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Ethnic Drinking Cultures, Gender, and Socioeconomic Status in Asian American and Latino Drinking

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Abstract

Background—Heterogeneity in drinking across national groups is well-documented, but what explains such heterogeneity is less clear. To improve understanding of the underlying cultural conditions that may lead to diverse drinking outcomes, we investigate whether three dimensions of ethnic drinking culture (EDC)—alcohol consumption level, drinking prevalence, and detrimental drinking pattern (DDP) in the country of origin (COO)—are significantly associated with alcohol consumption in Asian Americans and Latina/os, and whether the associations vary by gender and socioeconomic status as assessed by educational level.

Methods—A nationally-representative sample of 1,012 Asian American and 4,831 Latino adults extracted from the Wave 2 National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) data was used. A series of multiple logistic and linear regression models were fitted separately for Asian Americans and for Latina/os. Analyses were also stratified by gender and educational level.

Results—Overall, the associations between EDC variables and drinking outcomes were more pronounced for all Asian Americans than for all Latina/os, for males than for females among Asian Americans, and for Latinas than for Latinos. In analyses simultaneously stratifying on gender and education level, however, there was a clear pattern of COO DDP associated with heavier drinking and alcohol consumption volume only for Latinos without a college degree.

Conclusions—Ethnic drinking cultures may influence drinking in Asian American and Latino subgroups, albeit to a varying degree. Low-SES Latinos may be at disproportionate risk of harmful drinking patterns pervasive in their country of origin. Future research might investigate the complex interplay between socioeconomic disadvantage and cultural conditions to inform targeted interventions for subgroups at high risk of alcohol-related harms.

Keywords

Asian American drinking; Latino drinking; cultural influence; socioeconomic disparities; immigrant drinking

Introduction

Heterogeneity in drinking across national groups, among both Asian Americans and Latinos, is well-documented. Among Asian Americans, alcohol consumption is greater in some ethnic groups, such as Korean and Japanese, than in others such as Chinese (Hendershot et al., 2008, Iwamoto et al., 2012). Alcohol abuse and dependence among Asian American young adults, more prevalent in some ethnic groups, are growing public concerns (Grant et al., 2004a, Iwamoto et al., 2010). Among Latinos, there is higher prevalence of drinking and alcohol use disorders among Mexican Americans and Puerto Ricans, particularly as compared with Cubans (Caetano et al., 2009, Ramisetty-Mikler et al., 2010).

What explains such heterogeneity in drinking among national groups is less clear, as the country of origin (i.e. the country where immigrants originally came from) is used mostly as an implicit proxy for underlying and unspecified cultural conditions *assumed* to vary across ethnic groups (Cook et al., in press). Efforts to specify those conditions are rare. The use of countries of origin as disparate categories in much of current research, while informative, makes it difficult to clarify the underlying cultural conditions that lead to heterogeneous drinking outcomes among national groups.

Recent studies (Cook et al., 2013, Cook et al., 2012, Cook et al., in press) centering on the influence of ethnic drinking culture (EDC), defined as drinking-related cultural norms and behavioral practices in the immigrant's country of origin (Cook et al., 2012), represent such rare efforts. Quantitative measures of two EDC dimensions, drinking prevalence and detrimental drinking pattern, constructed using international data on alcohol consumption in the countries of origin, have been found predictive of alcohol consumption among Asian American adults (Cook et al., 2012), problem drinking among Asian American young adults (Cook et al., 2013), and drinking trajectories among Asian Americans transitioning from adolescence to young adulthood (Cook et al., in press). We build on this research to explore whether three EDC dimensions—specifically, *alcohol consumption level* (referring to the average volume of alcohol consumed by the population in the country of origin), *drinking prevalence* (the proportion of drinkers among the population), and *detrimental drinking pattern* (prevailing drinking patterns that may affect the negative health impact of a given amount of alcohol consumed (Rehm et al., 2004) and that concern social and cultural practices that influence drinking (Cook et al., 2013))—are associated with Latino drinking as well. Also, in light of gender differences in drinking among Latina/os that have been widely reported (Alaniz et al., 1999, Caetano et al., 2012, Caetano et al., 2008, Ramisetty-Mikler et al., 2010) and the paucity of research investigating gender differences in Asian American drinking, we also examine whether the associations of EDC with alcohol outcomes vary by gender.

Drinking is a social affair to enhance sociability and to forge and maintain social unity in many parts of the world, and it is likely to be governed by a variety of cultural norms that specify where, how and when it is appropriate to drink or not to drink (Partanen, 1991, Heath, 2000). As suggested by transnationalism theories—a paradigm that has dominated sociological and anthropological research on diasporas in recent decades—immigrants often maintain socioeconomic ties to their homelands and retain elements of their cultural heritage, some of which may also appeal to their American-born descendants (Portes et al., 1999, Schiller et al., 1995). Therefore, drinking cultures in the COO may have enduring influence on immigrant communities. At the same time, immigrant drinking is also likely to be influenced by the adoption of drinking norms and attitudes prevalent in the host society (i.e., acculturation) as reported in a large number of studies (Caetano et al., 2008, Hendershot et al., 2008, Zeng, 2007). As EDC and acculturation may represent complementary processes that significantly shape immigrant health behaviors, we take an integrative approach to consider them simultaneously, essentially to examine whether EDC is independently associated with alcohol consumption when acculturation is controlled for.

Another important aim of the current study is to investigate whether the associations of EDC dimensions and alcohol consumption are more prominent for individuals with lower socioeconomic status (SES) than those with higher SES. It is well-established, at least in the context of developed countries, that high-SES groups tend to have a lifestyle that involves frequent moderate drinking with potentially protective effects, while low-SES groups tend to drink heavier quantities (Casswell et al., 2003, Droomers et al., 2004, Huckle et al., 2010). Such diverging patterns are attributed, at least in part, to the socioeconomic disadvantage experienced by low-SES groups that turn to problematic drinking to cope with stressors stemming from it (Mossakowski, 2008, Mulia et al., 2008, Mulia and Zeng, 2012). At issue is whether low-SES groups, thus at higher risk of heavy drinking, are also influenced by harmful drinking cultures originating from their COOs, bearing disproportionate risks of alcohol-related harms. Little research has been reported on this.

The research questions addressed in the current study are: 1) whether three EDC dimensions—alcohol consumption level, drinking prevalence, and DDP in the COO—are significantly associated with alcohol consumption for Asian Americans and Latinos, controlling for acculturation; and 2) whether the associations vary by gender and SES. Since EDCs may influence the U.S.-born and the foreign-born differently, nativity was also controlled for in our multivariate models. Our multivariate models also included age, family income, and education levels as covariates.

Methods

We analyzed data from the Wave 2 of National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) survey. NESARC Wave 1 (2001-2002) was administered to a representative sample of the US adult civilian population (18 years and older) residing in households and group quarters. The NESARC Wave 2 survey (2004-5) involved re-interviews with participants from Wave 1, with a cumulative Wave 2 response rate of 70.2%. Wave 2 was favored because of the information it provides on English language use (used as a proxy for acculturation in the current study). Data were weighted to account for

design characteristics and oversampling of African Americans, Hispanics, and young adults and to adjust for non-response. Additional details of the NESARC are provided elsewhere (Grant et al., 2004b). Our sample included 1,012 Asian Americans and 4,831 Latinos who reported their specific ethnicity.

Measures

Drinking outcomes—We considered three individual-level alcohol outcomes with well-established negative health effects: *usual drinking quantity*, *frequent heavy drinking*, and *alcohol consumption volume* in past 12 months. Heavy drinking concentrates alcohol's toxicity and increases mortality through diverse disease and behavioral pathways (Murray et al., 2002, Rehm et al., 2010), with protective effects of moderate drinking peak at around 1 to 2 drinks per day (Di Castelnuovo et al., 2006). Intended to capture the extent of heavy drinking, *usual drinking quantity* was assessed using a continuous measure of the number of drinks the respondent usually consumed on the days when they drank. Frequent heavy drinking further increases risks of negative health outcomes and mortality associated with heavy drinking (Dawson and Archer, 1993, Plunk et al., 2014). We used a dichotomous measure to assess *frequent heavy drinking*, which indicates that the respondent engaged in heavy drinking—4 or more drinks, if female; and 5 or more drinks, if male—more frequently than once a month, constructed by recoding categorical responses (“every day,” “nearly every day,” “3-4 times a week,” “2 times a week,” “once a week,” “2-3 times a month,” “once a month,” “7-11 times in the last year,” “3-6 times in the last year,” and “1 or 2 times in the last year”). *Alcohol consumption volume* in the past year was calculated by multiplying usual drinking quantity by the number of days when alcohol was consumed in the past year, the latter of which was calculated using mid-points from categorical responses (as above). Alcohol consumption volume has been causally linked to a number of major diseases including cancers, alcohol use disorders, liver cirrhosis, depressive disorders, and ischaemic heart disease (Rehm et al., 2010). Because of their extreme skewness, natural logs of usual drinking quantity and alcohol consumption volume were used.

NESARC consumption measures we used concern “any kind of alcoholic drink,” including coolers, beer, wine, and liquor (i.e. distilled spirits). These data were collected using life-sized photographs of common glasses, with a standard drink being any drink that contains about 14 grams of pure alcohol (drink size estimates thus varied by type of beverage).

EDC measures—To construct proxies for the three EDC dimensions, we used international data compiled by the World Health Organization (World Health Organization, 2011) on per capita alcohol consumption, current consumption rate, and *detrimental drinking pattern (DDP)*, all referencing the COO and based on self-identified Asian or Hispanic ethnicity. Because of the lack of data for Puerto Rico in the WHO database that presents data by country, Puerto Ricans were not included.

As a proxy for alcohol consumption level, we used *per capita alcohol consumption*, including both recorded and unrecorded consumption, estimated in liters of ethanol consumed per adult age 15 years or older. This measure was associated with several alcohol outcomes for Asian Americans in a prior study (Cook et al., 2012). *Current consumption*

rate (or *drinking rate*), a proxy for drinking prevalence, is the proportion of persons who consumed alcohol in the past year. Given the gender differences in drinking rates in most of the countries where Asian or Latino immigrants in the U.S. came from, gender-specific drinking rates were used in our analyses stratifying on gender. Ranging from 1 for the least risky pattern to 4 for the most risky, the *DDP scale* is based on the WHO's aggregate alcohol consumption data and key informant surveys on drinking practices prevalent in a country, covering six specific areas (e.g., frequent heavy festive drinking and drunkenness, drinking with meals, and drinking in public places) (Rehm et al., 2003). This scale has been validated using population survey data in 13 countries, with good correspondence with individual-level alcohol consumption (Gmel et al., 2007). DDP was found predictive of alcohol abuse and dependence symptoms for Asian American young adults (Cook et al., 2013) and problematic drinking trajectories for Asian Americans transitioning from adolescence to young adulthood (Cook et al., in press).

Acculturation measure: English language use—NESARC does not provide an extensive range of acculturation measures. We used English language use as a proxy for acculturation, following a number of studies (Cook et al., 2013, Allen et al., 2008, Caetano et al., 2008). *English language use* was constructed using seven items on the language that respondents: 1) read and spoke; 2) spoke as a child; 3) usually spoke at home; 4) usually thought in; 5) spoke with friends; 6) listened to TV and radio programs in; and 7) preferred to watch/listen to movies, TV, and radio programs in. The 5-point Likert-type scale ranged from: 1) only Asian/Pacific Island (API) or Spanish language; 2) more API or Spanish language than English; 3) both equally; 4) more English than API or Spanish language; to 5) only English. Chronbach's alpha for this construct was 0.93 with our Asian American sample and 0.95 with our Latino sample.

Other Covariates—Following Braveman (2005), we examined income and education as separate indicators of individual-level SES to avoid the conceptual blurring of explanatory mechanisms for SES effects that occurs with use of a composite. While continuous measures of income and education yielded similar results, we used dichotomous measures for the ease of interpretation and stratifying of analyses. The annual *family income* variable had two categories of below \$40,000 (the U.S. Median) *versus* “\$40,000 or higher.” *Education level* was assessed using the two categories of “a four-year college or advanced degree” *versus* “less than a college degree.” Educational level has the advantage of being available for both men and women, whether they are in paid employment or not, being stable during adult life, having a high reliability and validity, and being simple to measure and use (Droomers 1999). We thus used *educational level* to stratify our sample into two SES groups.

Statistical Analysis

Analyses were conducted using STATA (version 13.0) and its survey estimation procedure to accommodate all design, ratio, non-response and post-stratification adjustments. After conducting preliminary bivariate analyses to compare sample characteristics between Asian Americans and Latinos and to examine associations between potential predictors and drinking outcomes, we fitted a series of multiple logistic and linear regression models, separately for Asian Americans and Latinos. We first ran regression models to examine

whether COO per capita consumption level and DDP were associated with alcohol outcomes for Asian Americans and Latinos. We then performed stratified analyses on gender to examine whether gender-specific drinking rate and DDP were associated with alcohol outcomes for males and females. Because of the high correlations between COO per capita alcohol consumption and drinking rate in our sample ($r=0.90$ with male drinking rate and 0.78 with female drinking rate), the former was not included in these models. We then repeated these analyses stratifying on education level (i.e. 4-year college or advanced degree *versus* lower education level) to explore whether the associations between EDC dimensions and alcohol consumption varied by education level.

To control for Type I errors that may be made in multiple comparisons, we used the Holm's sequential procedure (Holm, 1979). This procedure is a stepwise derivative of the traditional Bonferroni procedure that protects against Type I error without being overly conservative; it ranks tests of significance in order of ascending p-values and alters the magnitude of adjustment as a function of this order (Eichstaedt et al., 2013). While more powerful than the Bonferroni adjustment, the Holm's procedures employs a stricter standard for controlling Type I errors than other stepwise methods such as Hochberg and Hommel methods (Aickin and Gensler, 1996, Eichstaedt et al., 2013).

Results

Sample Characteristics

Table 1 shows the results of chi-square tests to compare demographic characteristics of Asian Americans and Latina/os included in our sample. The two groups were similar in gender and age distributions but significantly differed in other demographic characteristics. Asian Americans appeared to be better off socioeconomically than Latina/os in our sample, with over half of the Asian American sample having a 4-year college or advanced degree, compared to only about one in five Latina/os in our sample who did ($p<.0001$). Asian Americans also had higher family incomes than Latina/os, with about 61.1% earning family incomes of higher than the U.S. median of \$40,000, compared to about 42.0% of Latina/os who did ($p<.0001$). Although the proportion of the foreign-born was higher for Asian Americans (70%) than Latina/os (53.8%), Asian Americans in our sample reported a somewhat greater use of the English language than Latina/os.

As for alcohol consumption (also in Table 1), the proportion of frequent heavy drinkers was higher among Latina/os than among Asian Americans (48.6% *versus* 44.1%, $p<.05$). Among drinkers, Latina/os had a higher mean of usual drinking quantity than Asian Americans. Latina/os also had a higher mean of annual volume of consumption than Asian Americans, but, given the overlap of confidence intervals, the difference was not statistically significant.

Drinking Cultures in Countries of Origin

COO per capita alcohol consumption, male and female drinking rates, and DDP scores presented in Table 2 depict diverse drinking culture in countries where Asian Americans and Latina/os in our sample originated. Among Asian COOs, India/Afghanistan/Pakistan on average consumed the smallest volume of alcohol, closely followed by Indonesia and

Malaysia. Korea consumed the largest volume of alcohol among all Asian countries, followed by Japan. Among Central and Latin American countries, Mexico consumed the largest volume of alcohol, followed by Brazil/Chile/Colombia and Cuba. Guatemala/Nicaragua consumed the smallest volume. Drinking rates in Asian COOs, both male and female, were highly correlated with per capita alcohol consumption ($r=0.86$ for per capita consumption and male drinking rate and $r=0.75$ for per capita consumption and female drinking rate). Thus, countries with the largest consumption volumes (such as Korea and Japan) also had the highest drinking rates, and those with the lowest consumption volumes such as India/Afghanistan/Pakistan, Indonesia, and Malaysia had the lowest drinking rates. Such patterns were not evident among Central and Latin American COOs ($r=0.36$ for per capita consumption and male drinking rate, and $r=0.41$ for per capita consumption and female drinking rate).

Results of Multivariate Analyses: Predictors of Drinking

Table 3 shows the results of our multivariate regression analyses of the associations of EDC dimensions and drinking outcomes, controlling for English language use and other covariates. For brevity of reporting, we present results involving only EDC variables, the predictors of our interest, and English language use (the proxy of acculturation). Overall, their associations were more pronounced for all Asian Americans than for all Latina/os. For all Asian Americans, per capita alcohol consumption was significantly and positively associated with all three outcomes, and DDP was associated with log usual drinking quantity. For all Latina/os, per capita consumption level was associated with log usual drinking quantity, and DDP was not associated with any outcomes.

When stratifying the same analyses on education level (also in Table 3), COO per capita alcohol consumption was significantly and positively associated with all alcohol outcomes for Asian Americans with a four-year college or advanced degree, but EDC variables were not significantly associated with any outcomes for their counterparts without a college degree. Among Latina/os, the only significant association involving an EDC variable was between per capita alcohol consumption and log usual drinking quantity for those without a college degree.

In the analyses to examine the relationships between gender-specific drinking rates and alcohol outcomes (Table 4), COO male drinking rate and DDP each was significantly associated with log usual drinking quantity and log alcohol consumption volume for Asian males; female drinking rate was associated only with log usual drinking quantity for Asian females. Therefore, the relationships between drinking rates and alcohol outcomes were somewhat more pronounced for Asian males than for females. The opposite was the case for Latina/os, as COO female drinking rate was significantly associated with all three outcomes for Latinas, but COO male drinking rate was not associated with any outcomes for Latinos. In these models, DDP was associated with frequent heavy drinking for Latinas and with usual drinking quantity for Latinos.

In the analyses including gender-specific drinking rates and stratifying on educational level (also in Table 4), COO DDP was associated with usual drinking quantity and alcohol consumption volume for Latinos without a college degree, but not with any outcomes for

their counterparts with a college or advanced degree. COO female drinking rate was significantly associated with usual drinking quantity for Latinas without a college degree and with frequent heavy drinking for their better-educated counterparts. As for Asian Americans, the only significant association involving an EDC variable was between male drinking rate and usual drinking quantity for males with a college or advanced degree.

Discussion

Findings of the current study indicate that EDC in the country of origin may have significant bearings on Asian Americans and Latina/o drinking, independent of their acculturation levels. Still, the associations between EDC dimensions and alcohol outcomes varied by race, gender, and education level.

Overall, the associations between EDC variables (COO per capita consumption, in particular) and alcohol outcomes were more pronounced for Asian Americans than for Latinos. The more consistent associations for Asian Americans than for Latinos may have been driven, at least in part, by the greater variability in alcohol consumption patterns in Asian countries than in Central and Latin American countries included in the current study (Table 2).

In our analyses stratifying on gender and educational level simultaneously, however, a clear pattern emerges that suggests elevated risks of heavier drinking and greater consumption volume associated with DDP for Latinos without a college degree. Consistent with prior studies that have shown patterns of heavier drinking (Huckle et al., 2010, Casswell et al., 2003, Dawson et al., 1995) and a greater burden of alcohol-related harms in socioeconomically-disadvantaged groups (Harrison and Gardiner, 1999, Makela et al., 1997), these findings are highly significant, as they hint at the continuing influence of harmful drinking patterns in the Central and Latin American COOs that may disproportionately affect Latinos of lower SES.

Past research investigating harmful drinking among low-SES groups has focused on the aspect of drinking as a self-medication to cope with stressors stemming from socioeconomic hardships (Cappell and Greeley, 1987, Colder, 2001). Low-SES groups may have limited access to protective resources such as a supportive social network (Lin et al., 2009), known to mitigate harmful effects of hardships, which may also leave them more prone to excessive alcohol use (Thoits, 1982, Windle and Windle, 1996). In suggesting an enduring influence of harmful COO drinking patterns disproportionately affecting Latinos of lower SES, our findings break new ground in disparities research on drinking as it concerns immigrant communities. Alcohol-related harms are disproportionately borne by low- and middle-income countries (where most Asians and Latinos living in the U.S. came from), particularly in countries where drinking is prevalent (e.g., alcohol use disorders and cancers) or of a detrimental pattern (e.g., heart diseases and injuries) (Rehm et al., 2009). Our findings point to the need to improve understanding of the ways in which EDCs originating from these countries affect drinking among immigrants and their descendants in the U.S., particularly those of more disadvantaged backgrounds.

The significant associations between DDP and heavier drinking for higher-SES Asian males may be attributed to the unique pattern of higher prevalence of drinking combined with more detrimental pattern of drinking in Asian American ethnic groups with relatively high SES, such as Japanese and Korean (Cook et al., in press). There may be complex interplays between EDCs, socioeconomic disparities, and acculturation that may importantly influence drinking in immigrant communities that are not well-understood, which future research might further explore.

Our findings involving the more consistent associations of gender-specific drinking rate and alcohol outcomes for Latinas than for Latinos are also worth noting. These findings dovetail with our other findings that show relatively consistent patterns of English language use with greater alcohol consumption for Latinas, particularly for those without a college degree (Tables 3 and 4). Consistent with past acculturation research that links greater alcohol consumption in Latinas with higher acculturation levels (Zemore, 2007), these findings suggest that cultural influences may profoundly shape Latina drinking. Given these gender differences, gender-relevant factors including adherence to masculine and feminine norms on Asian American and Latina/o drinking also warrant further investigation.

At the same time, diversity in female drinking rates across Central and Latin American COOs should also be noted. In past research, lower levels of alcohol consumption among Latinas have been attributed to conservative norms regarding women's drinking in Hispanic cultures (Kulis et al., 2010, Lara-Cantu et al., 1990). While such may be the case to a large extent, those findings may have been driven by Mexican American samples or the disproportionately large numbers of Mexican Americans in the national samples used in these studies, potentially obscuring a greater tolerance of female drinking in some Latin American cultures. Gender differences in drinking patterns, while more or less universal, are modified by sociocultural factors (Wilsnack et al., 2000) that lead to different acceptance levels for female drinking (Kerr-Correa et al., 2007). The diverse female drinking rates across the countries of origin included in the current study (Table 2) clearly indicate varying degrees of tolerance of female drinking. Our findings highlight such differences across Hispanic cultures, while hinting at the continuing influence of cultural norms on Latina drinking.

There are several limitations to this study. Since we used cross-sectional data, caution is urged in inferring causal relationships. In operationalizing EDC dimensions we used proxies because of the lack of data needed to assess specific values, norms, and behaviors related to drinking within ethnic communities in the U.S. Measures to accurately assess various EDC dimensions need to be developed and tested in future research. Drinking norms (such as descriptive or injunctive norms) are likely to influence drinking of immigrants and their descendants, but, due to the lack of information available in NESARC on drinking norms, we could not adjust for them in our multivariate models. Also, due to the ways in which some ethnic categories were made available in NESARC, respondents from more than one country were included in the same category for some COOS (with country-level alcohol consumption estimates averaged across the countries in the same category), although this may be justifiable as countries included in the same category (for example, Guatemala and Nicaragua) tend to have similar levels of country estimates. The omission of Puerto Rico,

due to the lack of data on drinking in Puerto Rico in the WHO data we used, is an important limitation.

Another set of limitations concerns statistical power. The absence of significant associations for Asian Americans in the analyses simultaneously stratifying on gender and education level may be due, at least partly, to the small number of Asian Americans in each subgroup. Also, due to low statistical power, we could not perform more fine-grained analyses to explore whether the relationships we examined in the current study differed for the U.S.- and for the foreign-born or for individuals of different immigration generational statuses who may be under a varying degree of influence of EDC.

Despite these limitations, the current study has a number of important strengths, some of which are stated above. Weighted representativeness of the data is another strength. Most importantly, by simultaneously considering cultural influence and socioeconomic disparities, we found that harmful drinking patterns pervasive in the country of origin may have greater influence on some subgroups than others. Along these lines, special research attention needs to be paid to the demographic subgroups such as young adults that are at higher risks of alcohol-related harms than others within these populations. Alcohol use disorders among young adults, particularly in some Asian American ethnic communities where drinking is prevalent and/or of more detrimental patterns, have been noted as important public health concerns (Grant et al., 2004a, (Iwamoto et al., 2010). Such may be the case for Latino adolescents and young adults as well (Eitle et al., 2009). Further research is needed to improve understanding of the cultural and socioeconomic conditions that increase risks of harmful drinking for young adults in immigrant communities in order to help inform targeted future interventions. More broadly, future research might explore specific mechanisms through which ethnic drinking cultures and socioeconomic disadvantage influence drinking among immigrants and their descendants, as well as cultural and psychosocial processes within immigrant communities that may protect them from harmful drinking.

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Table 1

Sample Characteristics and Alcohol Outcomes

	Asian Americans (N=1,012)	Latinos (N=4,831)	p
Gender			
Female	570 (56.3%)	2,751 (56.9%)	>.05
Male	442 (43.7%)	2,080 (43.1%)	
Age			
21-30	207 (20.5%)	1,090 (22.6%)	>.05
31-40	266 (26.3%)	1,293 (26.8%)	
41-50	235 (23.2%)	1,034 (21.4%)	
51-60	137 (13.5%)	622 (12.9%)	
61 or older	167 (16.5%)	785 (16.3%)	
Educational level			
Did not graduate high school	106 (10.5%)	1,636 (33.9%)	
High school graduate/GED	180 (17.8%)	1,165 (24.1%)	****
Some college	174 (17.2%)	935 (19.4%)	
College degree+	552 (54.6%)	1,095 (22.7%)	
Family Income			
\$0 - \$37,499	394 (38.9%)	2,804 (58.0%)	****
\$ 37,500 or higher	618 (61.1%)	2,027 (42.0%)	
Nativity			
US-born	304 (30.0%)	2,233 (46.2%)	****
Foreign-born	708 (70.0%)	2,598 (53.8%)	
English Language Use: Mean (95% CI)	23.33 (22.8-23.9)	20.9 (20.7-21.2)	****
Frequent heavy drinking (>monthly)	446 (44.1%)	2,345 (48.6)	*
Usual drinking quantity: Mean (95% CI)[†]	2.1 (1.9-2.3)	3.3 (3.1-3.5)	****
Annual alcohol consumption volume: Mean (95% CI)[†]	182.2 (131.9-232.5)	266.7 (204.4-329.0)	>.05

CI: confidence interval

** $p < .01$ *** $p < .001$ [†] Current drinkers only* $p < .05$ **** $p < .0001$

Table 2

Per Capita Annual Alcohol Consumption (in Liters), Drinking Rates & Detrimental Drinking Pattern in Countries of Origin (COO)

	COO	Per Capita Alcohol Consumption	Male Drinking Rate (%)	Female Drinking Rate (%)	Detrimental Drinking Pattern	n (%)
Asian	China/Taiwan	5.91	72.6	38.1	2	233 (23.0)
	India/Afghanistan/Pakistan	0.46	10.2	1.5	3	193 (19.1)
	Indonesia	0.59	6.4	0.4	3	21 (2.1)
	Japan	8.03	88.1	81.4	2	129 (12.8)
	Korea	14.80	88.0	61.1	3	78 (7.7)
	Malaysia	0.82	4.6	0.8	3	10 (1.0)
	Philippines	6.38	55.3	33.5	3	192 (19.0)
	Thailand/Cambodia/Lao	6.19	51.9	18.0	3	60 (5.9)
	Vietnam	3.77	47.4	1.3	3	72 (7.1)
	All Asian Americans					1,012 (100%)
Hispanic	Brazil/Chile/Colombia	7.96	73.3	58.9	3	394 (8.2)
	Cuba	5.51	67.2	24.5	2	351 (7.3)
	Guatemala/Nicaragua	4.70	42.5	7.7	4	527 (10.9)
	Mexico	8.42	45.1	18.0	4	3,559 (73.7)
	All Latina/os					4,831 (100%)

All country estimates are from WHO (2011).

Table 3

Associations of COO per Capita Alcohol Consumption and DDP with Alcohol Outcomes: All Asian Americans and Latina/os and by Education level

	Asian Americans			Latinos		
	Usual Quantity b (SE)	Frequent Heavy Drinking OR (95% CI)	Alcohol Consumption Volume b (SE)	Usual Quantity b (SE)	Frequent Heavy Drinking OR (95% CI)	Alcohol Consumption Volume b (SE)
	All Asian Americans (N=828)			All Latinos (N=4,546)		
Per capita consumption	0.03(0.01) ****	1.09(1.03-1.15) **	0.09(0.03) **	0.03(0.01) *	1.05(0.07-1.14)	0.07(0.04)
DDP	0.10(0.04) *	1.13(0.79-1.63)	0.27(0.17)	0.001(0.03)	0.84(0.71-1.004)	-0.04(0.09)
English language use	0.01(0.003) ****	1.05(1.02-1.08) **	0.03(0.01) **	0.01 (0.003) ****	1.05(1.03-1.06) ****	0.04(0.01) ****
	College degree + (N=484)			College degree + (N=1,004)		
Per capita consumption	0.03(0.01) *	1.10(1.02-1.18) *	0.10(0.04) *	0.01(0.02)	1.01(0.86-1.20)	0.08(0.08)
DDP	0.10(0.06)	1.06(0.66-1.71)	0.21(0.23)	-0.02(0.04)	0.80(0.60-1.08)	-0.25(0.15)
English language use	0.01(0.004)	1.03(1.00-1.07)	0.03(0.02)	-0.001(0.005)	1.03(1.01-1.06)	0.03(0.02)
	No college degree (N=344)			No college degree (N=3,543)		
Per capita consumption	0.02(0.01)	1.06(0.98-1.14)	0.08(0.04)	0.04(0.02) *	1.06(0.96-1.16)	0.07(0.05)
DDP	0.14(0.06)	1.06(0.97-2.63)	0.39(0.26)	0.02(0.03)	0.87(0.70-1.08)	0.07(0.11)
English language use	0.02(0.004) ****	1.07(1.03-1.12) **	0.04(0.02)	0.01(0.003) ****	1.05(1.04-1.06) ****	0.04(0.009) ****

AOR: Adjusted odds ratio.

CI: confidence interval (lower limit, upper limit)

SE: standard error.

COO: country of origin

*** $p < .001$

* $p < .05$

** $p < .01$

**** $p < .0001$, adjusted for multiple comparisons using Holm's procedure (Holm, 1979, Eichstaedt et al., 2013)

Table 4

Associations of COO Drinking Rate and DDP with Alcohol Outcomes for Asian Americans and Latina/os
Stratified by Gender and Education Level

	Asian Americans			Latina/os		
	Usual Quantity b (SE)	Frequent Heavy Drinking OR (95% CI)	Alcohol Consumption Volume b (SE)	Usual Quantity b (SE)	Frequent Heavy Drinking OR (95% CI)	Alcohol Consumption Volume b (SE)
	All Males (N=360)			All Males (N=1,965)		
Male drinking rate	0.01(0.002) *	1.01(0.99-1.02)	0.02(0.01) *	0.01(0.01)	1.00(0.97-1.03)	0.004(0.02)
DDP	0.32(0.10) **	1.37(0.69-2.69)	1.02(0.37) *	0.21(0.08) *	0.94(0.59-1.51)	0.37(0.26)
English language use	0.01(0.005) *	1.01(0.97-1.05)	0.03(0.02)	-0.004(0.005)	1.01(0.99-1.03)	0.003(0.01)
	All Females (N=468)			All Females (N=2,582)		
Female drinking rate	0.004(0.002) *	1.01(0.96-1.06)	0.01(0.01)	0.004(0.001) *	1.04(1.01-1.08) *	0.01(0.01) **
DDP	0.16(0.07)	1.58(0.13-19.42)	0.42(0.29)	-0.001(0.03)	2.94(1.36-6.36) *	-0.09(0.10)
English language use	0.01(0.004) **	1.07(0.93-1.24)	0.04(0.02)	0.02(0.002) ****	1.08(1.03-1.12) **	0.08(0.01) ****
	Males with college degree+ (N=221)			Males with college degree+ (N=458)		
Male drinking rate	0.01(0.002)	1.01(0.99-1.02)	0.02(0.01)	-0.003(-0.01-0.01)	0.98(0.94-1.03)	-0.03(0.02)
DDP	0.31(0.13) *	1.33(0.56-3.18)	0.96(0.46)	-0.01(-0.20-0.17)	0.64(0.34-1.24)	-0.48(0.35)
English language use	0.01(0.01)	1.01(0.96-1.06)	0.04(0.03)	-0.01(0.03-0.01)	1.02(0.97-1.07)	-0.01(0.03)
	Males with no college degree+ (N=139)			Males with no college degree+ (N=1507)		
Male drinking rate	0.01(0.004)	1.00(0.97-1.02)	0.02(0.01)	0.01(0.01)	1.01(0.97-1.05)	0.02(0.02)
DDP	0.29(0.16)	1.15(0.39-3.44)	1.13(0.60)	0.34(0.12) *	1.18(0.61-2.29)	0.86(0.33) *
English language use	0.02(0.01) *	1.02(0.96-1.09)	0.02(0.03)	-0.001(0.01)	1.01(0.00-1.04)	0.01(0.02)
	Females with college degree+ (N=100)			Females with college degree+ (N=546)		
Female drinking rate	0.005(0.002)	1.04(1.00-1.10)	0.02(0.01)	0.003(0.002)	1.06(1.02-1.10) **	0.02(0.01)
DDP	0.14(0.11)	3.08(0.08-121.90)	0.39(0.42)	-0.004(0.05)	2.46(0.88-6.86)	-0.11(0.20)
English language use	0.01(0.01)	0.92(0.74-1.15)	0.02(0.02)	0.01(0.004)	1.04(0.93-1.15)	0.08(0.02) ****
	Females with no college degree+ (N=205)			Females with no college degree+ (N=2,035)		
Female drinking rate	0.003(0.002)	0.97(0.92-1.03)	0.01(0.01)	0.005(0.002) *	1.04(0.99-1.08)	0.01(0.01)
DDP	0.21(0.10)	1.36(0.05-35.70)	0.62(0.36)	0.004(0.03)	3.96(0.07-16.27)	-0.09(0.11)
English language use	0.02(0.01) **	1.27(1.06-1.51) *	0.05(0.02) *	0.02(0.002) ****	1.09(1.04-1.14) ****	0.08(0.01) ****

AOR: Adjusted odds ratio.

CI: confidence interval (lower limit, upper limit)

SE: standard error.

COO: country of origin

*** $p < .001$

*
 $p < .05$

**
 $p < .01$

 $p < .0001$, adjusted for multiple comparisons using Holm's procedure (Holm, 1979, Eichstaedt et al., 2013)