Acculturation Profiles and Alcohol Use among Hispanic Americans

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Abstract

Hazardous alcohol use among Hispanics makes for a critical public health issue that warrants empirical examination. Whereas research shows positive associations between alcohol-related outcomes and *acculturation*, it is unclear how *enculturation* and *acculturation* x *enculturation* are linked to alcohol use. Hispanic American undergraduate and graduate students ($N = 348$, 61.8% women, $M_{\text{age}} = 21.82$, 83.3% undergraduates) completed questionnaires assessing their levels of *acculturation*, *enculturation*, and alcohol use. *Enculturation* was negatively associated with social drinking-related consequences. *Acculturation* was positively associated with alcohol consumption, and *enculturation* buffered this association. Findings highlight the utility of considering acculturation profiles in understanding Hispanic alcohol use.

Keywords: acculturation; biculturalism; culture; ethnicity; social norms

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Alcohol misuse is linked to adverse health, personal, and social consequences; thus it poses a critical public health concern (World Health Organization, 2018). Epidemiologic data reveal high prevalence rates of past-year alcohol consumption, binge drinking, and alcohol use disorders among Hispanic/Latinx Americans¹ (see Lui & Zamboanga, 2019, for summary). Across ethnic groups in the United States, college students make up a particularly vulnerable segment of the population for alcohol misuse (SAMHSA, 2017). More than half of American college students who consume alcohol report experiencing one or more negative social or personal consequence(s) as a result of their drinking (e.g., engaging in unprotected sexual activities and sustaining unintended injuries; American College Health Association, 2012). These adverse consequences not only are associated with students' poorer academic functioning, but also greater institutional expenses to cover property damage or emergency services (Carey et al., 2009). Given these alcohol-related problems, it is critical to understand drinking behaviors among Hispanic American college students.

Cultural orientations are one set of key sociocultural determinants that have been examined in relation to drinking behaviors among Hispanic Americans. These orientations may underscore how individuals are socialized in their cultural contexts with regard to alcohol use. *Acculturation* orientation typically is defined as individuals' immersion in the mainstream U.S. culture, whereas *enculturation* orientation is defined as individuals' immersion in their heritage or country-of-origin culture (Yoon et al., 2013). Prior evidence indicates that *acculturation* can be a risk factor for alcohol use and misuse—especially among Hispanic women (Lui &

¹ Research has shown that most Mexican Americans identify as Hispanic over Latinx Americans (Pew Research Center, 2012). Our sample consisted of predominantly Mexican Americans; thus, we used the label "Hispanic Americans" throughout the rest of the manuscript.

Zamboanga, 2018). Yet, relatively fewer studies have examined the association between *enculturation* and alcohol use, or considered both dimensions of cultural orientations simultaneously. Studies also have tended to focus on community adult samples (e.g., Caetano et al., 2008; Zeng, 2005) whereas less is clear about these relations among college students (Zamboanga, Tomaso, & Lui, 2017). Therefore, we aimed to examine the degree to which *acculturation*, *enculturation*, interaction between *acculturation* and *enculturation*, and gender explain the variances of alcohol use outcomes among Hispanic college students.

Acculturation and Enculturation Orientations: Determinants of Alcohol Use Outcomes

Although Hispanic Americans are more likely to abstain from alcohol use than Euro Americans, Hispanics who do drink are more likely to consume alcohol in greater quantities and experience more negative consequences (e.g., drunk driving, liver cirrhosis, injuries and death; Chartier & Caetano, 2010). Acculturation—a process of psychological and cultural change that occurs when individuals interact with culture(s) that is/are different from their own—is one key factor related to alcohol use and other health outcomes (Abraído-Lanza, Chao, & Flórez, 2005; Yoon et al., 2013). Being more immersed in the mainstream U.S. culture may promote more permissive attitudes and beliefs around health risk behaviors such as alcohol (mis)use (Schwartz et al., 2011). Theory and empirical data have supported a bidimensional conceptualization of the acculturation process: *acculturation* and *enculturation* not only are weakly correlated with each other, but also contribute uniquely to psychological outcomes (Berry, 1997; Cano, 2016; Kim & Abreu, 2001; Lorenzo-Blanco et al., 2012). Concerning alcohol use outcomes among Hispanic Americans, a meta-analysis and a narrative review show that *acculturation* and *enculturation* may serve as risk and protective factors, respectively (Lui & Zamboanga, 2018; Zamboanga et al., 2017). Even though these associations fell in the small to moderate range in Hispanic

American samples, cultural orientations remain relevant because of their added value in predicting alcohol use above and beyond other sociocultural factors such as religiosity (Daniel-Ulloa et al., 2014; Jankowski, Meca, Lui, & Zamboanga, 2018).

The relevance of cultural orientations in alcohol use outcomes can be contextualized within social norms theory (Pedersen, Cruz, Labrie, & Hummer, 2011). Heavy drinking and drunkenness are normalized behaviors that are often seen as a rite of passage among college students in the U.S. (Crawford & Novak, 2006). Individuals who are more U.S. oriented may be more likely to engage in high-risk drinking behaviors including pregaming (Perotte, Zamboanga, Lui, & Piña-Watson, 2018). Those who are more Hispanic oriented may have learned more conservative attitudes toward alcohol use as a result of cultural values including *familismo*. *Familismo* is characterized by a strong sense of pride and obligation to one's family, and an emphasis on family's centrality to individuals' self-identity (Ayón, Marsiglia, & Bermudez-Parsai, 2010). Research has shown that Hispanic college students consume less alcohol when they report higher levels of *familismo* and parental monitoring of their drinking behaviors (Venegas et al., 2012). There is evidence to suggest that Hispanic individuals who are more enculturated learn to practice safer drinking practices from their parents. Additionally, being enculturated may also induce a greater sense of connectedness to and respect for their parents, which in turn reduces their likelihood of engaging in risky drinking behaviors.

Although grounded in social norms theory, research on the associations between acculturation orientations and alcohol use outcomes has shown different results across college and community samples. Nuanced understanding of such variability currently is limited in three ways. First, studies have tended to focus on *acculturation* alone; few have simultaneously considered *acculturation* and *enculturation* and whether they are related to alcohol use outcomes

independently of each other. Second, *acculturation* and *enculturation* in general are associated with alcohol use in opposite directions; little research has considered their interaction as a predictor. Third, questions remain about whether these associations are more robust for women than men.

Acculturation Profiles in Relation to Alcohol Use Outcomes

In addition to assessing *acculturation* and *enculturation* as separate dimensions, studies have also considered the role of acculturation profiles on alcohol use outcomes. In most existing studies, individuals are categorized into four discrete profiles based on their levels of *acculturation* and *enculturation*. These categories help characterize individual differences in the levels of adherence to both mainstream U.S. and heritage cultures, and are then used to examine differences in patterns of alcohol use. For example, individuals characterized as predominantly Hispanic oriented are less likely to engage in hazardous drinking behaviors than individuals who are predominantly U.S. oriented or equally integrated in both cultures (Des Rosiers, Schwartz, Zamboanga, Ham, & Huang, 2013). It is important to note there are limitations to the current approach to acculturation profiles. Researchers tend to use midpoints on the range of possible scores (e.g., Coatsworth, Maldonado-Molina, Pantin, & Szapocznik, 2005) or sample-specific median scores (Giang & Wittig, 2006) when classifying individuals into these categories. The use of sample-specific scores makes it difficult to replicate across samples (Schwartz et al., 2010). Moreover, there have been inconsistencies in the number of profiles found across studies. This underscores the importance of using a more dimensional approach to classification of these profiles rather than a categorical approach. Examining *acculturation* x *enculturation* interaction as a continuous variable can provide a more realistic understanding of acculturation profiles in relation to individual differences in alcohol use outcomes.

Gender Differences

Compared to their man counterparts, there are lower levels of alcohol consumption and drinking problems, and stronger relations between *acculturation* and alcohol use outcomes among Hispanic American women (see Lui & Zamboanga, 2018). These mean and correlational differences may reflect gender-specific socialization around alcohol use. There tend to be more conservative societal attitudes toward alcohol use by women than by men, especially in Hispanic communities (Fiorentino et al., 2007). Hispanic women who are more Americanized may be more inclined to adhere to the more liberal and permissive U.S. drinking norms than women who are less Americanized (Schwartz et al., 2014). Additionally, Hispanic women students in a predominantly White/Euro American college environment may be embedded in sociocultural contexts that place fewer gender-specific restrictions against alcohol use than in a predominantly Hispanic environment (Zamboanga, Tomaso, Kondo, & Schwartz, 2014). Furthermore, Hispanic women who are more enculturated may be more strongly influenced by cultural values such as *marianismo*—a core Hispanic value which implies that alcohol (mis)use is incompatible with the idyllic image of a pure and moral woman (Castro & Coe, 2011). Thus, it stands to reason that the association between *acculturation* x *enculturation* and alcohol use outcomes would be stronger for Hispanic women than men.

The Present Study

The goal of the present study was to further scientific understanding of how acculturation orientations and acculturation profiles are related to alcohol use outcomes among Hispanic American college students. Existing studies tend to focus on community adult samples; thus, less is known about whether these patterns are similar among college students. Consistent with social norms theory, the roles of cultural orientations may be especially robust predictors among

Hispanic Americans in college. To capture a range of alcohol use outcomes, we examined the intensity of alcohol consumption, alcohol dependence symptoms, harmful alcohol use, as well as personal and social drinking-related consequences. These drinking behaviors and alcohol-related consequences have shown different associations with cultural orientations (Des Rosiers et al., 2013; Zemore, 2007); disentangling these distinct patterns can inform prevention and treatment efforts that best serve Hispanic Americans. Based on prior research, we hypothesized that:

- (1) greater *acculturation* would be associated with higher levels of alcohol use outcomes;
- (2) greater *enculturation* would be associated with lower levels of alcohol use outcomes above and beyond *acculturation*;
- (3) gender would moderate the associations between alcohol use outcomes and *acculturation*, and *enculturation*; and,
- (4) *enculturation* would reduce the association between *acculturation* and alcohol use outcomes, and gender would moderate this moderation effect.

Method

Participants and Procedures

The sample included Hispanic college students aged 18 years or older ($N = 348$, 61.8% women², $M_{\text{age}} = 21.82$, $SD_{\text{age}} = 5.08$, 79.3% U.S. born, 83.3% undergraduate students) of diverse ethnic heritages (62.1% Mexican, 18.3% Cuban, 7.4% Spanish). Domestic, non-international, Hispanic American graduate and undergraduate students were recruited via university-wide mass emails at a private, mid-sized university in the southwestern region of the United States. Hispanic American students make up 11.7% of the university population. Using a list maintained by the Office of the Registrar, our recruitment emails were sent to 1,223 students who self-

² One participant identified as transgender/non-binary; their data were not included in gender difference analyses.

identified as Hispanic or Latinx Americans. This 27.8% response rate was similar to those in other studies assessing college alcohol use (e.g., Linowski, Ward, & Houghton, 2012; Lorant, Nicaise, Soto, & d’Hoore, 2013). Participants provided electronic consent and completed the present online survey study. The survey took about 50 minutes to complete and participants received monetary compensation for their time.

Measures

Participants completed a demographic questionnaire and the following measures. All scale scores showed adequate internal consistency reliability (see Table 1 for Cronbach’s α s).

Stephenson Multigroup Acculturation Scale (SMAS; Stephenson, 2000). The SMAS is a 32-item self-report measure that assesses individuals’ immersion in the mainstream U.S. culture and their heritage culture. Participants reported their levels of *acculturation* using the 15-item Dominant Society Immersion subscale (e.g., “I feel at home in the United States”). They also reported their levels of *enculturation* using the 17-item Ethnic Society Immersion subscale (e.g., “I know how to speak my native language”). All items were rated on a scale from 1 (*false*) to 4 (*true*). The SMAS was developed to be used across ethnic groups and has shown to be a reliable and valid measure in Hispanic samples (Brown, Gibbons, & Hughes, 2013).

Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). The AUDIT is a widely used, 10-item self-report measure of hazardous alcohol use. The AUDIT can be scored into three subscales that tap respondents’ alcohol consumption, dependence symptoms, and harmful alcohol use over the past year (World Health Organization, 2001). Differentiating these three alcohol use outcomes provides more information about how sociocultural factors are linked to alcohol use and misuse, and can better identify areas to focus on in prevention and treatment. The measure included three items on alcohol consumption (e.g., “How often do you

have a drink containing alcohol?”), three items on alcohol dependence symptoms (e.g., “How often during the last year did you find you were not able to stop drinking once you had started?”), and four items on harmful alcohol use (e.g., “How often during the last year have you had a feeling of guilt or remorse after drinking?”). Participants rated items from 0 (*never/no*) to 4 (*daily or almost daily/yes, during the last year*). The AUDIT scores were computed using summed scores of items in each of the three subscales; higher sum scores indicated greater risk of alcohol consumption, dependence symptoms, and harmful alcohol use, respectively. The AUDIT has been shown to be a reliable and valid measure of alcohol use in Hispanic American samples (Frank et al., 2008).

College Alcohol Problems Scale—Revised (CAPS-r; Maddock, Laforge, Rossi, & O’Hare, 2001). The CAPS-r contains eight items measuring negative consequences associated with college alcohol use. This measure assesses alcohol-related problems that are more commonly associated with the college environment, beyond what is typically captured by hazardous alcohol use measures for non-college adult samples. The CAPS-r has been found to be a reliable and valid measure of drinking-related consequences among college students, including those of Hispanic backgrounds (Pedersen & Labrie, 2006). Participants rated how often they experienced personal problems (e.g., “feeling sad, blue, or depressed”) and social problems (e.g., “drove under the influence”) over the past year as a result of consuming alcoholic beverages on a scale from 1 (*never*) to 6 (*10 or more times*). The CAPS-r scores were computed using summed scores of items in each of the two subscales. Higher scores indicated greater personal and social drinking-related problems.

Data Analytic Plan

We ran independent sample *t*-tests and Fisher's Z_r transformations to assess gender differences in the mean scores of our study variables and zero-order correlations among them. Additionally, we examined the distribution of scores for all five alcohol use outcomes to determine what type of regression analyses would be the most appropriate. To test Hypotheses 1 through 3, we entered *acculturation*, *enculturation*, *acculturation* x gender, and *enculturation* x gender into a regression model (Model 1) for each alcohol use outcome. To test Hypothesis 4, we added two-way (*acculturation* x *enculturation*) and three-way interaction terms (*acculturation* x *enculturation* x gender) into a second regression model (Model 2). Including interaction terms in a second model allowed us to examine their incremental predictive value above and beyond simple main correlates of *acculturation*, *enculturation*, and gender. Given that graduate students may differ from undergraduate students in drinking behaviors and social contexts in which they are embedded, student status was included as a covariate in our regression analyses.

Results

Preliminary Analyses

We screened the present data for univariate and multivariate outliers using *Z*-scores and Mahalanobis distance, respectively. There were no differences in our univariate and multivariate results with and without these outliers; thus, we used all available data for analyses.

Distribution of alcohol use outcomes. We examined the distribution of all five alcohol use outcomes. As evidenced by levels of skewness and kurtosis, the distribution of residual variances of these outcome variables was nonnormal. This violated the core assumption of normality for ordinary least squares regression. Hence, we considered nonlinear regression analyses for the present data. Model fit indices and dispersion parameter estimates showed that negative binomial regression was a better fit than Poisson regression for our data; thus, we

present results using negative binomial regression analyses to account for the variances in alcohol use outcomes (Hilbe, 2011).

Descriptive statistics. Seventy-six percent of the sample reported consuming alcohol in the past year. Similar to other college samples, our participants reported moderate levels of alcohol consumption, but low levels of drinking-related problems. Overall, participants reported more personal consequences than social consequences. Within personal consequences, participants were most likely to report “feeling sad, blue or depressed” and “problems with appetite or sleeping.” Within social consequences, “driving under the influence” was the most frequently endorsed alcohol-related problem. Table 1 summarizes the means, standard deviations, and correlations of all variables by gender. Consistent with prior research, we found gender differences in the mean levels of alcohol consumption ($t = 4.05, p < .001$), alcohol dependence ($t = 2.59, p < .001$), personal drinking-related consequences ($t = -2.48, p = .014$), and social drinking-related consequences ($t = 3.03, p = .003$). Men reported statistically significantly higher levels of alcohol consumption ($M = 4.12, SD = 2.99$) than women ($M = 2.91, SD = 2.28$). Men also reported statistically significantly higher levels of alcohol dependence ($M = 1.14, SD = 1.77$) than women ($M = 0.65, SD = 1.27$). Women reported statistically significantly higher levels of personal drinking-related consequences ($M = 9.05, SD = 5.45$) than men ($M = 7.41, SD = 4.25$), but men reported statistically significantly higher levels of social drinking-related consequences ($M = 7.31, SD = 4.45$) than women ($M = 5.88, SD = 2.94$). We also found gender differences in the (statistically nonsignificant) zero-order correlations among study variables, including between *acculturation* and alcohol dependence ($z = -1.65, p = .049$). Specifically, this correlation trended negative for men ($r = -.14, p = .134$) and trended positive for women ($r = .03, p = .457$).

Regression Results Predicting Alcohol Consumption

Acculturation and *enculturation* were mean-centered prior to being entered into the model. Regression results from Models 1 and 2 are summarized in Table 2. We discuss results from Model 2, with all variables simultaneously entered in the analyses. Student status ($B = -.31$, $p = .019$) and gender ($B = -.31$, $p = .002$) were both associated with alcohol consumption. Data supported Hypothesis 1: *acculturation* was statistically significantly associated with alcohol consumption ($B = .50$, $p = .012$). For every one unit increase in *acculturation*, there was a 65% increase in the odds of alcohol consumption. Inconsistent with Hypotheses 2 and 3, *enculturation* was not statistically significantly associated with alcohol consumption and gender did not moderate the relations between cultural orientations and alcohol consumption. Hypothesis 4 was partially supported. *Acculturation* x *enculturation* statistically significantly predicted alcohol consumption ($B = -.66$, $p = .022$), but this interaction was not moderated by gender. As shown in Figure 1, among those who indicated that they were immersed in their ethnic society, their degree of alcohol consumption did not differ across levels of *acculturation*. Hispanics who scored low on both *acculturation* and *enculturation* consumed less alcohol than Hispanics of other acculturation profiles.

Regression Results Predicting Alcohol-Related Consequences

Gender differences in alcohol-related consequences varied by specific outcomes. Gender was the most robust predictor of alcohol dependence ($B = -.57$, $p = .025$) and personal consequences ($B = .21$, $p = .007$), and social consequences ($B = -.19$, $p = .007$). Our data did not support Hypothesis 1: *acculturation* was not robustly associated with any of these alcohol-related consequences. Data supported Hypothesis 2; *enculturation* was statistically significantly associated with social drinking-related consequences ($B = -.18$, $p = .027$). For every one unit

increase in *enculturation*, there was a 16% decrease in the odds of social consequences. Data also did not support Hypotheses 3 and 4 as they pertained to various drinking-related consequences.

Discussion

We examined the degree to which cultural orientations and acculturation profiles were associated with alcohol use outcomes among Hispanic American college students, a segment of the population known to be at high risk for hazardous alcohol use (Schwartz et al., 2011; White & Hingson, 2014). *Acculturation* was positively associated with alcohol consumption, but not a robust predictor of alcohol-related consequences in our sample. We found that *enculturation* was a negative correlate of social drinking-related consequences above and beyond *acculturation*. Strengths of this study include considerations of both independent and joint associations linking U.S. and heritage cultural orientations to alcohol use outcomes. Specifically, rather than arbitrarily categorizing individuals into discrete acculturation profiles, we used *acculturation x enculturation* to examine the interactive roles of these cultural orientations on alcohol use. This interaction was a significant correlate of alcohol consumption, which provided a clearer depiction of what acculturation profiles may look like across individuals. This finding also allowed us to further examine how these individual differences may influence alcohol consumption and identify who may be more at risk for alcohol misuse. Furthermore, our findings underscore the importance of examining different alcohol use outcomes because of their differential associations with cultural orientations. Specifically, studies have shown that *acculturation* may be associated with higher levels of alcohol consumption, but lower levels of alcohol dependence (Caetano et al., 2008). In contrast to prior research indicating a stronger influence of cultural orientations on alcohol use among women (Zemore, 2005), we did not see

gender variations in the links between cultural orientations and alcohol use outcomes.

Consistent with social norms theory and the existing literature, our data show *acculturation* to be a risk factor for alcohol consumption (Lui & Zamboanga, 2018). In a college context, *acculturation* likely reflects liberal drinking norms and encourage high volume and frequency of drinking for social reasons (Champion, Lewis, & Myers, 2015). *Acculturation* may particularly tap into social affiliations. In general, Euro Americans are more likely to drink than Hispanic Americans (Lui & Zamboanga, 2019). College students who are more acculturated to the U.S. mainstream society may be more likely to spend time with Euro American peers than those who are less acculturated. Spending time with individuals who engage in higher levels of drinking in turn may reinforce the more liberal norms around alcohol use, and facilitate Hispanic Americans' alcohol consumption (Talbot et al., 2008). Additionally, previous research has shown that individuals who drink for social reasons consume greater quantities of alcohol but do not necessarily experience severe drinking-related problems (Cooper et al., 2016). Considering the social drinking contexts in which *acculturation* likely taps, norms theory helps explain our finding that immersion in the U.S. culture is associated with consumption but not drinking-related problems.

Also consistent with social norms theory, *enculturation* may be tapping into Hispanics' family and ethnic socialization around alcohol use. Hispanic Americans who are more enculturated may be more likely and more comfortable to socialize with same-ethnic peers (Shin & Maupome, 2017). More enculturated individuals may have predominantly Hispanic American social affiliations who are less likely to drink, given Hispanic Americans drink less than Euro Americans. As a result, these individuals may be less likely to engage in high levels of drinking that could result in negative consequences. Additionally, cultural values, such as *familismo*, have

been shown to protect against hazardous alcohol use (Ayón et al., 2010). *Familismo* involves a strong sense of pride and obligation to one's family. Individuals who are more enculturated may ascribe more strongly to family expectations and therefore may be guarded against risky drinking behaviors that could reflect negatively on the family. This motivation to avoid disrespecting the family unit helps explain why *enculturation* is protective against social drinking-related consequences, but not personal consequences.

Despite their independent associations in opposite directions, we uncover new knowledge about alcohol consumption when considering the possible joint effect of *acculturation* and *enculturation*. Individuals who scored low on both *acculturation* and *enculturation* reported lower levels of alcohol consumption compared to individuals of other acculturation profiles. This is in contrast to prior research: individuals who are categorized as “marginalized” from both U.S. mainstream and ethnic heritage cultures have been shown to be at the highest risk for internalizing and externalizing symptoms, including alcohol misuse (e.g., Berry, 1997; Cano et al., 2017). Two sets of theories may explain the current finding. First, in the context of social norms theory, it is possible that Hispanic students who are low on both *acculturation* and *enculturation* do not have strong affiliations with either Euro Americans or Hispanic Americans on campus. These individuals may not be presented with frequent opportunities where they engage in drinking with friends (e.g., attending Greek-life events). Second, previous studies have examined individuals who are low on *acculturation* and *enculturation* in the context of stress theory (e.g., Berry, 1997). It has been assumed that being disconnected to either U.S. mainstream and ethnic heritage culture induces stress, which in turn facilitates alcohol consumption as a maladaptive coping strategy (Vaeth et al., 2016). Given the focus of the current study was on the unique predictive roles of cultural orientations and acculturation profiles, we did not directly

measure acculturative stress. It is possible that some participants in our sample experience acculturative stress, but that their stress is being manifested in mental and behavioral health outcomes other than alcohol use. Future studies should consider measuring stress in conjunction with cultural orientations to better understand how they may both be simultaneously associated with alcohol use outcomes. Additionally, given that *acculturation* and *enculturation* were associated with alcohol use outcomes in opposite directions, future studies should continue to measure these orientations independently and jointly to better understand the degree to which these orientations are risk or protective factors. In addition, it would be important to examine more proximal factors and possible mechanisms that help explain these associations.

Finally, it is important to note that scoring low on *acculturation* and *enculturation* scales does not mean the individuals in our sample are completely marginalized from both sets of cultures. Whereas these individuals may not have strong ties to either the mainstream U.S. or their ethnic heritage society, they may have a more globalist and humanist outlook for their cultural identities (Penn et al., 1993). These individuals may consider their orientations to the mainstream and ethnic cultures to be of minor importance as to how they lead their lives.

Despite observed gender differences in the bivariate correlations between cultural orientations and alcohol use, gender did not moderate these associations once all other variables were included in the multiple regression model. Perhaps, relations between cultural orientations and alcohol use outcomes are similar across men and women among college students but are different among community adults. Our sample differs from most samples in the existing literature on acculturation and alcohol use in three ways. First, most studies have included Hispanic community adults (e.g., Caetano et al., 2008; Zemore, 2005), whereas we surveyed a college sample (see Lui & Zamboanga, 2018 for review). There may be more egalitarian

attitudes toward men's and women's drinking on college campuses than in the general community; this pattern is seen in the closing gender gap in alcohol use outcomes among individuals from younger generations (Keyes, Grant, & Hasin, 2008). Second, Hispanic women who chose to attend a predominantly White institution may be more acculturated to the mainstream society. In turn, they are likely more receptive to the mainstream U.S. drinking norms than women who are not included in our sample. Third, our sample consisted of second through fourth generation Hispanic Americans whereas previous samples consisted of first-generation immigrants (e.g., Abraído-Lanza, 2005; Daniel-Ulloa et al., 2014). The role of Hispanic gender norms in alcohol use may become less salient as later immigrant generations become more immersed in American culture, which may explain why there were few gender differences in our present study.

Our findings should be interpreted with several limitations in mind. First, cultural orientations accounted for relatively small variances in alcohol use outcomes. Additional cognitive and behavioral factors—such as the use of protective behavioral strategies or group-specific descriptive and injunctive norms—likely predict alcohol use independently or together with cultural orientations (Lui & Zamboanga, 2019). Future studies should consider simultaneously sociocultural and cognitive factors on alcohol use outcomes among Hispanic Americans. Second, our sample size was not large enough to conduct ethnic-specific analyses in order to systematically examine within-group heterogeneity. Our sample consisted of largely individuals of Mexican backgrounds, thus findings are consistent with those in previous research with Mexican Americans (e.g., Cano, 2016; Cano et al., 2017). Still, different alcohol preferences, drinking norms, and strategies that guard against adverse drinking-related consequences across Hispanic subgroups may explain ethnic variability in the associations

between alcohol use and *acculturation/enculturation*. Research comparing Hispanic subgroups has shown *acculturation* to be a stronger risk factor for alcohol dependence among Mexican Americans, but not Puerto Rican Americans (Caetano, Ramisetty-Mikler, & Rodriguez, 2009). It is possible these differences are associated with alcohol preferences. For example, Puerto Ricans are more likely to consume hard liquor, whereas Mexicans are more likely to drink beer (Caetano, 1987). Research has shown that beer drinkers are more likely than others to drink and drive (Smart, 1996). Ethnic differences in preference for types of alcohol hence can result in group variability in alcohol-related consequences. Thus, it would be important to disentangle how cultural orientations differentially affect Hispanic subgroups in future research. Finally, our study was conducted at a predominantly White institution. Relative to other cultural contexts, such as Hispanic-serving institutions or culturally integrated environments (e.g., at the U.S.-Mexico border; Caetano et al., 2008), *acculturation* may be more closely linked to college alcohol use in our sample because of a more pervasive and liberal drinking culture (Mercado et al., 2017). Future research should further consider specific contexts in which cultural orientations and drinking behaviors are assessed. In sum, the present investigation contributes to the study of acculturation-related factors and alcohol use among Hispanic college students. This new knowledge presents additional opportunities for research to consider sociocultural influences on alcohol use and misuse.

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Table 1

Means, Standard Deviations, and Internal Consistency Reliability (Cronbach's α) of, and Correlations among All Study Variables by Gender

Variables	<i>M (SD)</i>		<i>t</i>	α		1.	2.	3.	4.	5.	6.	7.
	<u>Men</u>	<u>Women</u>		<u>Men</u>	<u>Women</u>							
1. Alcohol Consumption	4.12 (2.99)	2.91 (2.28)	4.05**	0.83	0.78	—	.53**	.51**	.09	.37**	.09	-.10
2. Alcohol Dependence	1.14 (1.77)	0.65 (1.27)	2.59**	0.65	0.69	.50**	—	.69**	.22**	.47**	.03	.02
3. Harmful Alcohol Use	2.46 (3.05)	1.95 (2.75)	1.39	0.70	0.69	.63**	.63**	—	.31**	.48**	.14	-.10
4. Personal Consequences	7.41 (4.25)	9.05 (5.45)	-2.48*	0.83	0.90	.22**	.22*	.34**	—	.41**	-.15	.02
5. Social Consequences	7.31 (4.45)	5.88 (2.94)	3.03**	0.75	0.69	.41**	.43**	.57**	.59**	—	-.07	-.03
6. <i>Acculturation</i>	3.58 (0.36)	3.56 (0.35)	-0.93	0.76	0.75	.18	-.14	.13	-.02	.01	—	-.32**
7. <i>Enculturation</i>	2.86 (0.73)	2.94 (0.73)	0.58	0.92	0.93	.08	-.03	-.10	-.10	-.16	-.11	—
Skewness (SE)						.54 (.14)	2.25 (.15)	1.62 (.15)	1.15 (.15)	1.72 (.16)	-1.13 (.14)	-.55 (.14)
Kurtosis (SE)						-.62 (.27)	5.01 (.30)	2.24 (.30)	.46 (.31)	2.51 (.31)	1.78 (.27)	-.65 (.27)

Note. Correlations for men are presented below the diagonal ($N = 132$), and correlations for women are presented above the diagonal ($N = 215$). Only participants who reported alcohol consumption in the past year are included in analyses involving alcohol dependence, harmful alcohol use, personal consequences and social consequences for men ($N = 101$) and women ($N = 165$). Correlations in bold indicate statistically significant gender differences.

* $p < .05$. ** $p < .01$.

Table 2

Summary of Negative Binomial Regression Analyses Predicting Alcohol Use Outcomes

Predictor	<u>Model 1</u>				<u>Model 2</u>			
	<i>B</i> (SE)	Wald χ^2	Exp (<i>B</i>)	Omnibus χ^2	<i>B</i> (SE)	Wald χ^2	Exp (<i>B</i>)	Omnibus χ^2
Outcome: Alcohol Consumption				24.05**				30.47**
Student Status (Undergraduate = 0)	-.32 (.14)	5.43*	.73		-.31 (.13)	5.47*	.73	
Gender (Man = 0)	-.32 (.10)	11.09**	.73		-.31 (.10)	9.48**	.74	
<i>Acculturation</i>	.36 (.19)	3.66	1.44		.50 (.20)	6.28*	1.65	
<i>Enculturation</i>	.14 (.11)	1.48	1.15		.20 (.11)	3.04	1.22	
<i>Acculturation</i> x Gender	-.20 (.27)	.52	.82		-.27 (.28)	.88	.77	
<i>Enculturation</i> x Gender	-.20 (.14)	2.04	.82		-.24 (.14)	2.75	.79	
<i>Acculturation</i> x <i>Enculturation</i>					-.66 (.29)	5.23*	.52	
<i>Acculturation</i> x <i>Enculturation</i> x Gender					.30 (.44)	.45	1.35	
Outcome: Alcohol Dependence				8.18				8.25
Student Status (Undergraduate = 0)	-.43 (.34)	1.61	.65		-.42 (.34)	1.49	.66	
Gender (Man = 0)	-.55 (.24)	5.36*	.58		-.57 (.26)	5.01*	.57	
<i>Acculturation</i>	-.54 (.46)	1.38	.59		-.53 (.48)	1.20	.59	
<i>Enculturation</i>	-.20 (.27)	.54	.82		-.19 (.28)	.49	.82	
<i>Acculturation</i> x Gender	.78 (.71)	1.19	2.17		.80 (.73)	1.18	2.22	
<i>Enculturation</i> x Gender	.31 (.36)	.75	1.36		.32 (.37)	.76	1.38	
<i>Acculturation</i> x <i>Enculturation</i>					-.04 (.67)	<.01	.96	
<i>Acculturation</i> x <i>Enculturation</i> x Gender					-.20 (1.11)	.03	.82	
Outcome: Harmful Alcohol Use				7.99				8.10
Student Status (Undergraduate = 0)	-.36 (.26)	2.03	.70		-.35 (.26)	1.86	.70	
Gender (Man = 0)	-.21 (.19)	1.32	.81		-.22 (.20)	1.25	.80	
<i>Acculturation</i>	.29 (.35)	.66	1.34		.32 (.38)	.69	1.38	
<i>Enculturation</i>	-.19 (.22)	.75	.83		-.18 (.23)	.58	.84	
<i>Acculturation</i> x Gender	.30 (.45)	.30	1.34		.31 (.58)	.28	1.36	
<i>Enculturation</i> x Gender	.12 (.28)	.19	1.13		.12 (.30)	.17	1.13	

(Cont).	<u>Model 1</u>				<u>Model 2</u>			
Predictor	B (SE)	Wald χ^2	Exp (B)	Omnibus χ^2	B (SE)	Wald χ^2	Exp (B)	Omnibus χ^2
<i>Acculturation</i> x <i>Enculturation</i>					-.11 (.53)	.04	.90	
<i>Acculturation</i> x <i>Enculturation</i> x Gender					-.07 (.90)	.01	.93	
Outcome: Personal Consequences				13.92*				15.55*
Student Status (Undergraduate = 0)	-.12 (.10)	1.50	.89		-.12 (.10)	1.55	.89	
Gender (Man = 0)	.21 (.07)	7.88**	1.23		.21 (.08)	7.26**	1.24	
<i>Acculturation</i>	-.08 (.17)	.24	.92		-.12 (.17)	.52	.89	
<i>Enculturation</i>	-.10 (.09)	1.09	.91		-.11 (.09)	1.48	.89	
<i>Acculturation</i> x Gender	-.19 (.22)	.79	.82		-.18 (.23)	.65	.83	
<i>Enculturation</i> x Gender	.08 (.11)	.47	1.08		.08 (.11)	.47	1.08	
<i>Acculturation</i> x <i>Enculturation</i>					.25 (.24)	1.01	1.28	
<i>Acculturation</i> x <i>Enculturation</i> x Gender					-.05 (.35)	.02	.95	
Outcome: Social Consequences				19.71**				22.27**
Student Status (Undergraduate = 0)	-.21 (.09)	5.21*	.81		-.22 (.09)	5.51*	.80	
Gender (Man = 0)	-.20 (.07)	9.09**	.82		-.19 (.07)	7.28**	.83	
<i>Acculturation</i>	-.05 (.14)	.15	.95		-.09 (.14)	.38	.92	
<i>Enculturation</i>	-.16 (.08)	4.16*	.85		-.18 (.08)	4.89*	.84	
<i>Acculturation</i> x Gender	-.07 (.19)	.12	.94		-.07 (.20)	.12	.93	
<i>Enculturation</i> x Gender	.13 (.10)	1.79	1.14		.13 (.10)	1.63	1.14	
<i>Acculturation</i> x <i>Enculturation</i>					.20 (.20)	1.04	1.23	
<i>Acculturation</i> x <i>Enculturation</i> x Gender					.08 (.31)	.07	1.09	

Note. $N = 301$ for alcohol consumption. Only participants who reported alcohol consumption in the past year are included in analyses involving alcohol dependence, harmful alcohol use, personal consequences, and social consequences ($N = 241-251$).

* $p < .05$. ** $p < .01$

Figure 1. Graph depicting levels of alcohol consumption as a function of *acculturation* and *enculturation*. Low and high values of *acculturation* and *enculturation* are plotted 1 SD below and above the sample means.