking.

5. Conclusion

The results of this paper confirmed previous findings in the literature about the general positive association between acculturation and drinking among women. Particularly, high acculturation was associated with a higher volume of drinking and binge drinking. Thus, for women, both overall alcohol ingestion and the pattern of ingestion were affected. Our lack of significant findings regarding acculturation and drinking are surprising given previous findings that acculturation is associated with alcohol abuse and DUI (Caetano et al., 2008a, 2009a, Caetano, Ramisetty-Mikler, & Rodriguez, 2009). The fact that findings differ for different drinking outcomes (e.g., volume and patterns of drinking, alcohol abuse and dependence, alcohol-related problems, and DUI) is likely due to the multidimensional nature of drinking behavior and its associated harms. Clearly, the volume and patterns of drinking are related, but they are also somewhat independent. For example, the majority of "high risk" binge drinkers have an overall moderate volume of intake and a large proportion of alcoholrelated societal problems can be credited to this "moderate volume, high binge" group (Caetano & Mills, 2011; Gmel, et al., 2001).

Finally, among women, there was considerable variation in the way acculturation affected drinking across Hispanic national groups. This should not be a surprise given the cultural heterogeneity that characterizes U.S. Hispanics and underscores the importance of reporting results that are specific to particular national groups so that treatment and preventive interventions may be more effective. Our findings are important given the growing Mexican American population in the U.S. From the years 2000 to 2010, this group grew by 7.2 and 4.2 million due to births and immigration, respectively (Pew Hispanic Center, 2011).

5.1. Strengths and limitations

This study collected comprehensive information on alcohol consumption and alcohol use disorders from representative samples of Hispanic national groups in five large metropolitan areas in the U.S. Face-to-face interviews were conducted in English or Spanish, thus allowing for the selection of respondents who were not English-speakers and for the collection of detailed data on a variety of areas. The survey also achieved a high response rate (76%). However, nearly one quarter of the selected respondents refused to be interviewed. The data under analysis were cross-sectional in nature and did not allow for considerations of time order in the analyses. Some of the analyses, especially the analysis of predictors of drinking 12 or more drinks, were based on relatively small cell frequencies. Respondents may have under-reported some of the behaviors under analysis. If under-reporting was higher in a particular group than in others, this could affect the relationships discussed in this study. South/Central Americans and Dominicans were analyzed as a group. This was because the number of respondents interviewed in each of the national groups under this rubric was too small for separate analysis.

Acknowledgments

References

Alegria M, Mulvaney-Day NE, Torres M, Polo A, Cao Z, Canino GJ. Prevalence of psychiatric disorders across Latino subgroups in the United States. American Journal of Public Health. 2007; 97:68–75. [PubMed: 17138910]

Alegria M, Shrout PE, Woo M, Guarnaccia PJ, Sribney W, Vila D, et al. Understanding differences in past year psychiatric disorders for Latinos living in the US. Social Science & Medicine. 2007; 65:214–230. [PubMed: 17499899]

Arnett JJ. The developmental context of substance use in emerging adulthood. Journal of Drug Issues. 2005; 35:235–253.

Berry, JW. Conceptual approaches to acculturation. In: Chun, KM.; Balls-Organista, P.; Marin, G.; Sue, S., editors. Acculturation: Advances in theory, measurement, and applied research. American Psychological Association; Washington, D.C.: 2003. p. 17-37.

Black SA, Markides KS. Acculturation and alcohol consumption in Puerto Rican, Cuban-American, and Mexican-American women in the United States. American Journal of Public Health. 1993; 83:890–893. [PubMed: 8498630]

Born DO. Psychological adaptation and development under acculturative stress: toward a general model. Social Science & Medicine. 1970; 3:529–547. [PubMed: 5483545]

Caetano R. Acculturation and attitudes toward appropriate drinking among U.S. Hispanics. Alcohol and Alcoholism. 1987; 22:427–433. [PubMed: 3426772]

Caetano R. Acculturation and drinking patterns among U.S. Hispanics. British Journal of Addiction. 1987; 82:789–799. [PubMed: 3311103]

Caetano R, Clark CL. Trends in alcohol-related problems among Whites, Blacks, and Hispanics: 1984–1995. Alcoholism, Clinical and Experimental Research. 1998; 22:534–538.

Caetano R, Clark CL. Trends in alcohol consumption patterns among Whites, Blacks and Hispanics: 1984 and 1995. Journal of Studies on Alcohol. 1998; 59:659–668. [PubMed: 9811087]

Caetano, R.; Galvan, F. Alcohol use and alcohol-related problems among Latinos in the United States. In: Molina, M. Aguirre; Molina, C.; Zambrano, RE., editors. Health Issues in the Latino Community. Jossey-Bass; San Francisco: 2001. p. 383-412.

Caetano R, Mills BA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): Is the "prevention paradox" applicable to alcohol problems across Hispanic national groups? Alcoholism, Clinical and Experimental Research. 2011; 35:1256–1264.

Caetano R, Ramisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): DUI rates, birthplace and acculturation across Hispanic national groups. Journal of Studies on Alcohol and Drugs. 2008; 69:259–265. [PubMed: 18299767]

Caetano R, Ramisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): Rates and predictors of alcohol abuse and dependence across Hispanic national groups. Journal of Studies on Alcohol and Drugs. 2008; 69:441–448. [PubMed: 18432387]

Caetano R, Ramisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): Rates and predictors of DUI across Hispanic national groups. Accident; Analysis and Prevention. 2008; 40:733–741.

Caetano R, Ramisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): The association between birthplace, acculturation and alcohol abuse and dependence across Hispanic national groups. Drug and Alcohol Dependence. 2009; 99:215–221. [PubMed: 18945554]

Caetano R, Ramisetty-Mikler S, Vaeth PAC, Harris TR. Acculturation stress, drinking, and intimate partner violence among Hispanic couples in the U.S. Journal of Interpersonal Violence. 2007; 22:1431–1447. [PubMed: 17925291]

Caetano R, Vaeth PAC, Ramisetty-Mikler S, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey: Alcoholic beverage preference across Hispanic national groups. Alcoholism, Clinical and Experimental Research. 2009; 33:150–159.

Caetano R, Vaeth PAC, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): Acculturation, birthplace and alcohol-related social problems across Hispanic national groups. Hispanic Journal of Behavioral Sciences. 2012; 34:95–117. [PubMed: 22438607]

Carlin JB, Galati JC, Royston P. A new framework for managing and analyzing multiply imputed data in stata. The Stata Journal. 2008; 8:49–67.

Dawson DA. Beyond Black, White, and Hispanic: Race, ethnic origin and drinking patterns in the United States. Journal of Substance Abuse. 1998; 10:321–339. [PubMed: 10897287]

Dawson DA. Defining Risk Drinking. Alcohol Research & Health. 2011; 34:144–156. [PubMed: 22330212]

Finch BK, Hummer RA, Kolody B, Vega WA. The role of discrimination and acculturative stress in the physical health of Mexican-origin adults. Hispanic Journal of Behavioral Sciences. 2001; 23:399–429.

Finch BK, Vega WA. Acculturation stress, social support, and self-rated health among Latinos in California. Journal of Immigrant Health. 2003; 5:109–117. [PubMed: 14512765]

Firestone JM, Harris RJ, Vega WA. The impact of gender role ideology, male expectancies, and acculturation on wife abuse. International Journal of Law and Psychiatry. 2003; 26:549–564. [PubMed: 14522225]

Gil A, Vega WA, Dimas J. Acculturative stress and personal adjustment among Hispanic adolescent boys. Journal of Community Psychology. 1994; 22:43–54.

Gilbert MJ. Alcohol consumption patterns in immigrant and later generation Mexican American women. Hispanic Journal of Behavioral Sciences. 1987; 9:299–313.

Gmel G, Klingemann S, Müller R, Brenner D. Revising the preventive paradox: the Swiss case. Addiction. 2001; 96:273–284. [PubMed: 11182873]

Grant BF, Stinson FS, Hasin DS, Dawson DA, Chou SP, Anderson K. Immigration and lifetime prevalence of DSM-IV psychiatric disorders among Mexican Americans and non-Hispanic Whites in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. Archives of General Psychiatry. 2004; 61:1226–1233. [PubMed: 15583114]

Greenfield TK, Nayak MB, Bond J, Ye Y, Midanik LT. Maximum quantity consumed and alcohol-related problems: Assessing the most alcohol drunk with two measures. Alcoholism, Clinical and Experimental Research. 2006; 30:1576–1582.

Hovey JD, Magana C. Acculturative stress, anxiety, and depression among Mexican immigrant farmworkers in the midwest United States. Journal of Immigrant Health. 2000; 2:119–131. [PubMed: 16228745]

Marín G, Posner SF. The role of gender and acculturation on determining the consumption of alcoholic beverages among Mexican Americans and Central Americans in the United States. The International Journal of the Addictions. 1995; 30:779–794. [PubMed: 7558470]

Markides K, Krause N, Mendes de Leon CF. Acculturation and alcohol consumption among Mexican Americans: A three-generation study. American Journal of Public Health. 1988; 78:1178–1181. [PubMed: 3407815]

Markides K, Ray LA, Stroup-Benham CA, Treviño F. Acculturation and alcohol consumption in the Mexican American population of the southwestern United States: Findings from HHANES 1982–1984. American Journal of Public Health. 1990; 80:42–46. [PubMed: 9187581]

Mena FJ, Padilla AM, Maldonado M. Acculturative stress and specific coping strategies among immigrant and later generation college students. Hispanic Journal of Behavioral Sciences. 1987; 9:207–225.

National Institute on Alcohol Abuse and Alcoholism [NIAAA]. Recommended sets of alcohol consumption questions, NIAAA Task Force on Recommended Questions of the National Council on Alcohol Abuse and Alcoholism. National Institute on Alcohol Abuse and Alcoholism; Bethesda, MD: 2003.

Neff JA, Hoppe SK, Perea P. Acculturation and alcohol use: Drinking patterns and problems among Anglo and Mexican American male drinkers. Hispanic Journal of Behavioral Sciences. 1987; 9:151–181.

Neff JA, Prihoda TJ, Hoppe SK. "Machismo," self-esteem, education and high maximum drinking among Anglo, Black and Mexican-American male drinkers. Journal of Studies on Alcohol. 1991; 52:458–463. [PubMed: 1943101]

Ortega AN, Rosenheck R, Alegria M, Desai RA. Acculturation and the lifetime risk of psychiatric and substance use disorders among Hispanics. The Journal of Nervous and Mental Disease. 2000; 188:728–735. [PubMed: 11093374]

Pew Hispanic Center. The Mexican-American boom: births overtake immigration. 2011. Retrieved from http://www.pewhispanic.org/2011/07/14/the-mexican-american-boom-brbirths-overtake-immigration/

Ramisetty-Mikler S, Caetano R, Rodriguez LA. The Hispanic Americans Baseline Alcohol Survey (HABLAS): Alcohol consumption and sociodemographic predictors across Hispanic national groups. Journal of Substance Use. 2010; 15:402–416. [PubMed: 23847447]

Rehm J, Room R, Graham K, Monteiro M, Gmel G, Sempos CT. The relationship of average volume of alcohol consumption and patterns of drinking to burden of disease: An overview. Addiction. 2003; 98:1209–1228. [PubMed: 12930209]

Romero AJ, Roberts RE. Stress within a bicultural context for adolescents of Mexican descent. Cultural Diversity & Ethnic Minority Psychology. 2003; 9:171–184. [PubMed: 12760328]

Rubin, DB. Multiple Imputation for Nonresponse in Surveys. John Wiley and Sons Inc; New York: 1987.

Schafer, JL. Analysis of Incomplete Multivariate Data. Chapman & Hall; London: 1997.

StataCorp. Stata Statistical Software: Release 11. StataCorp LP; College Station, TX: 2009.

Straus, MA.; Smith, C. Violence in Hispanic families in the United States: Incidence rates and structural interpretations. In: Straus, MA.; Gelles, RJ., editors. Physical Violence in American Families: Risk Factors and Adaptations in Violence in 8,145 Families. Transactions Books; New Brunswick, NJ: 1990. p. 341-363.

U.S. Census Bureau. An older and more diverse nation by midcentury. 2008 [Press release]. In U.S. Census Bureau News (No. 2009, p.

Vaeth PAC, Caetano R, Ramisetty-Mikler S, Rodriguez LA. Hispanic Americans Baseline Alcohol Survey (HABLAS): alcohol-related problems across Hispanic national groups. Journal of Studies on Alcohol and Drugs. 2009; 70:991–999. [PubMed: 19895778]

Vega, WA.; Gill, AG. A model for explaining drug use behavior among Hispanic adolescents. In: DeLaRosa, MR.; Segal, B.; Lopez, R., editors. Drug Abuse Research with Minority Populations: Advances and Issues. The Haworth Press, Inc; New York: 1999. p. 57-74.

Vega WA, Kolody B, Aguilar-Gaxiola S, Alderete E, Catalano R, Caraveo-Anduaga J. Lifetime prevalence of DSM-III-R psychiatric disorders among urban and rural Mexican Americans in California. Archives of General Psychiatry. 1998; 55:771–778. [PubMed: 9736002]

White HR, Jackson R. Social and psychological influences on emerging adult drinking behavior. Alcohol Research & Health. 2004; 28:182–190.

Zemore SE. Re-examining whether and why acculturation relates to drinking outcomes in a rigorous, national survey of Latinos. Alcoholism, Clinical and Experimental Research. 2005; 29:2144–2153.

Table 1

Sample description.

	Total % (*n*)	Men % (*n*)	Women % (*n*)
Hispanic national group			
Puerto Rican	25.6 (1335)	24.7 (688)	26.4 (647)
Cuban American	25.5 (1327)	24.1 (662)	26.8 (665)
Mexican American	24.6 (1288)	26.5 (640)	22.9 (648)
South/Central American	24.3 (1274)	24.8 (637)	23.9 (637)
Age			
18–29	25.3 (1261)	26.8 (724)	23.8 (537)
30–39	23.5 (1185)	23.8 (574)	23.3 (611)
40–49	20.6 (1053)	20.4 (515)	20.8 (538)
50+	30.6 (1702)	29.0 (808)	32.1 (894)
Education level			
<High school	35.0 (2376)	33.8 (1192)	36.0 (1184)
HS diploma/GED	32.8 (1427)	35.7 (778)	30.2 (649)
Technical/vocational school	5.6 (255)	4.8 (109)	6.2 (146)
Some college	16.7 (704)	16.3 (336)	17.1 (368)
College graduate/professional school	10.0 (451)	9.4 (210)	10.5 (241)
Median annual family income	$17,500	$25,000	$12,500
Employment status			
Full/part–time employment	55.5 (2814)	68.3 (1712)	43.9 (1102)
Unemployed, looking/ not looking	8.6 (433)	8.6 (210)	8.7 (223)
Retired	9.6 (572)	9.3 (283)	9.9 (289)
Homemaker	11.3 (552)	N/A	21.3 (537)
Disabled	8.6 (518)	7.8 (243)	9.4 (275)
Temporary illness/student/other	6.4 (331)	6.0 (161)	6.8 (170)
Marital status			
Married/living with spouse/living with someone	54.0 (2482)	56.8 (1329)	51.4 (1153)
Married not living with spouse/legally separated/divorced/widowed	21.4 (1385)	15.2 (520)	27.2 (865)
Never married/never lived with someone	24.7 (1345)	28.1 (774)	21.5 (571)
Place of birth			
U.S.–born	23.8 (1123)	24.8 (596)	22.9 (527)
Foreign–born	76.2 (4091)	75.2 (2027)	77.2 (2064)
Mean # years in US	17.4 ±0.8	17.3 ±1.1	17.6 ± 1.0
Acculturation level			
Low	32.2 (1923)	28.7 (867)	35.5 (1056)
Medium	30.9 (1578)	32.0 (806)	29.9 (772)
High	36.9 (1723)	39.4 (954)	34.6 (769)
Acculturation stress			
Low	41.8 (1848)	41.7 (934)	41.9 (914)
Medium	26.6 (1221)	27.4 (631)	25.9 (590)

	Total % (*n*)	Men % (*n*)	Women % (*n*)
High	31.5 (1647)	30.9 (811)	32.1 (836)

Notes: Unweighted *n*'s, weighted %.

Table 2

Average number of drinks per week, frequency of binge drinking, and consumption of 12 or more drinks in a single day by acculturation.

Acculturation level by Hispanic national group

	Puerto Rican				Cuban American				Mexican American				South/Central American			
	Low	Medium	High	Sig	Low	Medium	High	Sig	Low	Medium	High	Sig	Low	Medium	High	Sig
Men																
Number of drinks per week [a]	n=109	n=191	n=374	ns	n=299	n=207	n=154	ns	n=252	n=187	n=191	ns	n=201	n=212	n=221	ns
Mean±standard error	8.36±2.11	8.92±1.78	13.22±1.77		4.45±0.68	5.76±1.28	5.96±1.28		10.48±2.03	10.42±1.70	11.15±2.41		5.76±1.20	6.59±0.98	5.95±0.91	
Binge frequency	n=110	n=193	n=371	ns	n=298	n=207	n=153	ns	n=253	n=186	n=190	ns	n=201	n=212	n=220	ns
1+ times a month	0.22	5.53	4.45		2.01	3.66	4.70		3.09	5.58	4.98		5.18	2.43	5.82	
<Once a month	30.35	20.30	32.50		12.16	16.21	14.83		28.51	27.83	23.09		22.03	26.86	23.73	
Largest number of drinks consumed on any single day	n=109	n=191	n=374	**	n=296	n=206	n=154	ns	n=255	n=187	n=191	ns	n=200	n=212	n=220	ns
12+ drinks	6.33	6.07	16.04		3.66	9.70	9.64		15.41	14.54	12.76		11.99	11.68	11.94	
Women																
Number of drinks per week [a]	n=130	n=188	n=327	b, c	n=336	n=218	n=109	ns	n=294	n=172	n=180	ns	n=295	n=194	n=148	ns
Mean±standard error	1.25±0.56	1.43±0.41	6.33±1.82		0.88±0.28	1.99±1.30	1.68±0.50		0.29±0.14	0.77±0.27	2.70±1.19		0.97±0.29	1.71±0.43	2.87±0.79	
Binge frequency	n=130	n=188	n=326	*	n=336	n=218	n=111	***	n=295	n=171	n=181	***	n=295	n=194	n=148	**
1+ times a month	2.89	0.12	3.11		0.00	0.00	0.97		0.27	1.08	0.07		0.24	0.00	0.58	
< once a month	8.52	16.83	24.44		2.47	5.38	27.62		2.88	7.61	20.73		6.94	18.56	12.34	
Largest number of drinks consumed on any single day	n=128	n=188	n=327	***	n=336	n=218	n=111	ns	n=295	n=171	n=181	ns	n=294	n=193	n=148	ns
12+ drinks	1.41	0.26	7.88		5.07	1.05	4.95		2.07	4.24	0.82		1.50	4.51	1.75	

Notes: Sig=Significance; a=Continuous variable; b=p<0.01 between low versus high acculturation level within given Hispanic national group, significance based on t-test; c=p<0.01 between medium versus high acculturation level within given Hispanic national group, significance based on t-test; ns=not significant

*
p<0.05

**
p<0.01

***
p<0.001.

Table 3

Unstandardized coefficients and standard errors from multiple linear regression of mean number of drinks consumed per week in the past 12 months on selected sociodemographic characteristics.

	Men (*n* = 2344)			Women (*n* = 2301)		
	Estimate	SE	95% CI	Estimate	SE	95% CI
Age (Ref: 50+ years)						
18–29	1.07 **	0.38	0.32–1.82	0.05	0.27	−0.49–0.59
30–39	1.07 **	0.31	0.46–1.67	0.04	0.21	−0.37–0.45
40–49	0.60	0.33	−0.04–1.25	−0.05	0.21	−0.47–0.36
Hispanic national group (Ref: Cuban American)						
Puerto Rican	0.03	0.31	−0.58–0.63	0.25	0.24	−0.22–0.72
Mexican American	−0.23	0.31	−0.85–0.39	−0.37	0.21	−0.79–0.04
South/Central American	−0.28	0.26	−0.80–0.24	−0.11	0.20	−0.51–0.29
Marital status (Ref: married/living with spouse/living with someone)						
Married not living with spouse/legally separated/divorced/ widowed	0.43	0.27	−0.11–0.97	−0.03	0.17	−0.37–0.30
Never married/never lived with someone	−0.15	0.25	−0.65–0.34	0.30	0.23	−0.15–0.76
Education level (Ref: college graduate/professional school)						
<High school	0.09	0.42	−0.75–0.93	−0.54 *	0.24	−1.01–0.08
HS diploma/GED	−0.09	0.39	−0.85–0.67	−0.57 *	0.24	−1.04–0.10
Technical/vocational school	0.24	0.57	−0.90–1.37	−0.74 *	0.33	−1.40–0.08
Some college	−0.15	0.44	−1.02–0.72	0.40	0.31	−0.20–1.01
Employment status (Ref: full/part-time employment)						
Unemployed, looking/ not looking	−0.30	0.40	−1.09–0.49	0.08	0.32	−0.55–0.71
Retired	−1.41 ***	0.36	−2.11–0.71	−1.16 ***	0.28	−1.72–0.61
Homemaker	n/a	n/a	n/a	−0.87 ***	0.18	−1.22–0.53
Disabled	−0.89 *	0.36	−1.60–0.19	−0.64 *	0.28	−1.18–0.09
Temporary illness/student/other	−0.83	0.51	−1.84–0.18	−0.36	0.33	−1.01–0.30
Income [a]	0.001	0.004	−0.007–0.010	0.01	0.004	−0.001–0.01
Place of birth (Ref: foreign-born)						
U.S.-born	0.34	0.30	−0.26–0.94	0.23	0.26	−0.29–0.76
Acculturation stress (Ref: low)						
Medium	0.41	0.21	−0.01–0.83	−0.02	0.19	−0.41–0.36
High	0.32	0.25	−0.17–0.81	−0.13	0.17	−0.47–0.21
Acculturation level (Ref: low)						
Medium	−0.01	0.25	−0.50–0.47	0.15	0.17	−0.18–0.48
High	0.23	0.31	−0.37–0.83	0.73 **	0.23	0.28–1.18

Notes: SE = Standard error; a = Continuous variable

*
$p < 0.05$

**
$p < 0.01$

***
p<0.001.

Table 4

Odds ratios and 95% confidence intervals from multiple logistic regression of binge drinking one or more times in the past 12 months on selected sociodemographic characteristics.

	Men (*n* = 2,339)		Women (*n* = 2,305)	
	OR	95% CI	OR	95% CI
Age (Ref: 50+ years)				
18–29	3.40 ***	1.95–5.92	1.63	0.75–3.52
30–39	2.89 ***	1.82–4.57	2.75 **	1.43–5.27
40–49	2.13 **	1.25–3.61	1.49	0.73–3.03
Hispanic national group (Ref: Cuban American)				
Puerto Rican	1.59	0.97–2.60	n/a	n/a
Mexican American	1.31	0.81–2.12	n/a	n/a
South/Central American	1.49	0.94–2.36	n/a	n/a
Marital status (Ref: married/living with spouse/living with someone)				
Married not living with spouse/legally separated/divorced/widowed	1.07	0.65–1.77	0.89	0.57–1.41
Never married/never lived with someone	1.00	0.71–1.40	1.17	0.74–1.85
Education level (Ref: college graduate/professional school)				
<High school	1.29	0.67–2.46	0.80	0.41–1.53
HS diploma/GED	1.04	0.56–1.95	0.68	0.38–1.21
Technical/vocational school	1.62	0.65–4.05	0.33 *	0.12–0.93
Some college	1.14	0.54–2.40	0.90	0.49–1.68
Employment status (Ref: full/part–time employment)				
Unemployed, looking/ not looking	1.08	0.67–1.75	1.08	0.58–2.02
Retired	0.43 *	0.20–0.96	0.89	0.29–2.77
Homemaker	n/a	n/a	0.32 ***	0.18–0.57
Disabled	0.69	0.38–1.23	0.64	0.26–1.60
Temporary illness/student/other	0.69	0.36–1.32	1.08	0.54–2.13
Income [a]	1.00	0.99–1.01	1.00	0.99–1.01
Place of birth (Ref: foreign–born)				
U.S.–born	1.30	0.90–1.89	1.36	0.77–2.42
Acculturation stress (Ref: low)				
Medium	1.09	0.77–1.55	1.28	0.81–2.02
High	1.39	0.96–1.99	1.23	0.77–1.97
Acculturation level (Ref: low)				
Medium	0.93	0.64–1.34	n/a	n/a
High	0.91	0.60–1.38	n/a	n/a
Interaction of national group and acculturation level (Ref: Cuban American–low acculturation level)				
Puerto Rican – low	n/a	n/a	4.75 *	1.24–18.17
Puerto Rican – medium	n/a	n/a	5.70 **	1.72–18.91
Puerto Rican – high	n/a	n/a	10.33 ***	3.13–34.03
Cuban American – medium	n/a	n/a	1.96	0.49–7.81

	Men (*n* = 2,339)		Women (*n* = 2,305)	
	OR	**95% CI**	**OR**	**95% CI**
Cuban American – high	n/a	n/a	8.27 ***	2.66–25.72
Mexican American – low	n/a	n/a	1.14	0.29–4.47
Mexican American – medium	n/a	n/a	2.82	0.79–10.08
Mexican American – high	n/a	n/a	5.06 *	1.45–17.75
South/Central American – low	n/a	n/a	2.67	0.83–8.56
South/Central American – medium	n/a	n/a	6.70 **	2.11–21.31
South/Central American – high	n/a	n/a	3.47 *	1.09–11.02

Notes: a = Continuous variable

*
$p<0.05$

**
$p<0.01$

***
$p<0.001$.

Table 5

Odds ratios and 95% confidence intervals from multiple logistic regression of selected variables on drinking 12 or more drinks in a single day in the past 12 months, among men ($n = 2340$).

	OR	95% CI
Age (Ref: 50+ years)		
18–29	2.85 [**]	1.43–5.68
30–39	1.93	0.96–3.85
40–49	1.87	0.95–3.70
Hispanic national group (Ref: Cuban American)		
Puerto Rican	1.33	0.62–2.87
Mexican American	1.53	0.76–3.08
South/Central American	1.48	0.78–2.81
Marital status (Ref: married/living with spouse/living with someone)		
Married not living with spouse/legally separated/divorced/widowed	1.01	0.57–1.77
Never married/never lived with someone	0.66	0.39–1.10
Education level (Ref: college graduate/professional school)		
<High school	2.97	0.86–10.21
HS diploma/GED	1.88	0.57–6.23
Technical/vocational school	2.97	0.73–12.04
Some college	1.23	0.33–4.56
Employment status (Ref: full/part–time employment)		
Unemployed, looking/not looking	0.80	0.39–1.65
Retired	0.29 [*]	0.09–0.87
Disabled	0.71	0.28–1.82
Temporary illness/student/other	0.93	0.41–2.11
Income [a]	1.00	0.99–1.01
Place of birth (Ref: foreign–born)		
U.S.–born	0.97	0.55–1.70
Acculturation stress (Ref: low)		
Medium	1.76 [*]	1.08–2.88
High	1.50	0.94–2.40
Acculturation level (Ref: low)		
Medium	1.11	0.64–1.93
High	1.61	0.92–2.81

Notes: a = Continuous variable

[*]
$p<0.05$

[**]
$p<0.01$.