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Gender, Acculturation and Alcohol Use among Latina/o Adolescents: A Multi-Ethnic Comparison

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Abstract

This is the first study to examine the relationship between acculturation and alcohol use by gender and ethnicity using a nationally representative sample of Hispanic and non-Hispanic white adolescents. Specifically, we use data from the National Longitudinal Study of Adolescent Health (Add Health) to explore alcohol use and binge drinking for a sample that includes 6792 non-Hispanic whites, 910 Mexican Americans, 290 Cuban Americans, and 336 Puerto Ricans. Bivariate results reveal significant gender differences in alcohol use among first generation Mexican American, first generation Puerto Rican, and second generation Cuban American adolescents. In addition, these results indicate binge drinking differs significantly by gender among first generation Mexican American, first generation Cuban American, third plus generation Puerto Rican, and third plus generation non-Hispanic white adolescents. Multivariate logistic regression reveals that gender also moderates the effect of acculturation as well as ethnicity on alcohol use and abuse. Among both males and females, first generation immigrants are significantly less likely than third plus generation immigrants to use alcohol and binge drink while selective acculturation significantly reduces the odds of both behaviors. However, the effects of immigrant generation and selective acculturation on binge drinking are larger for females. Further, the trajectories that alcohol use and binge drinking follow with acculturation differ significantly by gender and ethnicity. These results reaffirm the need to further develop theoretical models and intervention strategies that are both gender-specific and culturally-specific, targeting high risk groups in particular in these efforts.

Keywords

Gender; Acculturation; Alcohol use

Introduction

In the past decade, the Latino population has grown dramatically, becoming the largest minority group in the United States [1]. Given this growth, Latino youth are increasingly at the center of public debates about the risks of adolescent alcohol use and other addictive behaviors. In general, Latino students are less likely to drink than their non-Hispanic white counterparts; nonetheless, a significant share of Latino youth report alcohol use in the past year, with some drinking heavily. In 2005, approximately 15 percent of 8th graders reported binge drinking in the past two weeks, according to the *Monitoring the Future Study* [2]. Among 10th graders, this rate rose to 26 percent. By the 12th grade, nearly 40 percent reported they had been drunk on at least one occasion in the past year. During late adolescence and early adulthood, drinking

is often associated with risky and illegal behaviors, increasing emotional distress, and other negative psychological outcomes that may impact later life stages [3,4]. For many Latino adolescents, these risks can be even more costly as their parents, who are often newly arrived immigrants, may lack the financial resources and social capital needed to protect their children if they get into trouble [5]. Despite these costs, many Hispanic teens as well as others feel intense pressure to drink, as “alcohol use and heavy drinking are culturally embedded in the experience of adolescence and the transition to young adulthood” in the United States [4, p. 54].

Research has yet to fully disentangle the complex determinants of alcohol use among Latino adolescents. The process of acculturation, in particular, introduces a set of dynamics, including potential ethnic and gender differences, that may shape drinking behaviors in unique ways across this diverse group of teens.¹ However, most research that examines the link between acculturation and alcohol use focuses on adults [6]. In general, this work has found that the least acculturated Latinos are more likely to abstain from alcohol than their more acculturated counterparts [7]. Alcohol abuse and dependence have also been positively associated with acculturation in this research [8]. Similarly, research on adolescents has demonstrated a positive association between acculturation and alcohol use [9–14] as well as other health risk behaviors, including cigarette smoking [5,15] and illicit drug use [6,16,17].

Researchers have used various measures of acculturation in this work. Most studies that focus on adolescents, using language as a measure of acculturation, have found that alcohol use and other substance use rises with greater linguistic assimilation [6,10,12,14,18,19]. For example, Epstein et al. [6] found that Latino adolescents in New York City who spoke only Spanish with their parents were less likely to use alcohol than were other Latino adolescents. Fewer studies of Latino/a adolescent alcohol use have examined differences based on generational status, another measure of acculturation, largely because data on nativity is not as widely available. In general, research that uses this measure has produced results that are largely consistent with the research on linguistic assimilation. Alcohol use as well as other substance use typically increases across immigrant generations. Specifically, the prevalence of alcohol use and illicit drug use is consistently higher among second-generation Latina/o adolescents than among their first-generation counterparts [15,20; see also 5,11,21]. Likewise, Velez & Ungemack [17] found that New York born Puerto Rican adolescents are at a greater risk for alcohol and drug use than their Puerto-Rican born peers.

These results are largely consistent with classical assimilation theory, a perspective that has dominated research on immigration and health. Gordon’s classical model of assimilation treats the process of adaptation as linear; immigrants gradually adopt the host country’s values, beliefs, and norms and in turn secure social and economic integration and mobility [22]. The longer the contact of a group with the host culture, the more acculturated the group becomes. This model suggests that Latino/a youth are increasingly likely to adopt and engage in the normative behaviors of the dominant host culture with each successive generation. In the process, they are likely to adopt some risky behaviors that are more common among non-Hispanic white adolescents, including cigarette smoking [23], drug use [24,25], and alcohol use [26].²

¹The conceptualization and measurement of acculturation remains subject to debate. Scholars agree that acculturation is a multidimensional and complex process of adaptation to a host society and, thus, have developed a wide range of measures to tap these complexities. Language use and nativity/generational status represent those measures that are most widely used in studies focusing on alcohol use and abuse. These measures as well as others are intended to capture the broader processes of cultural and structural assimilation many scholars emphasize in their work on immigrants [22].

²Gordon’s analyses focused on the positive consequences of acculturation and emphasized the role of assimilation/acculturation in the upward mobility that many immigrants have historically secured in the United States. While Gordon did not address negative consequences directly, his perspective does not seem to preclude the possibility that acculturation could result in negative behaviors/outcomes to the extent that these are elements of the dominant culture.

According to more recent debates emphasizing a “segmented assimilation” perspective, the process of acculturation among Hispanics follows multiple trajectories rather than a single path. Successful assimilation may actually depend on a process of “selective acculturation” whereby the retention of certain cultural traditions and values, like language and family solidarity, protect immigrants and their children from potentially negative behaviors [27,28]. This process may also depend on other sociocultural factors. Among Hispanics, gender may be particularly important. Scholars widely contend that Latino culture traditionally discourages and sanctions drinking among women but not men [29,30]. Consistent with this research, many studies have reported significant gender differences in alcohol use among Latino adults. With few exceptions, this work indicates that Hispanic women are more likely to abstain while Hispanic men drink more frequently and drink more heavily [7,31–34]. These gender differences are evident across multiple Latino subgroups, holding for Mexican American, Puerto Rican, Cuban American and other Hispanic adults [33–36]. More recent research focusing on young adults (ages 17–24) has found significant gender differences for Mexican Americans and Central/South Americans but not for Cubans or Puerto Ricans [12].

Given these differences, several recent studies have disaggregated the effects of acculturation by gender. Among adults, some studies have found that alcohol use increases with acculturation regardless of gender [7,35,37]. Other research, however, concludes that this association holds for women but not men [34,38,39]. According to this work, the least acculturated Hispanic men do not differ significantly in their drinking patterns from the most acculturated Hispanic men. In contrast, the least acculturated Hispanic women have typically reported the lowest rates of alcohol use while alcohol use among the most acculturated Hispanic women is more similar to alcohol use among non-Hispanic white women. Presumably, the rise in alcohol use that is associated with acculturation among Hispanic women reflects the influence of the dominant culture in the United States, which is less prohibitive about women drinking than are traditional Latino cultures. This normative interpretation of acculturation’s effects on drinking suggests that alcohol use among Hispanic men and women will converge with the patterns of alcohol use among non-Hispanic white men and women.

Fewer studies have focused on gender differences in alcohol use among Latino adolescents and the results of this research are mixed. Flores-Ortiz [29] and others [13] find that Latino adolescents widely recognize the culturally rooted double standard that holds alcohol use is inappropriate for women but not men. However, the consequences of these cultural norms for drinking behavior among these adolescents remain unclear. Using a sample of Florida adolescents, Khoury et al. [15] found no gender differences in adolescent alcohol use for Cubans and other Hispanics. Similarly, Nielsen and Ford [12], using a large national sample, found no significant gender differences for any of four different Latino subgroups included in their analysis. Given these results, they speculate that gender differences among Latinos may not emerge until adulthood. In contrast, Figueroa-Moseley [40] reported that past month drinking frequency differed significantly by gender for Mexican Americans and Puerto Ricans. In addition, Wallace and Bachman [41] found that rates of heavy alcohol use also differed considerably by gender among high school seniors; these rates were nearly double among Mexican American and Puerto Rican males compared to females.

Few studies have extended this research to explore gender differences in the relationship between acculturation and alcohol use among adolescents. One recent study, which included older teens, provides mixed results. Using a sample of Mexican American college students, Zamboanga, Raffaelli, and Horton [42] found that a global measure of acculturation was not significantly associated with heavy alcohol use for males or females, but ethnic identity was significant for males. Those males who identified most strongly with Latino culture reported higher rates of heavy alcohol use than other males in the study. In one of the few such studies to focus on Hispanic secondary school students, the researchers also uncovered important

gender differences and similarities [18]. In general, teens who spoke Spanish and English with their peers (i.e. bilingual) were more likely to report having tried alcohol than Latino teens who spoke primarily English with their peers. This difference was significant for boys but not girls when the students were initially surveyed. In a one year follow-up assessment, the difference was significant for both girls and boys. The results differed slightly when the language spoken with parents was used as the measure of acculturation. Consistent with research on adults, bilingual adolescents were significantly more likely than Spanish speaking adolescents to report having tried alcohol; the results held for both boys and girls. But the differences between bilingual students and students who spoke primarily English with their parents were not significant. Further, the most acculturated boys had alcohol initiation rates comparable to the least acculturated boys.

This paper further clarifies the complex effects of gender, ethnicity and acculturation on alcohol use among Latino adolescents. More specifically, we examine the relationship between acculturation and alcohol use by gender for a nationally representative sample of non-Hispanic white, Mexican American, Cuban American and Puerto Rican adolescents. Our analysis extends previous research in several important ways. With few exceptions, most studies that focus on Latino adolescents depend on samples that are limited in their scope, including only a single community or a single Hispanic subgroup [5,11,15,18,19,42]. Those studies that are based on a national sample of adolescents are limited in their substantive scope. Some have examined the effects of gender and ethnicity on drinking but do not include measures of acculturation like generational status [12,41]. Others have explored the effects of acculturation and gender on alcohol use without disaggregating the results by ethnicity/national origin [43]. Still others [21] examine the effects of acculturation and ethnicity on drinking but do not break down the results by gender. Finally, most studies of acculturation and alcohol use do not compare Hispanic ethnic groups to third plus generation non-Hispanic white adolescents, the group to which they are presumably becoming more similar in their drinking behaviors.

To our knowledge, the current study represents the first to consider the independent effects of gender, ethnicity, and acculturation on drinking behavior for a nationally representative sample of Hispanic and non-Hispanic white adolescents. We address two broad questions. First, does alcohol use and abuse vary with gender, ethnicity and acculturation among Hispanic adolescents, reflecting significant within and across group differences not fully recognized in past research? Second, do the determinants and dynamics of alcohol use and abuse differ by gender and ethnicity? More specifically, do gender and ethnicity moderate the effects of acculturation on alcohol use? Based on prior theoretical and empirical work, we are guided by the following hypotheses:

- **Hypothesis 1** First and second generation adolescents will be less likely to use alcohol or binge drink than third generation adolescents.
- **Hypothesis 2** Those adolescents who are experiencing selective acculturation, which includes some forms of ethnic retention, will be less likely to use alcohol or binge drink than those who do not report selective acculturation.
- **Hypothesis 3** Alcohol use and binge drinking will also vary by gender and ethnicity. Latina adolescents will be less likely to engage in these behaviors than their male counterparts. These behaviors will also differ across Latino subgroups as will gender differences within these groups.
- **Hypothesis 4** Gender and ethnicity will moderate the effects of generational status and selective acculturation. The effects of generational status, and selective acculturation will be larger for females than males, particularly for some Latino subgroups.

- **Hypothesis 5** Differences between Hispanic and non-Hispanic white adolescents in alcohol use will be mediated by generational status and selective acculturation.

Data and Methods

Sample

This analysis uses data from the National Longitudinal Study of Adolescent Health (Add Health), a nationally representative longitudinal study of adolescents (7th–12th grade in 1994 when the study began), their schools, and their families. In this study, we link data on adolescents surveyed in both the first and second waves of the adolescent In-Home Interview to data from the Parent Interview (Wave II excluded students who were in the 12th grade at Wave I).

For our study sample, we selected adolescents from the In-Home sample based on several criteria. First, in order to facilitate a longitudinal analysis we selected only those respondents who participated in the first two waves of the In-Home Interview and for whom a valid sampling weight was available. Second, we included only those adolescents who responded that they were of Mexican, Puerto Rican or Cuban ancestry or they were non-Hispanic whites. This allows for the comparison of non-Hispanic white adolescents with Latino adolescents, which is a central focus of this study. Third, we included only those adolescents who responded to questions about alcohol use. Using these criteria results in a sample of 7992 total adolescents including 6792 non-Hispanic whites, 910 Mexican Americans, 290 Cuban Americans, and 336 Puerto Ricans.

Dependent Variables

Alcohol Use—Two measures of alcohol use were drawn from Wave II. The first measure, self-reported *alcohol use*, was a dummy variable indicating whether or not the adolescent reported having “a drink of beer, wine, or liquor—not just a sip or a taste of someone else’s drink—more than two or three times” since they had been interviewed in Wave I (approximately a year before). The second measure, self-reported *binge drinking*, was a dummy variable indicating whether or not the adolescent reported drinking five or more drinks in a row in one day over the past 12 months. Dummy variables of alcohol use and binge drinking were preferred to continuous measures for both theoretical and analytic reasons. First, it is not legal for adolescents to buy alcohol or to drink in public so the two behaviors measured here, alcohol use and binge drinking, reflect illegal behaviors of different intensities. Second, continuous measures of alcohol use and binge drinking include more measurement error. Both measures capture drinking behaviors that are common among non-Hispanic white adolescents and less common among new Latina/o immigrants. As such, they tap the extent to which Hispanic youth were assimilating to the dominant adolescent culture.

Independent Variables

All of the independent variables were measured at Wave I.

Gender—Gender was measured as the self-reported sex of the respondent.

Ethnicity—Ethnicity was measured as country of origin. We distinguished four ethnic groups: *Mexican American*, *Cuban American*, *Puerto Rican*, or *non-Hispanic White*

Immigrant Generation—Similar to recent research on assimilation, immigrant generation was measured as first, second, or third plus generation in the United States [21,44,45]. Adolescents who reported that they were not born in the U.S. were coded as *first generation immigrants*, adolescents who reported that they were born in the U.S. but that one or both of

their parents were born elsewhere were coded as *second generation immigrants*, and adolescents who reported that they and both of their parents were born in the U.S. were coded as *third-plus generation immigrants*.

Selective Acculturation—In this study, *bilingualism*, *GPA*, and *family social relations* served as measures of the acculturation experience. *Bilingualism* captured one element of ethnic retention with simultaneous English language proficiency. It was measured as a dummy variable that is equal to one if the adolescent indicated both that Spanish is the predominant language spoken in their home and that they earned an A or B in English during the last academic term. Fluent bilingualism has been associated with cognitive development, academic performance, academic attainment, and psychological well-being [46]. *GPA* was based on a 4.0 scale and calculated from the adolescent's self-reported grades earned in English, Mathematics, History/Social Science, and Science during the most recent grading period. Doing well in school was considered a normative behavior that reflected acculturation. The *family social relations index* was a six item index created to measure the extent to which the adolescent feels cared for and happy in their family life. The items in the index included, "your parents care about you," "people in your family understand you," "you and your family have fun together," "your family pays attention to you," "how close do you feel to your mother," and "how close do you feel to your father." Responses were reverse coded where appropriate and ranged from 1 (not at all) to 5 (very much). The mean of the responses to the six items served as the final scale ($\alpha = .81$). Strong and supportive family relations have been associated with selective acculturation [28].

Control Variables—All analyses controlled for four additional variables: *age* (based on the respondent's date of birth), *parental alcohol use* (parent report of self and partner use from the Parent Interview, 0 = never in past year, 6 = nearly everyday), *parental education* (parent or student report of whether either of the two parents had graduated from high school), and *single-parent family* (based on the student's report regarding who they live with). Age and parental alcohol use have been shown to be associated with adolescent alcohol use [47,48] and parental education and living in a single-parent family captured elements of family human and social capital which segmented assimilation theory has posited as important for facilitating selective acculturation [28]. Descriptive statistics for the variables in the full sample and for each of the Latina/o ethnic group sub samples are reported by gender in Table 1.

Analytic Strategy

Because the Add Health sample was based on a complex survey design, appropriate weighting was used to account for the Add Health design effects.³ In addition, we estimated all analyses with the survey procedure in the statistical package STATA. The survey procedure in STATA takes into account the clustered sampling design, where adolescents were sampled within schools, and produces robust standard errors and more accurate *t*-values. Because alcohol use and binge drinking were measured as dichotomous variables, logistic regression modeling (in the STATA survey procedure) was used to estimate these equations through maximum likelihood. The analyses progressed in three stages. First, we calculated the proportions of males and females reporting drinking or binge drinking for each ethnic group by immigrant generation in order to explore whether significant gender differences exist within groups. The group differences we uncovered were compared using an adjusted Wald test (*t*-test). Second, nested logistic regression models were estimated in order to explore the relationship between gender, ethnicity, immigrant generation, selective acculturation and alcohol use. In order to explore gender differences, we ran separate models for males and females and then compared the logistic regression coefficients for ethnicity, immigrant generation and selective

³More detailed documentation on the Add Health design can be found in Chantala [50].

acculturation across these models. Since typical interaction analysis or *t*-tests across groups do not account for unobserved heterogeneity, logistic regression coefficients were compared across models for males and females using Allison's test of logit coefficients across groups [49]. Allison's test is a Wald chi-square test that removes the potential confounding effects of unobserved heterogeneity that may produce observed but ingenuine differences in logit coefficients across groups. Third, we capture the additive effects of all these variables by reporting the predicted probabilities of alcohol use based on the logistic regression analyses. Unless otherwise noted, we used listwise deletion to deal with missing data in all multivariate analyses.⁴

Results

In general, our results clarify the complex ways that gender, ethnicity and acculturation work to shape alcohol use and binge drinking across our diverse sample of Hispanic and non-Hispanic adolescents. The descriptive statistics reported in Table 2 provide an overview of these complexities. First, these results indicate these behaviors vary significantly by gender within and across ethnic groups. Within ethnic groups, alcohol use differs significantly for males and females among first generation Mexican American, first generation Puerto Rican and second generation Cuban American adolescents. In each case, males are significantly more likely to use alcohol than their female counterparts. Gender differences in binge drinking typically reflect a similar pattern; males are more likely than their female co-ethnics to engage in this behavior. These differences are significant for first generation Mexican Americans, first generation Cuban Americans, third plus generation Puerto Ricans and non-Hispanic whites.

Consistent with classical assimilation models, alcohol use and binge drinking also vary across immigrant generations. In general, first generation Hispanic adolescents are less likely to engage in these behaviors than their third generation co-ethnic counterparts as well as their non-Hispanic white counterparts. In most cases, this pattern is evident regardless of gender. To some extent, these differences across immigrant generations reflect the convergence of alcohol use rates that becomes evident among both males and females when we compare third generation Hispanics to their non-Hispanic white counterparts. Several important exceptions tied to gender and ethnicity, however, do emerge in these cross-tabulations. Perhaps most importantly, binge drinking rates among third generation Mexican American males and third generation Cuban American females rise to levels that are significantly higher than the rates among third generation plus non-Hispanic males and females, respectively.

We turn to multivariate logistic regression models to more systematically disentangle the effects of gender, ethnicity, and acculturation, controlling for a number of variables known to be associated with alcohol use behaviors. The results are reported in Table 3. First, we establish baseline racial and ethnic differences, net of the effects of the control variables. Specifically, we compare the odds of alcohol use among Mexican American, Puerto Rican and Cuban American adolescents relative to non-Hispanic whites (Table 3, Model 1). Among females, neither Mexican American nor Puerto Rican teens differ significantly from non-Hispanic whites. The only significant difference to emerge is for Cubans; once we control for other factors they are less likely to use alcohol than non-Hispanic whites (Table 3, Model 1). Among males, no ethnic differences in alcohol use emerge initially.

Next, we include immigrant generation in the models (see Table 3, Model 2). As expected, the odds of alcohol use among first generation females and first generation males are significantly lower than among their third plus generation counterparts, even after we control for other factors. In contrast, second generation immigrants do not differ significantly from third plus

⁴Results of alternative analyses using imputation methods (mean or statistical imputation) resulted in similar findings.

generation adolescents in alcohol use. Finally, we include the measures of selective acculturation, namely bilingualism, GPA and the family relations index. We find that increases in GPA and the family relations index both reduce the odds of alcohol use among females and males. Further, the inclusion of these measures clarifies the ethnic differences that should, in fact, be treated as significant for adolescent males and females. Among females, the ethnic differences between Cuban American and non-Hispanic white adolescents remain significant once the measures of selective acculturation are included in these models. In contrast, the full model for males indicates that the odds of alcohol use among Mexican American and Cuban American males are 1.6 and 1.7 times as high, respectively, as for non-Hispanic white males, once we control for immigrant generation and selective acculturation. The Wald chi-square test of differences in the logistic coefficient estimates across the models indicate a significant gender difference among Cuban Americans in the effect of ethnicity on alcohol use with females showing greatly reduced odds of alcohol use compared to Cuban American males.

We ran similar models to explore the associations between ethnicity, immigrant generation, selective acculturation and binge drinking by gender. The results are reported in Table 4. Our baseline models, focusing on ethnic differences, reveal no significant differences for males or females (see Table 4, Model 1).

Next, we include immigrant generation in the models (see Table 4, Model 2). Similar to the effects for alcohol use, the odds of binge drinking among first generation immigrants were significantly lower than the odds of binge drinking among third plus generation adolescents regardless of gender. Further, second generation immigrants, irrespective of gender, did not differ significantly from third plus generation adolescents (see Table 4, Model 2). However, the Wald chi-square test of gender differences in the coefficients reveals that the impact of immigrant generation does differ by gender. First generation females experience a greater reduction in the odds of binge drinking compared to third plus generation females than do their male counterparts. Additionally, the effect of second generation status as compared to third plus generation differs by gender. The odds of binge drinking increase in the second generation among females but decline among males.

The measures of selective acculturation were also related to binge drinking (see Table 4, Model 3). Bilingualism was associated with reduced odds of binge drinking among females. GPA and the family relations index were both associated with reduced odds of binge drinking regardless of gender. However, the Wald chi-square test of gender differences in the coefficients indicated that, as a group, the effect of the measures of selective acculturation differed significantly by gender. Together, GPA, the family relations index and bilingualism resulted in a greater reduction in the odds of binge drinking among females than among males.

To clarify the most important relationships, we present the predicted probabilities of alcohol use and binge drinking based on gender, ethnicity, immigrant generation and selective acculturation (see Table 5). The predicted probabilities illustrate the effects of the factors being manipulated in Table 5 when other independent variables are held constant. These results further highlight and confirm several important similarities and differences in alcohol use and binge drinking patterns by gender. Among Hispanic males and females, first generation immigrants have lower probabilities of alcohol use and binge drinking than their second generation and third generation counterparts. However, the increase we see in the probabilities of these drinking behaviors across immigrant generations differs for males and females. Among Hispanic males, the probabilities of alcohol use are similar for second and third generation immigrants but the probabilities of binge drinking are higher in the third generation than in the second generation. For Hispanic females, the probabilities of alcohol use and binge drinking peak in the second generation. In fact, the probabilities of alcohol use and binge drinking are actually higher for females than males among second generation Mexican American

adolescents who are not bilingual, have poor family relations and have a poor GPA, once we control for other factors. By the third generation, the odds of binge drinking as well as alcohol use have dropped slightly, converging in some cases with the probabilities of these behaviors among non-Hispanic white females.

Discussion

This is the first study to examine the relationship between acculturation and alcohol use and abuse by both gender and ethnicity using a nationally representative sample that includes both Hispanic and non-Hispanic adolescents. Despite the dramatic growth of this population, researchers have yet to disentangle the complex relationships among these factors for Latino/a youth. We clarify several important effects by comparing the relationship between immigrant generation, selective acculturation and alcohol use among adolescent males and females within and across four different ethnic groups, including Mexican American, Cuban American, Puerto Rican and non-Hispanic Whites.

Consistent with research on adults, significant gender differences emerge within our sample of adolescents. Using cross tabulations, we find that alcohol use differs significantly for males and females among first generation Mexican, first generation Puerto Rican and second generation Cuban American teens. In each case, males were more likely to use alcohol than their female counterparts. Gender differences in binge drinking also emerge within some groups, with males again typically more likely than their female counterparts to engage in this behavior. Using logistic regression, we also uncover a set of gender differences that we did not expect based on previous research; the probabilities of alcohol use and binge drinking are actually higher among second generation Mexican American females than among their male counterparts, at least when they are not bilingual, report poor family relations and have a poor GPA. Similarly, the probabilities of alcohol use are higher among second generation Puerto Rican females than their male counterparts when they have not experienced selective acculturation. These results may resolve, to some extent, several inconsistencies reported in previous research on Latino adolescents. In contrast to this analysis, those studies that find no gender differences within ethnic groups do not include these measures of acculturation, which may account for this discrepancy.

In addition, our results provide evidence that gender also moderates the relationship between acculturation and alcohol use, but in ways that differ to some extent from the gender-specific patterns several previous studies report for adults. In general, generational status is positively associated with alcohol use among *both* females and males. However, alcohol use and binge drinking among Latino adolescents follow distinct, gender-specific trajectories with acculturation. Regardless of national origin, first generation Latinas are less likely than their third generation counterparts to use alcohol or binge drink. In general, they are also less likely than third plus generation non-Hispanic white females to engage in either behavior. Importantly, alcohol use and binge drinking peak among second generation Latinas. The escalation of these behaviors in this generation is particularly dramatic among those who are not bilingual, report poor family relations and have a low GPA. By the third generation, alcohol use and binge drinking among Latinas drop to levels that are similar to or lower than the rates for their non-Hispanic white counterparts. Among Hispanic males, the odds of alcohol use and binge drinking also increase across immigrant generations. Similar to females, alcohol use rises significantly by the second generation and then levels off in the third generation. The rate of binge drinking among Hispanic males, however, continues to rise, peaking in the third generation.

Taken together, these results suggest that traditional gender ideologies may, in fact, shape alcohol use during adolescence, contrary to some studies that conclude these culturally defined

expectations do not generate gender differences in drinking until adulthood. On the one hand, Latina adolescents may internalize gendered expectations, as Stone and Meyler [13] suggest, and face greater parental restrictions that limit the opportunity to drink. Further, they may also face more severe sanctions if they drink. With acculturation, Latina adolescents seemingly adopt the norms of the dominant culture which includes a less restrictive set of prohibitions against alcohol use among females. On the other hand, the expectations tied to traditional Latino culture and Anglo American culture do not differ as dramatically for Hispanic males. This likely explains why the difference in binge drinking, in particular, between first generation Hispanics and their non-Hispanic counterparts is greater among females than among males. Importantly, our results also point to an important set of resources that may protect Hispanic females, in particular, against this rise in alcohol use and abuse. These resources include bilingualism, positive family relations and academic achievement. These forms of selective acculturation are protective for Hispanic males as well but the effects are larger for Hispanic females.

We were able to uncover these gender differences in the trajectories of alcohol use and abuse that are associated with acculturation largely because this analysis involved a set of comparisons not widely incorporated in studies of Latino adolescents. Perhaps most notably, the comparisons of non-Hispanic white adolescents with Latino adolescents of distinct immigrant generations provide a more solid foundation for assessing the expectations derived from classical assimilation accounts that claim acculturation involves adopting the norms and behaviors of the dominant host culture. Future research should similarly include both inter- and intra-ethnic group comparisons in order to determine if alcohol use patterns reflect acculturation to the dominant host culture—or perhaps some other reference group. Similarly, our results further underscore the importance of disaggregating the effects of acculturation on alcohol use for distinct Latino subgroups. Some similarities emerge in our comparisons of drinking behaviors across these subgroups but the particular trajectories of alcohol use and binge drinking are culturally-specific as well as gender-specific, as many scholars have suggested.

These differences provide further evidence that Cuban American, Mexican American and Puerto Rican males and females experience acculturation and acculturative stress in different ways. The high rate of binge drinking among third generation Mexican American male adolescents is particularly deserving of further scrutiny, as these rates remain high into adulthood for this group. In this case, the rise in binge drinking undoubtedly reflects not only assimilation to dominant cultural norms but also other dynamics as well. Recent research by Zamboanga et al. [43], for example, suggests that strong ethnic identification among this group of males may contribute to higher rates of alcohol use and abuse, contrary to theories that emphasize the importance of “ethnic retention”. Alternately, Mexican American males may encounter a set of stressors that other groups are not as likely to encounter, including discrimination [29]. Further research is necessary to disentangle the factors at work among this group as well as others.

In subsequent studies of Latino adolescents, researchers should also address one of the key limitations of samples like the one used in this analysis. The Add Health data includes only adolescents who are in school at the time of the survey. This may limit the generalizability of our results since dropout rates are higher among Latinos than other groups and adolescents who stay in school may have different alcohol use rates than their counterparts who have left school.

Despite these limitations, the results of our analysis have important implications for future research and public policy. Scholars need to further develop gender-specific as well as culturally-specific models of alcohol use for Latino adolescents, taking into account the unique

stressors that may be tied to acculturation for some groups. In other words, recent efforts to disaggregate patterns of alcohol use by gender, ethnicity and generational status among adults must be extended to further disentangle these complex relationships among Hispanic youth. Failure to do so may generate models that mask the substantial risks of alcohol use facing some groups of Latino adolescents. Research should also explore further the dynamics whereby alcohol use is conditioned by gendered norms and expectations as well as generational status and ethnicity. Research that extends the current study in this direction is critical to the development of intervention strategies that more effectively discourage binge drinking and other risky health behaviors among Hispanic adolescents, a growing population that continues to encounter a complex set of challenges in the United States.

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Table 1

Descriptive statistics for all study variables

	Non-Hispanic whites (<i>n</i> = 6792)		Mexican (<i>n</i> = 910)		Cuban (<i>n</i> = 290)		Puerto Rican (<i>n</i> = 336)	
	Females (<i>n</i> = 3475)	Males (<i>n</i> = 3317)	Females (<i>n</i> = 460)	Males (<i>n</i> = 450)	Females (<i>n</i> = 146)	Males (<i>n</i> = 144)	Females (<i>n</i> = 168)	Males (<i>n</i> = 168)
Alcohol use								
Alcohol use	.53	.51	.49	.53	.23*	.53	.50	.55
Binge drinking	.31*	.35	.30 ^a	.38	.15	.21	.21 ^a	.31
Immigrant generation								
First generation	.02	.01	.22	.24	.23	.29	.10	.07
Second generation	.05	.05	.37	.38	.70	.66	.44	.35
Third plus generation	.93	.94	.41	.38	.07	.05	.46	.58
Selective acculturation								
Bilingual	.01	.00	.33**	.22	.47*	.23	.19	.07
GPA	2.99***	2.77	2.75*	2.59	2.67	2.50	2.44	2.50
Family relations	4.10***	4.20	4.12**	4.27	4.09	4.26	4.19	4.24
Control variables								
Age	15.35***	15.51	15.40	15.60	15.42	15.58	15.17	15.41
Parental alcohol use	2.11*	2.18	1.66	1.77	1.65	1.67	1.94	2.04
Parents not high school graduates	.06	.07	.46	.52	.28	.24	.26	.15
Single parent family	.26	.25	.27	.30	.35	.36	.43	.53

^a indicates $P < .10$,* at $P < .05$,** at $P < .01$,*** at $P < .001$ (two-tailed test) for an adjusted Wald Test comparing males and females

Table 2

Alcohol use and binge drinking by ethnic group, immigrant generation, and gender

Ethnic groups by immigrant generation	Alcohol use		Binge drinking	
	Females	Males	Females	Males
First generation Mexican	.24 ^{*a}	.40	.15 ^{*a}	.29
Second generation Mexican	.60	.53	.34	.33
Third plus generation Mexican	.54	.60	.35	.48 ^a
First generation Cuban	.18 ^a	.21 ^a	.06 ^{*a}	.17 ^a
Second generation Cuban	.18 ^{*a}	.64 ^a	.11 ^a	.19
Third generation Cuban	.88 ^a	.95 ^a	.82 ^a	.71
First generation Puerto Rican	.31 [*]	.67	.03 ^a	.18
Second generation Puerto Rican	.52	.47	.30	.17
Third plus generation Puerto Rican	.52	.59	.17 ^{*a}	.42
First generation non-Hispanic White	.45	.30 ^a	.22	.24
Second generation non-Hispanic White	.54	.51	.34	.34
Third plus generation non-Hispanic White	.54	.52	.31 [*]	.36

* indicates $P < .05$ (two-tailed test) for an adjusted Wald Test comparing males and females

^a indicates $P < .05$ (two-tailed test) for an adjusted Wald Test comparing each category to third plus generation non-Hispanic whites

Table 3

Odds ratios for the logistic regression of alcohol use on ethnicity, immigration generation, and selective acculturation^a

	Females			Males		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Ethnicity ^(g** , models 1-3)						
Mexican	1.00 (0.69,1.45)	1.14 (0.77,1.69)	1.23 (0.80,1.90)	1.22 (0.90,1.64)	1.44* (1.01,2.03)	1.57* (1.10,2.25)
Cuban ^(g** , models 1-3)	0.27* (0.09,0.81)	0.28* (0.09,0.92)	0.28* (0.08,0.96)	1.22 (0.76,1.98)	1.57 (0.99,2.47)	1.66* (1.05,2.61)
Puerto Rican	0.95 (0.58,1.57)	0.96 (0.57,1.63)	0.96 (0.57,1.63)	1.26 (0.75,2.11)	1.34 (0.79,2.27)	1.37 (0.81,2.30)
Immigrant generation						
First generation		0.43** (0.26,0.71)	0.50** (0.30,0.83)		0.44** (0.26,0.72)	0.51* (0.29,0.88)
Second generation		1.16 (0.86,1.56)	1.19 (0.88,1.60)		0.96 (0.68,1.35)	1.02 (0.72,1.43)
Selective acculturation						
Bilingual			0.60 (0.35,1.02)			0.55 (0.30,1.04)
GPA			0.80*** (0.71,0.90)			0.85** (0.77,0.95)
Family relations			0.58*** (0.51,0.66)			0.71*** (0.62,0.80)
Control variables						
Age	1.23*** (1.16,1.30)	1.24*** (1.17,1.31)	1.19*** (1.12,1.26)	1.34*** (1.27,1.42)	1.34*** (1.27,1.42)	1.31*** (1.24,1.39)
Parental alcohol use	1.29*** (1.19,1.40)	1.29*** (1.19,1.40)	1.29*** (1.19,1.40)	1.24*** (1.15,1.33)	1.23*** (1.14,1.33)	1.24*** (1.15,1.34)
Parents not high school graduates	0.80 (0.57,1.13)	0.81 (0.58,1.14)	0.81 (0.57,1.14)	0.80 (0.54,1.16)	0.82 (0.56,1.20)	0.81 (0.54,2.15)
Single parent family	1.23* (1.01,1.50)	1.23* (1.01,1.50)	1.10 (0.90,1.34)	1.08 (0.88,1.32)	1.07 (0.88,1.31)	0.96 (0.79,1.16)
N	4249	4249	4249	4079	4079	4079
Df	(8,121)	(10,119)	(13,116)	(8,121)	(10,119)	(13,116)
F-adjusted ^b	3.44**	3.49***	6.66***	5.43***	4.59***	4.12***

* indicates statistical significance at $P < .05$,** at $P < .01$, and*** at $P < .001$ ^aConfidence intervals are reported to right of the odds ratio

b_i Reports result of an F -adjusted mean residual test used to assess goodness of fit for a design-based logistic regression model

g^* indicates a statistically significant Wald chi-square test of gender differences in logistic coefficient estimates at $P < .10$ and

g^{**} at $P < .05$ in the indicated model for a particular variable or for a group of variables

Table 4

Odds ratios for the logistic regression of binge drinking on ethnicity, immigration generation, and selective acculturation

	Females			Males		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Ethnicity						
Mexican	1.06 (0.71,1.58)	1.21 (0.81,1.80)	1.34 (0.86,2.09)	1.20 (0.84,1.72)	1.47 (0.97,2.22)	1.60* (1.04,2.47)
Cuban	0.40 (0.12,1.30)	0.42 (0.12,1.44)	0.41 (0.10,1.72)	0.48 (0.19,1.21)	0.69 (0.24,1.97)	0.71 (0.23,2.21)
Puerto Rican (g^* models 1–3)	0.63 (0.38,1.02)	0.62 (0.38,1.02)	0.60* (0.37,0.99)	0.85 (0.46,1.58)	0.93 (0.49,1.77)	1.08 (0.54,2.18)
Immigrant generation (g^{**} model 2, g^* model 3)						
First generation (g^{**} models 2–3)		0.41** (0.23,0.72)	0.52* (0.30,0.92)		0.47* (0.25,0.89)	0.56 (0.29,1.12)
Second generation (g^* models 2–3)		1.14 (0.81,1.60)	1.19 (0.85,1.67)		0.78 (0.52,1.17)	0.83 (0.55,1.26)
Selective acculturation (g^{**} model 3)						
Bilingual			0.43* (0.19,0.97)			0.54 (0.28,1.07)
GPA			0.75*** (0.67,0.84)			0.81*** (0.71,0.91)
Family relations			0.54*** (0.46,0.64)			0.69*** (0.61,0.79)
Control variables						
Age	1.31*** (1.22,1.40)	1.31*** (1.23,1.41)	1.27*** (1.18,1.36)	1.55*** (1.47,1.65)	1.56*** (1.47,1.65)	1.52*** (1.43,1.61)
Parental alcohol use	1.27*** (1.19,1.36)	1.28*** (1.19,1.36)	1.28*** (1.19,1.38)	1.15*** (1.07,1.23)	1.14*** (1.06,1.23)	1.15*** (1.07,1.23)
Parents not high school graduates	1.01 (0.72,1.31)	1.03 (0.72,1.49)	1.05 (0.72,1.53)	0.84 (0.55,1.29)	0.89 (0.58,1.35)	0.86 (0.55,1.34)
Single parent family	1.30*** (1.07,1.57)	1.29** (1.07,1.56)	1.12 (0.93,1.36)	1.14 (0.92,1.42)	1.13 (0.91,1.41)	0.99 (0.80,1.24)
N	4249	4249	4249	4079	4079	4079
Df	(8,121)	(10,119)	(13,116)	(8,121)	(10,119)	(13,116)
F-adjusted ^b	3.47***	3.05*	7.72***	8.78***	8.81***	8.48***

* indicates statistical significance at $P < .05$,** at $P < .01$, and*** at $P < .001$

- ^a Confidence intervals are reported to right of the odds ratio
- ^b Reports result of an *F*-adjusted mean residual test used to assess goodness of fit for a design-based logistic regression model
- ^{g*} Indicates a statistically significant Wald chi-square test of gender differences in logistic coefficient estimates at $P < .10$ and
- ^{g**} at $P < .05$ in the indicated model for a particular variable or for a group of variables

Table 5

Predicted probabilities of alcohol use and binge drinking by ethnicity, gender, immigrant generation, and selective acculturation with selected characteristics^a

	Non-Hispanic white		Mexican		Cuban		Puerto Rican	
	Female	Male	Female	Male	Female	Male	Female	Male
Alcohol use								
First generation immigrant								
Not bilingual, poor family relations, and poor gpa ^b	.54	.46	.60	.58	.25	.59	.53	.54
Bilingual, good family relations, and good gpa ^c	.20	.19	.24	.27	.07	.29	.20	.25
Second generation immigrant								
Not bilingual, poor family relations, and poor gpa	.74	.63	.78	.73	.44	.74	.73	.70
Bilingual, good family relations, and good gpa	.37	.32	.43	.43	.14	.44	.37	.40
Third plus generation immigrant								
Not bilingual, poor family relations, and poor gpa	.70	.63	.75	.73	.40	.74	.70	.70
Bilingual, good family relations, and good gpa	.34	.32	.38	.43	.12	.44	.33	.39
Binge drinking								
First generation immigrant								
Not bilingual, poor family relations, and poor gpa	.33	.35	.40	.46	.17	.27	.23	.33
Bilingual, good family relations, and good gpa	.06	.12	.08	.17	.03	.08	.04	.11
Second generation immigrant								
Not bilingual, poor family relations, and poor gpa	.53	.44	.60	.56	.32	.36	.41	.42
Bilingual, good family relations, and good gpa	.13	.16	.16	.23	.06	.12	.08	.15
Third plus generation immigrant								
Not bilingual, poor family relations, and poor gpa	.49	.48	.56	.60	.28	.40	.36	.47

	Non-Hispanic white		Mexican		Cuban		Puerto Rican	
	Female	Male	Female	Male	Female	Male	Female	Male
Bilingual, good family relations, and good gpa	.11	.19	.14	.27	.05	.14	.07	.18

^aThe predicted probabilities reported above are for 16 year olds who lived in a single-parent family, had at least one parent who was a high school graduate, and were at the mean level for GPA and parental alcohol use

^bPoor family relations and poor gpa is defined as 1 standard deviation below the overall mean on each of these measures

^cGood family relations and good gpa is defined as 1 standard deviation above the overall mean on each of these measures