Binge Drinking and Perceived Ethnic Discrimination among Hispanics/Latinos: Results from the Hispanic Community Health Study/Study of Latinos Sociocultural Ancillary Study

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Abstract

The study assessed whether overall perceived ethnic discrimination and four unique discrimination types were associated with binge drinking in participants from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) who also completed the HCHS/SOL Sociocultural Ancillary Study (n = 5,313). In unadjusted analyses that were weighted for sampling strategy and design, each unit increase in discrimination type was associated with a 12 - 63% increase in odds of binge drinking; however, after adjusting for important demographic variables including age, sex, heritage group, language, and duration of US residence, there was no longer an association between discrimination and binge drinking. Further research still needs to identify the salient factors that contribute to increased risk for binge drinking among Hispanics/Latinos.

INTRODUCTION

Binge drinking, which is defined as five or more drinks per occasion for men and four or more drinks per occasion for women, remains a serious public health concern among Hispanics/Latinos (Kirschner & Irion, 2006; National Institute of Alcohol Abuse and Alcoholism; Szaflarski, Cubbins, & Ying, 2011). According to data from the 2010 Behavior Risk Factor Surveillance System (BRFSS), the prevalence of binge drinking among Hispanics/Latinos (18%) is similar to that in non-Hispanic whites, but significantly higher than that of non-Hispanic blacks (13%) and non-Hispanics from other racial and ethnic groups (15%) (Centers for Disease & Prevention, 2012). Binge drinking is also associated with increased risk of many health and social problems, including motor vehicle crashes, violence, suicide, cardiovascular disease, and sexually transmitted diseases (Brondolo, Love, Pencille, Schoenthaler, & Ogedegbe, 2011; Brondolo, Rieppi, Kelly, & Gerin, 2003; Walter, Bourgois, Margarita Loinaz, & Schillinger, 2002).

Theory and research suggest that perceived ethnic discrimination is a stressor that can lead to unhealthy coping behaviors, such as binge drinking (Brondolo, Hausmann, et al., 2011; Myers, 2009). Ethnic discrimination is common among Latinos living in the U.S., and anti-immigrant sentiment towards Latinos has been increasing given recent debate over immigration policy in the US (Benjamins & Whitman, 2014; Perez, Fortuna, & Alegria, 2008). In national surveys, 30% of Latinos reported experiences of discrimination (Perez et al., 2008), and 82% felt racial discrimination was a problem that prevents them from succeeding in America (Pew Hispanic Center, 2006). Experiences of discrimination are multidimensional, and researchers have noted the need to examine different types of discrimination in efforts to understand its impact on health and well-being (Benjamins, 2013; Brondolo, Gallo, & Myers, 2009; Brondolo, Thompson, et al., 2005). Discrimination type refers to the act and context in which discrimination occurs, which can differentially impact how one reacts to it (Williams & Mohammed, 2009). Furthermore, different types of discrimination may be associated with different coping strategies, stress responses, health behaviors and health outcomes. Most research on discrimination and health has used either single-item measures or a combined multiple items into one overall discrimination score, which has limited our understanding of the impact of different types of discrimination (Williams & Mohammed, 2009; Williams, Neighbors, & Jackson, 2003). To our knowledge, no studies have examined the relationship between different types of discrimination and alcohol use.

Past research has shown that perceived ethnic discrimination is associated with unhealthy alcohol use among Hispanics/Latinos even after controlling for factors such as age, education, income, and nativity (Lo & Cheng, 2012; Ornelas, Eng, & Perreira, 2011; Ornelas & Hong, 2012; Verissimo, Gee, Ford, & Iguchi, 2014; Verissimo, Gee, Iguchi, Ford, & Friedman, 2013; Yen, Ragland, Greiner, & Fisher, 1999a, 1999b). However, most of these studies have focused on alcohol use disorders. More research is needed to examine whether and how discrimination influences drinking behaviors across the spectrum of unhealthy alcohol use, including binge drinking which is less severe but more common than having an alcohol use disorder (Saitz, 2005). Of those studies that have focused on binge drinking, findings have been inconsistent suggesting the need for more research (Chavez, Ornelas,

Lyles, & Williams, 2014; Daniel-Ulloa et al., 2014; Gilbert & Rhodes, 2014; Ornelas et al., 2011; Sobell & Sobell, 2000; Tran, Lee, & Burgess, 2010).

Another limitation of previous studies is that they have not identified potential moderators of the association between discrimination and binge drinking. Patterns of discrimination and alcohol use vary by sex, heritage group, language, and duration of U.S. residence among Hispanics/Latinos, and previous studies have shown that they also modify the relationship between discrimination and unhealthy alcohol use (Ornelas & Hong, 2012; Pearson, Dube, Nelson, & Caetano, 2009; Sullivan, Tetrault, Braithwaite, Turner, & Fiellin, 2011; Verissimo et al., 2014; Verissimo et al., 2013; Wallerstein & Duran, 2010; Zemore, Karriker-Jaffe, Keithly, & Mulia, 2011). In addition, recent reviews have cited a need for more research on how this relationship varies among specific demographic groups (Paradies, 2006; Williams & Mohammed, 2009). Yet, no studies have assessed whether some groups of Hispanics/Latinos are at higher risk of binge drinking as a result of discrimination than others.

Present study

Given that reducing the prevalence of binge drinking among adults has been established as a national priority, it is important to identify risk factors for binge drinking in this large and growing population. In this paper, we described patterns of perceived ethnic discrimination and binge drinking, and assessed the relationship between discrimination and binge drinking using data from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) and HCHS/SOL Sociocultural Ancillary Study, a national population-based study of Hispanics/Latinos in the U.S. (Gilbert & Rhodes, 2012). We hypothesized that higher levels of perceived discrimination (both overall discrimination and specific types) would be associated with increased risk of binge drinking. Given patterns of alcohol use and ethnic discrimination among Hispanics/Latinos and the results of previous studies, we also assessed whether this relationship was moderated by sex, heritage group, language, and duration of U.S. residence.

METHODS

Participants and procedures

The Hispanic Community Health Study/Study of Latinos (HCHS/SOL) is a multicenter epidemiologic cohort study examining chronic disease incidence, risk and prevalence in Hispanics/Latinos of Mexican, Central American, Cuban, Dominican, Puerto Rican, South American and other descent. Details concerning the sampling strategy have been published elsewhere (Lavange et al., 2010; Spitzer, Kroenke, Williams, & Lowe, 2006). Briefly, the HCHS/SOL target population was defined as all non-institutionalized self-identified Hispanic/Latino adults aged 18-74 years at baseline and residing in the defined geographical areas (census block groups) across the four participating field centers: Bronx, NY, Chicago, IL, Miami, FL, and San Diego, CA, (2008-2011). Participants were selected from the target population using a two-stage area household probability sampling approach. Over-sampling at both stages of sample selection was used to increase the likelihood that a selected address yielded an eligible household and the study oversampled the 45-74 age group (n=9,714,

59.2%) to facilitate examination of target outcomes. Consented participants underwent an in-person clinical assessment prior to completing the HCHS/SOL baseline questionnaires.

The HCHS/SOL Sociocultural Ancillary study was a cross-sectional cohort study designed to assess sociocultural and psychosocial factors, including discrimination, relevant to chronic disease risk and incidence in Hispanic/Latino groups (Lorenzo et al., 2012). Participants from the parent HCHS/SOL study who completed the HCHS/SOL clinical assessment and baseline questionnaires, consented to being contacted for future research, and were willing to attend a separate visit within 9 months of the baseline assessment were eligible for the HCHS/SOL Sociocultural Ancillary study. Of the 7,321 HCHS/SOL participants that recruiters attempted to reach, 5,313 (72.6%) participated in the Sociocultural Ancillary study and were representative of the HCHS/SOL cohort with the exception of lower participation by some higher socioeconomic block groups. Participants provided written informed consent and were compensated $60 for completing a 1-2 hour interview-administered sociocultural assessment.

The sample for this study included the 5,313 participants who completed the HCHS/SOL Sociocultural Ancillary study, with data from both the parent HCHS/SOL baseline questionnaire and the Sociocultural Ancillary study.

Measures

Discrimination—Discrimination was assessed as part of the Sociocultural Ancillary study using the 17-item Brief Perceived Ethnic Discrimination Questionnaire-Community Version (Brief PEDQ-CV) (Brondolo, Kelly, et al., 2005). Specifically, the Brief PEDQ-CV includes 5 validated continuous measures of perceived racism or ethnic discrimination: one measure assessing lifetime exposure to overall discrimination (all 17-items; scores 17-85) and 4 subscales of discrimination type: exclusion/rejection (4 items; scores 4-20, $\alpha = 0.76$), stigmatization/devaluation (5 items; scores 5-25; $\alpha = 0.74$), threat/aggression (4 items; scores 4-20; $\alpha = 0.76$), and discrimination at work or school (4 items; scores 4-20; $\alpha = 0.73$). Each item is assessed on a scale of 1-5 for how often any form of discrimination occurred to the participant because of their ethnicity or race (e.g., 1=never, 5=very often). Examples of questions by discrimination type include: "Have others ignored you or not paid attention to you?" (exclusion/rejection), Have other hinted that you are dishonest or can't be trusted?" (stigmatization/devaluation), "Have others threatened to hurt you?" (threat/ aggression), and "Have you been treated unfairly by co-workers or classmates?" (work/ school). For each of the 5 primary discrimination measures, items were averaged to create a summary score and were evaluated as continuous measures.

A secondary dichotomous measure of discrimination was created using a single measure of perceived discrimination included in the parent HCHS/SOL baseline questionnaire (Finch, Hummer, Kol, & Vega, 2001). Participants were asked "How often do people treat you unfairly because you are Hispanic/Latino?" with any response other than never (vs. sometimes, often or always) indicating discrimination. As single-item measures of discrimination are commonly used, this secondary measure of discrimination was evaluated for whether its association with binge drinking (see definition below) was similar to the five primary continuous discrimination measures.

Binge Drinking—A binary measure for binge drinking was created using two alcohol use questions from the parent HCHS/SOL baseline questionnaire. Participants were first asked "Do you presently drink alcoholic beverages (yes/no)?" Participants who answered 'yes' were then asked "How often did you have 4 or more drinks [for females] or 5 or more [for males] containing any kind of alcohol within a 2-hour period?" Nine response options ranged from 'never' to 'every day' with any response other than never (e.g., from less than once a month to every day) indicating binge drinking. Participants who did not currently drink alcoholic beverages or answered never on the binge question were considered to not have participated in binge drinking.

A secondary indicator of binge drinking was defined as drinking 4 or more drinks for females or 5 or more for males within a 2-hour period *at least 1 day per month or more* (vs. never or less than once a month). This more stringent measure of binge drinking was evaluated to assess whether the primary continuous measures of discrimination may have had a stronger association with higher levels of binge drinking.

Sociodemographic Characteristics—Sociodemographic characteristics of participants available from the parent HCHS/SOL baseline questionnaire were selected based on previous literature establishing their association with either discrimination or alcohol use. These included age (18-44; 45-64; and 65-74 years), sex (male; female), marital status (single; married or living with partner; and separated, divorced or widowed), annual family income (< 20,000; 20,000-50,000;> 50,000; and not reported), and education (< high school; high school graduate or some college; college degree). In addition, several measures specifically related to discrimination and alcohol use in Hispanic/Latino populations were included: self-reported Hispanic/Latino heritage (Mexican; Central American; Cuban; Dominican; Puerto Rican; South American; and more than one heritage group), language in which interview was conducted (Spanish; English), and duration of U.S. residence (U.S. born; foreign-born with 10 years in the U.S.; and foreign born with < 10 years in the U.S.).

Analyses

All analyses accounted for design effects and sample weights (Lavange et al., 2010). Initial analyses described the demographic characteristics and mean discrimination scale scores of the study sample overall and by whether or not binge drinking was indicated. Differences in report of binge drinking were assessed using chi-square tests of independence for categorical measures and two-sample tests of proportions for the 5 primary discrimination measures (exclusion/rejection; stigmatization; threat/aggression; work/school; and lifetime discrimination). To describe the relationship between perceived discrimination and participant characteristics, the population estimated mean scores and standard errors for each of the 5 discrimination measures across participant characteristics were estimated. In addition to mean scores, the estimated population prevalence of each of the 5 discrimination measures, indicated by a response other than 'never' to any of the scale items for each measure, was described.

To assess the association between discrimination and binge drinking, unadjusted and adjusted logistic regression analyses for survey data using generalized estimating equations

and robust error variances were performed. For unadjusted analyses, each of the 5 discrimination measures were regressed on the binary outcome, binge drinking, and the unadjusted odds of binge drinking for each measure was reported. For adjusted logistic regression analyses, our model included covariates most strongly associated with binge drinking and/or discrimination in unadjusted analyses: age, sex, heritage, language, duration of U.S. residence and income. Selected covariates were used to create parsimonious models. Next, interactions were tested to evaluate whether participant sex, heritage, language, or duration of U.S. residence modified the association between each of the 5 measures of discrimination and binge drinking. Stratified analyses and parallel Wald tests were performed if interactions between participant characteristics and discrimination were significant. Lastly, parallel adjusted analyses were performed by a) replacing the primary binge drinking outcome with the stricter measure for binge drinking and, in a separate analysis, b) replacing the continuous measure of discrimination with the secondary binary measure of discrimination. All analyses were conducted using Stata MP edition, v13.1 (StataCorp, 2013).

RESULTS

In Table 1, we present the demographic characteristics and patterns of perceived ethnic discrimination of the total population, and by reported binge drinking (all percents are weighted). The average age was 42 years, 55% were female, 48% were married, 31% were U.S. born, 33% had less than a high school education, and 47% had an annual family income of less than $20,000. The most represented heritage group was Mexican, which comprised one-third of our sample. Overall, 23% were binge drinkers and 16% met the more strict criteria of binge drinking once per month or more. Some groups at higher risk for binge drinking included those that were younger (35% of those under age 44), male (38%), English speakers (41%), single (35%); those with family income greater than or equal to $20,000 (33-34%); and, those with at least a high school education (29-30%) (Table 1). The prevalence of binge drinking was generally higher among those with more than one heritage (39%), Mexicans (33%) and Dominicans (32%).

In terms of discrimination, 79% experienced any type of discrimination at least sometimes. Among the discrimination types, 72% reported exclusion/rejection, 60% reported stigmatization/devaluation, 53% reported discrimination at work or school and 20% reported threat/aggression. Hispanics/Latinos in the youngest age group (18 – 44) and English speakers tended to report the highest levels of overall, exclusion, stigmatization and threat discrimination (Appendix A). Men reported 4%-20% higher levels of discrimination than women across all types. Hispanics/Latinos with more than one heritage had 24% higher discrimination than Cubans, who tended to report the lowest levels. U.S. born Hispanics/Latinos reported 15% higher levels of discrimination than foreign-born with less than 10 years in the U.S.

Binge drinkers reported 7% higher overall discrimination than non-binge drinkers. For discrimination types, binge drinkers reported 4% higher exclusion/rejection and 12% higher stigmatization/rejection (Table 1). Table 2 displays unadjusted weighted odds ratios of binge drinking for overall discrimination and each discrimination type. For each one-unit increase

in overall discrimination, the odds of binge drinking increased by 47% (OR=1.47, 95% CI: 1.25-1.75). In Table 3 we present the odds ratios for binge drinking for a covariate-only model, followed by odds ratios for each discrimination type controlling for all the covariates. Older Hispanics/Latinos had 77% lower odds of binge drinking compared Hispanics/Latinos age 44 or younger. Similarly, females had 61% lower odds of binge drinking compared to males. Central Americans, Cubans, Puerto Ricans and South Americans had between 35% and 43% lower odds of binge drinking compared to Mexicans. Spanish speaking Hispanics/ Latinos had 34% lower odds of binge drinking than English speaking Hispanics/Latinos and foreign-born Hispanics/Latinos residing less than 10 years in the U.S. had 36% lower odds of binge drinking compared to U.S. born Hispanics/Latinos. The effects for covariates were relatively unchanged when discrimination and discrimination types were added to the models. After adjusting for covariates, discrimination was not significantly associated with binge drinking.

We also assessed whether sex, heritage group, language, and duration of U.S. residence modified the relationship between discrimination and binge drinking. However, there was no evidence of significant interactions in any of these analyses (results not shown). In sensitivity analyses using the more strict criteria of binge drinking once per month or more, neither overall discrimination nor any of the discrimination types were associated with increased odds of binge drinking. Similarly, a single-item binary measure of discrimination was not associated with increased odds of binge drinking.

DISCUSSION

Our study sought to examine the relationship between discrimination and binge drinking in a population-based sample of Hispanics/Latinos in the U.S. In unadjusted analyses, a one unit increase in overall discrimination, stigmatization/devaluation, threat/aggression, and work/ school discrimination were associated with 12% – 63% increased odds of binge drinking. However, after adjusting for important demographic characteristics, language, there was no longer a significant association between discrimination and binge drinking. Strengths of our study included the large multi-site sample and multidimensional validated measures of discrimination. Below we highlight how our study contributes to the growing literature on discrimination and alcohol use among Hispanics/Latinos.

While results from previous studies have been mixed, most studies have shown that discrimination is associated with increased risk of binge drinking. Our study is the first in a large multi-site study to show no association after adjusting for demographic factors. Several methodological and conceptual factors may explain the inconsistent findings across studies.

In a large multi-state sample, Vieira et al. (2012) found that workplace discrimination was associated with an almost two-fold increased risk in binge drinking in the past month among employed Hispanics/Latinos (OR=1.9, 95% CI:1.29-1.80). However, this study did not control for heritage group or duration of U. S. residence, both of which were significant covariates in our adjusted analyses. Another difference between our study and studies showing larger positive associations between discrimination and binge drinking is that the HCHS/SOL study recruited participants from four urban areas with large Hispanic/Latino

populations (Lavange et al., 2010; Quesada et al., 2012), while most other studies have been in smaller, regional, and more homogeneous samples of Hispanics/Latinos (Gilbert & Rhodes, 2014; Ornelas et al., 2011; Tran et al., 2010). Therefore, discrimination may increase risk for binge drinking among certain groups living in certain contexts (for example, immigrant men living in the Southern U.S.).

Another important finding in our study was that self-reported experiences of discrimination were very common. As reported previously, responses to the brief PEDQ-CV indicated that 79% had experienced discrimination at least sometimes, and 50% reported experiences of discrimination when responding to the single-item measure. These prevalence rates are significantly higher than other recent studies of Hispanics/Latinos. For example, 30% of Latinos reported experiences of discrimination in the National Latino and Asian American study and 24 – 31% of Latinos in the California Health Interview Survey (Otiniano & Gee, 2012; Perez et al., 2008). Since discrimination was such a common experience for Latinos in our cohort, it may have been perceived as less stressful than expected. Alternatively, Hispanics/Latinos in our study may have developed a resiliency to discrimination or used coping strategies other than binge drinking for dealing with this chronic stressor (Gallo, Penedo, Espinosa de los Monteros, & Arguelles, 2009).

Finally, an additional contribution of our study was that we evaluated whether different types of discrimination were associated with binge drinking among Hispanics/Latinos. While none of the specific types of discrimination were associated with binge drinking in the adjusted analyses, stigmatization/devaluation discrimination was associated with a 63% increased risk in the unadjusted analyses. Stigmatization discrimination includes experiences such as feeling mistrusted or being stereotyped as lazy or mistrustful, and was the second most common type of discrimination reported by Hispanics/Latinos in our sample. Other researchers have noted that more subtle forms of discrimination, often referred to as microaggressions, have increased over time (Sue et al., 2007; Williams & Mohammed, 2009). Our findings add further evidence that subtle forms of discrimination such as stigmatization and social exclusion are common and while not associated with binge drinking in our adjusted analyses, they may be associated with other negative health outcomes among Hispanics/Latinos. In addition, there may be other types of discrimination not measured by our study, such as discrimination due to language or legal status which are particularly salient for Hispanics/Latinos (Ornelas et al., 2011).

Limitations

Despite the contribution of our study, it did have some limitations. Given the cross-sectional nature of our data, we are not able to assess the directionality of the associations we observed. While our measure of binge drinking was conditional on respondents indicating whether they currently used alcohol, it is unclear whether discrimination preceded binge drinking. Moreover, some former drinkers who might have recently quit drinking were not assessed for possible binge drinking patterns in the past. Due to the recruitment and sampling strategy of HCHS/SOL, heritage group was confounded with site in our sample (e.g., most Cuban participants were from the Miami site; a large majority of San Diego

participants were of Mexican descent). Also, because the sample was recruited from only urban areas, it may not be representative of the general US Latino population.

Conclusions

Future research should continue to examine the relationship between specific types of discrimination across the spectrum of unhealthy alcohol use in large, diverse samples of Hispanics/Latinos. Given the variation in findings across studies, further research is needed to identify which groups of Hispanics/Latinos are most at risk for binge drinking and in which contexts. Our study suggests that there may be social and cultural factors related to sex, age, language, heritage group, and duration of U.S. residence that protect against binge drinking. For example Cubans, who in study lived mostly in Miami, may have reported lower levels of binge drinking and discrimination because of aspects related to residing in ethnic enclaves. Therefore, research should focus on identifying the mechanisms underlying these observed associations, including how gender roles, social norms, and coping strategies influence patterns of alcohol use among Hispanics/Latinos. Further research can help better target efforts to prevent binge drinking use in this growing population.

Our study confirmed that discrimination was a common experience for Hispanics/Latinos. However, in this population of urban Hispanics/Latinos, discrimination was not associated with increased risk of binge drinking. These findings may suggest a resiliency in this population, via which they are able to avoid responding to this stressor with binge drinking. Further research is needed to understand the health impact of Hispanics/Latinos' exposure to discrimination and other social stressors.

Acknowledgements

Appendix

Appendix A

Weighted means for each discrimination scale across participant characteristics: HCHS/SOL Sociocultural Ancillary Study

	Discrimination (Overall)			Exclusion/rejection			Stigmatization			Threat/Anger			Work/School		
	M	SE	p-value	M	SE	p-value	M	SE	p-value	M	SE	p-value	M	SE	p-value
Age			0.00			0.000			0.00			0.00			0.00
18-44	1.51	(0.02)		1.88	(0.02)		1.41	(0.02)		1.20	(0.01)		1.57	(0.02)	
45-64	1.47	(0.02)		1.85	(0.02)		1.32	(0.02)		1.19	(0.02)		1.57	(0.02)	
65-74	1.27	(0.03)		1.54	(0.07)		1.15	(0.02)		1.08	(0.02)		1.35	(0.05)	
Gender			0.00			0.035			0.00			0.00			0.00
Male	1.55	(0.02)		1.87	(0.02)		1.49	(0.02)		1.24	(0.02)		1.62	(0.02)	
Female	1.41	(0.01)		1.81	(0.02)		1.24	(0.01)		1.15	(0.01)		1.48	(0.02)	
Hispanic/Latino Heritage Group			0.00			0.000			0.00			0.00			0.00
Mexican	1.52	(0.02)		1.89	(0.03)		1.40	(0.02)		1.21	(0.02)		1.60	(0.03)	
Central American	1.47	(0.03)		1.91	(0.04)		1.33	(0.03)		1.17	(0.02)		1.54	(0.04)	
Cuban	1.33	(0.02)		1.68	(0.03)		1.21	(0.02)		1.09	(0.02)		1.38	(0.02)	
Dominican	1.40	(0.02)		1.74	(0.05)		1.29	(0.03)		1.17	(0.03)		1.43	(0.04)	
Puerto Rican	1.57	(0.03)		1.91	(0.05)		1.46	(0.03)		1.27	(0.02)		1.66	(0.04)	
South American	1.48	(0.04)		1.89	(0.06)		1.34	(0.04)		1.17	(0.03)		1.56	(0.04)	
More than one heritage	1.65	(0.07)		1.97	(0.08)		1.55	(0.10)		1.32	(0.07)		1.79	(0.09)	
Language of interview			0.00			0.009			0.00			0.00			0.00
Spanish	1.42	(0.01)		1.81	(0.02)		1.28	(0.01)		1.14	(0.01)		1.48	(0.01)	
English	1.62	(0.02)		1.92	(0.04)		1.54	(0.03)		1.33	(0.02)		1.71	(0.03)	
Marital Status			0.00			0.734			0.00			0.00			0.02
Single	1.51	(0.02)		1.85	(0.03)		1.43	(0.02)		1.22	(0.02)		1.57	(0.02)	
Married or living with partner	1.44	(0.01)		1.83	(0.03)		1.30	(0.02)		1.16	(0.01)		1.51	(0.02)	
Separated, Divorced or Widowed	1.50	(0.03)		1.86	(0.04)		1.35	(0.03)		1.22	(0.03)		1.60	(0.04)	
Length of Residence			0.00			0.022			0.00			0.00			0.00
U.S. Native	1.59	(0.02)		1.91	(0.03)		1.50	(0.03)		1.28	(0.02)		1.68	(0.03)	
Foreign-Born ≥ 10 years in the US	1.45	(0.02)		1.82	(0.02)		1.33	(0.02)		1.17	(0.01)		1.52	(0.02)	
Foreign-Born < 10 years in the US	1.38	(0.02)		1.78	(0.03)		1.22	(0.02)		1.11	(0.01)		1.43	(0.02)	
Education			0.30			0.438			0.01			0.44			0.13

	Discrimination (Overall)			Exclusion/rejection			Stigmatization			Threat/Anger			Work/School		
	M	SE	p-value	M	SE	p-value	M	SE	p-value	M	SE	p-value	M	SE	p-value
< High School	1.47	(0.02)		1.84	(0.03)		1.36	(0.02)		1.20	(0.02)		1.51	(0.03)	
HS Graduate; Some College	1.50	(0.02)		1.87	(0.03)		1.40	(0.02)		1.20	(0.02)		1.56	(0.03)	
College Degree	1.46	(0.02)	0.00	1.82	(0.03)	0.000	1.32	(0.02)	0.00	1.18	(0.01)	0.00	1.57	(0.02)	0.00
Annual Family Income															
<20,000	1.48	(0.02)		1.85	(0.03)		1.36	(0.02)		1.20	(0.02)		1.55	(0.02)	
20,000-50,000	1.50	(0.02)		1.88	(0.03)		1.38	(0.02)		1.18	(0.02)		1.57	(0.02)	
>50,000	1.48	(0.04)		1.79	(0.05)		1.34	(0.04)		1.22	(0.03)		1.59	(0.05)	
Not Reported	1.33	(0.03)	0.00	1.66	(0.04)	0.000	1.23	(0.03)	0.00	1.11	(0.02)	0.00	1.37	(0.05)	0.00

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Table 1

Demographic characteristics of study population and those who reported binge drinking

| | Reported Binge Drinking [*] | | | | | Total Population | |
| | No (4,049) | | Yes (1,264) | | | (5,313) | |
	n	Weighted (row %)	n	Weighted (row %)	p-value [**]	n	Weighted (col %)
Age					0.00		
18-44	1,364	(64.9)	671	(35.1)		2,035	(56.5)
45-64	2,277	(79.2)	548	(20.8)		2,825	(33.6)
65-74	408	(91.3)	45	(8.7)		453	(9.9)
Gender					0.00		
Male	1,289	(62.1)	735	(37.9)		2,014	(45.2)
Female	2,760	(80.7)	539	(19.3)		3,299	(54.9)
Hispanic/Latino Heritage Group [†]					0.00		
Mexican	1,534	(67.1)	546	(32.9)		2,080	(36.6)
Central American	450	(77.6)	103	(22.4)		553	(7.6)
Cuban	638	(82.7)	137	(17.3)		775	(20.3)
Dominican	390	(67.9)	144	(32.1)		534	(11.7)
Puerto Rican	662	(71.8)	218	(28.2)		880	(15.8)
South American	281	(79.9)	69	(20.1)		350	(4.8)
More than one heritage	90	(61.1)	47	(38.9)		137	(3.3)
Language of interview					0.00		
Spanish	3,314	(77.2)	858	(22.9)		4,172	(78.5)
English	735	(59.6)	406	(40.5)		1,141	(21.5)
Marital Status [†]					0.00		
Single	1,053	(65.5)	443	(34.5)		1,496	(34.0)
Married or living with partner	2,047	(74.4)	601	(25.6)		2,648	(48.2)
Separated, Divorced or Widowed	941	(79.7)	219	(20.3)		1,160	(17.8)
Length of Residence [†]					0.00		
U.S. born	1,004	(63.7)	437	(36.3)		1,441	(30.8)
Foreign-Born 10 years in the US	2,079	(75.2)	577	(24.8)		2,656	(43.1)
Foreign-Born < 10 years in the US	958	(77.9)	247	(22.1)		1,205	(26.0)
Education [†]					0.02		
< High School	1,496	(75.7)	402	(24.3)		1,898	(32.7)
HS Graduate; Some College	1,013	(70.1)	355	(29.9)		1,368	(28.2)
College Degree	1,447	(70.5)	493	(29.5)		1,940	(39.1)
Annual Family Income					0.00		
<20,000	2,038	(76.2)	523	(23.8)		2,561	(46.9)
20,000-50,000	1,355	(66.9)	521	(33.1)		1,876	(34.7)
>50,000	296	(66.3)	139	(33.7)		435	(9.7)
Not Reported	360	(79.8)	81	(20.2)		441	(8.7)

	Reported Binge Drinking[*]					Total Population	
	No (4,049)		Yes (1,264)			(5,313)	
	n	Weighted (row %)	n	Weighted (row %)	p-value[**]	n	Weighted (col %)
Discrimination type[†] [Mean (SE)]							
Overall Discrimination	1.44	(0.01)	1.55	(0.02)	0.00	1.47	(0.01)
Exclusion/rejection	1.82	(0.02)	1.89	(0.03)	0.07	1.84	(0.02)
Stigmatization/Devaluation	1.31	(0.01)	1.47	(0.03)	0.00	1.35	(1.19)
Threat/Aggression	1.17	(0.01)	1.24	(0.02)	0.01	1.19	(0.01)
Work/School	1.52	(0.02)	1.62	(0.03)	0.00	1.55	(0.01)

[*] Binge drinking was defined as drinking 4 drinks for women and 5 drinks in a for men less than once a month or more

[**] P-value indicates significant chi-square test for survey data differences in report of binge drinking across demographic characteristic

[†] Total n varies by characteristic for all but age and gender: Exclusion/rejection (n=5,290), stigmatization (n=5,293), threat/anger (n=5,296); work/school (n=5,297); discrimination (n=5,297), heritage (n=5,309), nativity (n=5,302), marital status (n=5,304) and education (n=5,206)

Table 2

Unadjusted weighted odds of binge drinking for each continuous measure of discrimination

	OR	95% CI	p-value
Overall Discrimination	1.47	(1.25- 1.75)	0.00
Exclusion/rejection	1.12	(0.99- 1.25)	0.06
Stigmatization/devaluation	1.63	(1.40- 1.90)	0.00
Threat/Aggression	1.33	(1.10- 1.62)	0.00
Work/School	1.24	(1.09- 1.40)	0.00

Table 3

Multivariate models testing the weighted odds of binge drinking across types of discrimination

	OR	95% CI	
Covariates Only Model			
Age			
18-44 (referent)	--	--	--
45-64	0.58	(0.47-	0.72)
65-74	0.23	(0.15-	0.35)
Gender			
Male (referent)	--	--	--
Female	0.39	(0.31-	0.48)
Hispanic/Latino Heritage Group			
Mexican (referent)	--	--	--
Central American	0.65	(0.46-	0.91)
Cuban	0.57	(0.43-	0.75)
Dominican	1.13	(0.71-	1.78)
Puerto Rican	0.66	(0.47-	0.92)
South American	0.62	(0.39-	0.98)
More than one heritage	0.92	(0.47-	1.81)
Language of interview			
Spanish	0.66	(0.49-	0.88)
English (referent)	--	--	--
Length of Residence			
U.S. Native (referent)	--	--	--
Foreign-Born ≥ 10 years in the US	0.82	(0.59-	1.14)
Foreign-Born < 10 years in the US	0.74	(0.50-	1.10)
Annual Family Income			
<20,000 (referent)	--	--	--
20,000-50,000	1.20	(0.95-	1.51)
>50,000	1.07	(0.73-	1.56)
Not Reported	0.91	(0.63-	1.31)
Constant	1.44	(1.03-	2.02)
Overall Discrimination [*]	1.10	(0.93-	1.30)
Exclusion/rejection [*]	1.02	(0.91-	1.15)
Stigmatization/devaluation [*]	1.14	(0.98-	1.34)
Threat/Aggression [*]	1.05	(0.86-	1.28)
Work/School [*]	1.06	(0.93-	1.21)

[*] Effect of discrimination subscale after controlling for all sociodemographic covariates