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Alcohol Use/Abuse and Help-Seeking among US Adults: The Role of Racial-Ethnic Origin and Foreign-Born Status

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Abstract

We used data from Wave 1 and Wave 2 of the National Epidemiological Survey on Alcohol and Related Conditions to examine racial-ethnic and nativity-based variations in alcohol use/abuse and treatment-seeking while accounting for acculturation, stress, and social integration factors. The dependent variables included alcohol use, risky drinking, DSM-IV alcohol use disorder, and treatment-seeking in the last 12 months. Racial-ethnic categories included: African, European, Asian/Pacific Islander, Mexican, Puerto Rican, and other Hispanic/Latino. Acculturation, social stress, and social integration were assessed with previously validated, detailed measures. Bivariate probit models with sample selection were estimated for women and men. Immigrant status and origin associations with alcohol use/abuse and treatment-seeking were strong and largely unaffected by other social factors. Europeans and men of Mexican origin had the highest while women of African, Asian/Pacific-Islander, and Puerto Rican origins had the lowest rates of alcohol use/abuse. Years in the US were associated with a higher risk of alcohol use/abuse for all immigrant groups. Foreign-born were no less likely than US-natives to seek treatment if they were abusing or were dependent on alcohol. Further modeling of these relationships among specific immigrant groups is warranted. These findings inform alcohol rehabilitation and mental health services for racial-ethnic minorities and immigrants.

Keywords

nativity; immigrants; foreign-born; racial-ethnic origin; drinking; alcohol abuse; alcohol dependence; alcohol use disorder; alcohol treatment

INTRODUCTION

The US foreign-born population continues to grow and is becoming increasingly diverse (Zong & Batalova, 2015). When most immigrants enter the US, their risk of alcohol abuse is lower than the native population, even among those of the same race-ethnicity (Escobar, Hoyos Nervi, & Gara, 2000). However, the longer immigrants are in the US, the greater are

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their risks for alcohol abuse. Most research on immigrant alcohol abuse has focused the Hispanic/Latino ethnicity. US-born non-Hispanic whites appear to be more likely to abuse or be dependent on alcohol compared to US-born or foreign-born Mexican Americans (Alegria, Canino, Stinson, & Grant, 2006; Grant et al., 2004), even after controlling for sociodemographic variables (Grant et al., 2004). However, nativity was found not to be a factor when comparing US-born and island-born Puerto Ricans and "other Hispanics/ Latinos" (Alegria et al., 2006; Szaflarski, Cubbins, & Ying, 2011). Other studies show that foreign-born Latinos, Asians, and Africans are less likely to experience substance use disorders (as defined by the *Diagnostic and Statistical Manual of Mental Disorders Fourth Edition* [DSM-IV] (American Psychiatric Association, 2000)) than are their US-born counterparts (Alegria, Mulvaney-Day, et al., 2007; Breslau & Chang, 2006; D. R. Williams et al., 2007), but the patterns of alcohol use/abuse can vary by other factors, including country of origin, gender, or generation since immigration (Marshall, Schell, Elliott, Berthold, & Chun, 2005; Rebhun, 1998).

In terms of alcohol treatment utilization, US-born adults are more likely to display help-seeking behavior and participate in treatment than adults who are foreign-born (Agency for Healthcare Research and Quality (AHRQ), 2005; Fiscella, Franks, Doescher, & Saver, 2002), with lack of fluency in English and lack of health insurance being two major barriers to care. Few studies have addressed differences in alcohol treatment between immigrants compared to US-born. Cultural differences in defining alcohol abuse as a problem may also play a role in treatment gaps. One study of homeless people found immigrant substance users to be less likely than non-immigrants to perceive a need for treatment, though the two groups were similar in frequency and quantity of alcohol use (van Geest & Johnson, 1997). Although many studies emphasize the need for culturally sensitive treatment programs (Nemoto, Operario, & Soma, 2002; Rastogi & Wadhwa, 2006), there is some evidence that cultural differences or acculturation may not be related to the success or lack of substance treatment among immigrant groups (Arroyo, Miller, & Tonigan, 2003). Additional research is needed to determine immigrant treatment utilization for risky or abusive drinking.

There is a limited understanding of how foreign- and US-born groups differ in alcohol abuse in part because many studies have relied on small or regionally specific samples, focused on a single racial-ethnic group, or have not provided appropriate comparisons to a US-born group. Also, many past studies have been unable to sufficiently account for factors known to be associated with alcohol use/abuse and treatment-seeking such as acculturation, discrimination, or social ties, when addressing the impact of immigrant characteristics on alcohol use/abuse and treatment-seeking. This study closes some of these gaps and extends the past literature by: (1) examining several alcohol use/abuse and help-seeking outcomes by race-ethnicity, nativity, and gender while accounting for other explanatory factors; (2) relying on nationally representative longitudinal data for US adults that measure the timing of the outcomes; and, (3) using detailed measures of acculturation, racial-ethnic orientation, stress/stressors (incl. discrimination), and social ties.

Conceptual Framework

Alcohol use is a worldwide phenomenon, but its patterns vary by region and culture. Alcohol consumption tends to be higher in Europe and North America than in Africa and Asia. Per this *multiculturalism* perspective (Adrian, 1996), when people migrate, they take their drinking habits with them, adding to the mosaic of drinking cultures within host societies. Also, treatment-seeking for alcohol problems can vary across societies and cultures because of varying levels of stigma towards substance use and treatment options available in different social settings. Stigmatizing attitudes can be particularly strong and alcohol rehabilitation options limited in developing societies (Mattoo et al., 2015). To what extent stigma and help-seeking behaviors derived from the original culture are preserved or change after migration depends on the interaction of original and host society elements.

The past literature underscores the need for a further understanding of how membership in cross-cutting racial, ethnic, and nativity groups affects mental and behavioral health (Brown, Donato, Laske, & Duncan, 2013). In a diverse society like the US, individuals of various backgrounds must often reconcile multiple cultural influences and multiple racial, ethnic, or nativity-based identities. Patterns of alcohol use/abuse and treatment-seeking may reflect the interplay of these multiple identities. Furthermore, the migration experience to the US (historical time of entry, length of stay, or economic opportunity versus hardship), pre-immigration experience (e.g., refugee status), and acculturation modes and outcomes vary among foreign-born and in ways that may relate to differences in alcohol use/abuse.

Acculturation is a multidimensional concept that broadly refers to changes that occur due to contact with culturally dissimilar groups and social influences (Gibson, 2001; Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Originally, acculturation was defined as a unidimensional process of retention of the heritage culture while assimilating to the receiving culture. Later, Berry (Berry, 1992, 2001) developed a bi-dimensional model of acculturation in which receiving-culture acquisition and heritage-culture retention were independent dimensions. Berry further proposed four intersecting acculturation categories: assimilation, separation, integration, and marginalization. However, research has shown that not all of these categories may exist across samples and populations (Schwartz et al., 2010). The category of integration, or adoption of the receiving culture while retaining elements of the heritage culture, has been referred to as *biculturalism* and has been shown to be often associated with favorable psychosocial outcomes, including lower rates of substance use (Amaro, Whitaker, Coffman, & Heeren, 1990; Liebkind, 1996; Oetting & Beauvais, 1990; Tucker, 1985; Unger, Schwartz, Huh, Soto, & Baezconde-Garbanati, 2014).

More recently, the concept of acculturation has been extended to include the heritage and the receiving practices (e.g., language, culture foods), values (e.g., collectivism versus individualism), and identifications (e.g., country of origin) (Schwartz et al., 2010; Unger, 2012). Within this extended concept of acculturation, additional dimensions of acculturation are considered, in particular, the context of reception and its effects on acculturation. An unfavorable context (e.g., limited employment opportunities, discrimination) may result in the so-called *acculturative stress*, which refers to adverse effects of acculturation such as anxiety, depression, and other types of maladaption. Research has documented correlations

between substance abuse and measures of acculturative stress (e.g., loneliness, loss of occupational status) and assimilation (e.g., years in the US) (Johnson, 1997).

Furthermore, immigrants may face discrimination and hostility from US-born (or more assimilated foreign-born) individuals that may be greater due to the immigrants' race/ethnicity. *Discrimination* means differential treatment based on membership in a minority or lower-status group. Examples of discrimination include overt harassment as well as subtle micro-aggressions, such as assuming immigrants' low levels of intelligence (Unger et al., 2014; D. R. Williams, Neighbors, & Jackson, 2008). Perceived discrimination has been shown to be associated with alcohol and substance use problems among immigrants in multiple studies (Kam, Cleveland, & Hecht, 2010; Verissimo, Grella, Amaro, & Gee, 2014; Yen, Ragland, Greiner, & Fisher, 1999a, 1999b). Furthermore, discrimination may be a barrier to seeking and accessing treatment for alcohol problems (David R. Williams & Mohammed, 2009).

In addition to acculturative stress and discrimination, the patterns of alcohol use among immigrants may be shaped by other types of stress and stressors, which occur across populations. *Stress* is a complex, multidimensional concept that has been described elsewhere (Wheaton et al. 2012). In a nutshell, social environments expose people to different sources and types of stress which are intertwined. *Stressful life events* (e.g., death of a family member or divorce) were recognized early on as a key source of social stress (Holmes & Rahe 1967). Recent research indicates that stressful life events may promote either healthy (moderate) or unhealthy (excessive) alcohol consumption (Tamers et al., 2014). Other aspects of social stress include chronic, contextual, and traumatic stressors. Perceived overall stress has been linked with a greater risk of alcohol use disorder in men, but it has been associated with lower alcohol consumption among women (Sacco, Bucholz, & Harrington, 2014).

While negative stress and stressors are risk factors for alcohol problems, social integration and ethnic identity can be protective. For example, having a perception of high *social support* reduces psychological distress and buffers the impact of stressful events (Ritsner et al. 2000; Turner & Marino 1994) and can reduce the nativity effect on substance use disorders (Alegria et al. 2007c), but immigrants may have less social support than US-born individuals. Other research shows that immigrants tend to have better psychosocial outcomes when they receive help, encouragement, and tangible support resources in the host society (Schwartz et al., 2010). Furthermore, *ethnic identity*, which includes knowledge about one's ethnic group, emotional significance of group membership, and commitment to the ethnic group (J. Phinney & Ong, 2007), has been positively correlated with lower rates of substance use in some studies (Unger et al., 2014). Researchers argue that ethnic identity extends the concepts of race and ethnicity, which are often static, assigned categories (Unger, 2012).

In addition to the mechanisms noted above, alcohol use and treatment patterns are shaped by sociodemographic (e.g., age, gender, family status, religiosity, location) and economic (e.g., education, employment, income) factors. Alcohol use and dependency are highest among young adults, with declining rates of abuse and dependence at older ages, and men are consistently more likely than women to use, abuse, and be dependent on alcohol (Center for

Behavioral Health Statistics and Quality, 2016). Furthermore, the patterns of drinking and alcohol treatment have been linked with education, income, and employment (Esser et al., 2014; Keyes & Hasin, 2008; Lui, Sterling, Chi, Lu, & Campbell, 2017; Popovici & French, 2013) as well as religiosity (Delaney, Forcehimes, Campbell, & Smith, 2009; Koenig, McCullough, & Larson, 2001; Rodriguez, Neighbors, & Foster, 2014). Alcohol consumption also varies by geographic location (Haughwout, LaVallee, & Castle, 2015). These different social correlates of drinking and alcohol treatment-seeking should be taken into consideration when studying immigrants because the distribution of these factors varies across US immigrant and racial-ethnic groups (Grieco et al., 2012; Ruther, Tesfai, & Madden, 2016).

Study Aim and Hypotheses

Past research shows that the patterns of alcohol use/abuse and treatment-seeking vary by nativity and racial-ethnic background. However, many past studies have not been able to account for the many potential explanatory factors such as acculturation, stress/stressors, and social ties. The aim of this study was to describe variations in alcohol use/abuse and treatment-seeking among immigrants based on racial-ethnic background while accounting for the known explanatory factors. In pursuing this aim, several key hypotheses were derived from the conceptual framework and posited as follows.

Based on the past theory and research, we expected the foreign-born population to have lower rates of alcohol use/abuse and treatment-seeking than the US-born population, but some racial-ethnic variations were also expected. Specifically, immigrants from Westernized regions (e.g., Europeans, Puerto Ricans) were expected to have similar rates of alcohol use/abuse and help-seeking as US-natives because of similar drinking and help-seeking cultures and similar access and barriers to treatment. On the other hand, immigrants from more traditional cultures and developing societies were expected to have lower rates of alcohol use/abuse and help-seeking because of more prohibitive drinking cultures vis-à-vis the West and more structural and cultural barriers to treatment. In addition to racial-ethnic variations among immigrants, we hypothesized that length of time in the US would be associated with the likelihood of immigrants using alcohol, using alcohol in a risky manner, and having an alcohol use disorder. At the same time, length of time was expected to be positively associated with seeking treatment by immigrants because of their increased knowledge of the US health care system and treatment options. Furthermore, we hypothesized, based on past theory and research, that acculturation, racial-ethnic identity, social ties, and stress factors would explain some of the race-ethnicity and nativity-based variations in the patterns of alcohol use/abuse outcomes and treatment-seeking, even after adjusting for the known sociodemographic correlates of alcohol use/abuse and treatment-seeking.

METHODS

Data

The *National Epidemiological Survey on Alcohol and Related Conditions* (NESARC) is the primary source of recent longitudinal data on alcohol use, alcohol disorders, and treatment-seeking for alcohol problems among US adults (see http://pubs.niaaa.nih.gov/publications/

arh29-2/74-78.htm). Wave 1 of the NESARC (2001–2002; n=43,093; 81% response) was conducted with one randomly selected person from each household/group quarter in a face-to-face, computer-assisted personal interview (CAPI). A total of 34,653 (80.4%) cases were re-interviewed at Wave 2 (2004–2005). NESARC sampling procedures included over-sampling of non-Hispanic Black and Hispanic households, and within households it over-sampled 18 to 24 year olds. The NESARC provides sample weights to adjust for its complex sampling design and non-response at the household- and person-level. We used the published sampling weights and sampling design information to adjust the estimation results for these issues using STATA *svy* procedures.

Measures

Most of the measures described below were measured at Waves 1 and 2. The exceptions are social network size, level of social support, acculturation, perceived discrimination, and perceived stress, which were only measured at Wave 2.

Dependent variables—The NESARC includes an extensive set of questions about the use of alcohol during the last 12 months. These include whether respondents used alcohol, number of days they drank, number of drinks they usually had when they drank, and how often they binge-drank (4+ drinks for women and 5+ for men). We used these data to create binary measures of *alcohol use* and *risky alcohol use* in the last 12 months. Risky alcohol use was defined as: for men, binge drank, or drank 14+ drinks in a week (2 per day), or drank 4+ drinks on days they drank; and for women, binge drank, or drank 7+ drinks in a week (1 per day), or drank 3+ drinks on days they drank (Kraemer et al., 2005).

The NESARC also includes questions that can be used to construct clinical DSM–IV diagnoses for alcohol use disorders. We combined three categories of disorders occurring during the last 12 months identified in the NESARC – alcohol abuse only, alcohol dependence only, and alcohol abuse and dependence – to create a binary indicator for any *alcohol use disorder*. The diagnoses of abuse and dependence had to be combined due to a limited number of cases in each of these categories.

To assess *treatment-seeking* for alcohol use problems (binary measure), respondents were asked one item – whether they sought treatment for alcohol use problems such as seeing a physician, counselor, Alcoholics Anonymous, or any community agency or professional in the last 12 months.

Independent variables—*Nativity* or foreign-born status is an indicator of whether the respondent was born in (reference) or outside the US. We also measured two immigrant characteristics: *number of years lived in the US* and *refugee status*. For US-born respondents, *years in in the US* are coded equal to their age, and refugee status is coded zero (reference).

Race-ethnicity was measured based on self-reported information of the respondents' race and ethnicity (country of origin or racial-ethnic descent). NESARC respondents reported 59 different racial-ethnic origins. Given that some groups have small cell sizes, we used six *racial-ethnic origin* categories: African, European, Asian/Pacific Islander, Mexican, Puerto

Rican, and other Hispanic/Latino. We excluded other or unknown race-ethnicities due to too few observations.

Social network size was assessed by using the Social Network Index (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997). The measure is the summed total number of the following people respondents see or talk to on the phone or via internet at least once every two weeks: grown children 18 or over; respondent's living parents; respondent's spouse or partner's living parents; other relatives the respondent feels close to; close friends; fellow students or teachers that they see socially (if in school); co-workers that they see socially (if have job); neighbors; people at organizations that respondent volunteers at; and, people at any other volunteer groups.

Social support was measured with the Interpersonal Support Evaluation List (ISEL-12) (Cohen & Hoberman, 1983; Cohen, Mermelstein, Kamarck, & Hoberson, 1985). The scale has twelve questions on how true it is respondents could find someone to help them or join them in a variety of situations, including such things as: go on a day trip with them; share their private worries and fears; help with daily chores if sick; go to a movie; look after house when away on trip; get advice from in case of family crisis; and, help in moving into new house or apartment. Applying factor analysis, we created a scale of level of social support (Cronbach's alpha=.79).

We constructed two measures of *acculturation*: the language and social preference scale and the race-ethnic orientation scale, which were based on two existing scales: the Brief Acculturation Rating Scale II (ARSMA-II), developed and validated for Mexican Americans (Coronado, Thompson, McLerran, Schwartz, & Koepsell, 2005; Cuellar & Roberts, 1997; Deyo, Diehl, Hazoda, & Stern, 1985; Solis, Marks, Garcia, & Shelton, 1990) and the East Asian Acculturation Measure (EAAM), developed for and evaluated among East Asian Americans (Barry, 2001). In the NESARC, questions for the eleven-item scale were asked separately of Hispanics, Asian and Pacific Islanders, and those of another ethnicity. Seven questions on language preference asked respondents about which language they: generally read and speak; spoke as a child; usually speak at home; usually think in; usually speak with friends; of TV and radio programs they usually listen to; and, of movies, TV, and radio programs they *prefer* to watch/ listen to. Response categories for the seven questions use a five-point scale: only non-English language; more non-English language than English; both equally; more English than non-English language; and, only English. The four questions on social preferences asked respondents about the race-ethnicity of their close friends, people at the social gatherings and parties they prefer to attend, the people they visit with, and their children's friends if they could choose. The response categories to these questions for Hispanic, Asian, or Pacific Islander respondents were tailored to their specific race-ethnicity. The pattern of possible responses was the same for all respondents and coded as: (1) all from my racial-ethnic group, (2) more from my racial-ethnic group than other racial-ethnic groups, (3) about half and half, (4) more from other racial-ethnic groups than from my racial-ethnic group, and (5) all from other racial-ethnic groups. We used factor analysis to generate the *language and social preference scales* (Cronbach's alphas of .85).

The measure of *race-ethnic orientation* (identity) drew on eight questions adopted from past scales (Barry, 2002; J. S. Phinney, 1992; Rahim-Williams et al., 2007). The questions asked how strongly the respondents agree or disagree that: they have a strong sense of self as a member of their racial-ethnic group; they identify with other people from their racial-ethnic group; most of their close friends are from their racial-ethnic group; racial-ethnic heritage is important in their life; they are more comfortable in social situations where others are present from their racial-ethnic group; they are proud of their racial-ethnic heritage; their racial-ethnic background plays a big part in how they interact with others; and, their values, attitudes, and behaviors are shared by most members of their racial-ethnic group. The scale's Cronbach's alpha was .79. Higher values on the measure indicated less identification with one's own racial-ethnic group, reflecting greater acculturation and assimilation.

Perceived racial-ethnic discrimination was based on the Experiences with Discrimination (EOD) scales (Krieger, 1990, 2003; Krieger & Sidney, 1997; Krieger, Sidney, & Coakley, 1998; Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005). The six questions on racial-ethnic discrimination ask about how often respondents experienced discrimination related to their race or ethnicity in a variety of situations during the last 12 months. These include experiencing discrimination in: their ability to obtain health care or health insurance; in how they are treated when they got health care; in public (on the street, in stores, or in restaurants); in any other situation (jobs, school or training program, in courts or with police, or obtaining housing); and, being called a racist name and being made fun of, picked on, pushed, shoved, hit or threatened with harm because of their race-ethnicity. All NESARC respondents were asked these questions, though the question phrasing was more specific to type of race or ethnicity for respondents who were Hispanic/Latino or Asian/Pacific Islander. We used factor analysis to construct a measure of perceived racial-ethnic discrimination (Cronbach's alpha=.74).

Stressful life events was measured based on the number (sum) of the following events respondents reported experiencing in the last 12 months: moving/having someone new join household; being fired/laid off; being unemployed/looking for a job; trouble with boss/co-worker; changes in job/job responsibilities; marital separation/divorce/breakup; serious problems with neighbor/friend/relative; financial crisis; serious trouble with police/law; victim of theft; intentional damage to their property; death of family member/close friend; victim of assault/attack/mugging; and, family members/close friends having serious trouble with police/law.

Included in the NESARC is a set of four questions that provide a measure of *perceived stress in the last 12 months* (Cohen & Williamson, 1988). The four-item perceived stress scale is intended to assess the cognitively mediated emotional response to objective stressful events and not the objective life events themselves. The questions asked how often in the last 12 months the respondents felt: they were not able to control important things in life; they were confident about ability to handle personal problems; things were going their way; and, difficulties were piling up so high that they could not overcome them. We factor-analyzed the scores and constructed a continuous measure of perceived stress (Cronbach's alpha=.84).

The analysis also included other sociodemographic and health-related variables known to be associated with alcohol use/abuse and help-seeking including age, gender, marital status, number of children, education, employment status, household income, health insurance, religious activity, physical limitations, region, and community type.

ANALYTIC APPROACH

To address the issue non-response to the second wave survey, we employed the weighting procedure and reweight the data as suggested by Moffitt and colleagues (Moffit, Fitzgerald, & Gottschalk, 1999) and Wooldridge (Wooldridge, 2002). The test they propose shows that failing to reweight the data would lead to bias due attrition (p=.000).

Furthermore, analyses included largely questions restricted to those who have used alcohol in the last year. We attempted to control for this additional selection issue by estimating bivariate probit models with sample selection. Also, we conducted separate analyses for men and women because prior research has shown that men and women have very different drinking patterns, with men drinking considerably more than women. The exception is treatment-seeking, where we combined men and women because there were few people who actually sought treatment.

Per conceptual framework and past literature, our analysis focused on describing variations in alcohol use/abuse and treatment-seeking outcomes by nativity and racial-ethnic origin while accounting for acculturation, stress/stressors, and social ties (substantive explanatory factors), as well as sociodemographic correlates previously linked to these behaviors. To that end, the analysis proceeded in several steps. First, we examined the distribution of the outcome variables according to nativity, racial-ethnic origin, and gender. Next we estimated unadjusted and adjusted bivariate probit models (with or without sample selection, as warranted) predicting the alcohol use/abuse and treatment-seeking outcomes. The baseline model included three key predictors -- origin, foreign-born status, and years in the US. The initial adjustment included sociodemographic factors; the final adjustment included sociodemographic and substantive (explanatory) factors.

FINDINGS

The means for the outcome variables by nativity, refugee status, and origin for men and women indicated that men were more likely to drink, use alcohol in a risky manner, have an alcohol use disorder, and seek treatment (Supplementary Material). For both men and women, immigrants were less likely to drink, drink in a risky manner, have an alcohol disorder, or seek treatment than non-immigrants. Refugee status was not particularly important for women, but male refugees tended to drink less and were less likely to seek treatment than non-refugee immigrants. Origin was an important determinant of drinking, risky drinking, and alcohol use disorder for both men and women. Origin was also statistically significant for treatment-seeking for women but not for men.

Below we describe the bivariate and multivariable results regarding the associations between nativity, racial-ethnic origin, and the alcohol use/abuse (any alcohol use, risky alcohol use, alcohol use disorder) and treatment-seeking outcomes.

Any Alcohol Use

Table 1 shows results by nativity and origin for both men and women. For women, except for women of African descent, immigrants were less likely to drink, drink in a risky manner, or have an alcohol use disorder than non-immigrants, although sample size issues might have affected the level of significance for alcohol use disorder. However, immigrant women from Western Europe were more likely to drink than West European non-immigrants. Immigrant status was somewhat less important for men; there were fewer instances where immigrant status was statistically significant. The main exception was that immigrant status among men of African descent was more strongly associated with drinking than it was for women, and less strongly associated for men of Puerto Rican and other Hispanic/Latino origins.

Table 2 shows results of a probit model of alcohol use for women and men, respectively. For both men and women, origin and foreign-born status were statistically significant, regardless of what control variables were included in the model, although adding more controls reduced the estimated point estimates. Women of East-European descent had the highest rates of drinking, while women of Asian/Pacific-Islander and African origin had the lowest rates. Men of East-European and Mexican origin had the highest rates of drinking. The coefficients for foreign-born status show how much more/less a person was likely to have used alcohol relative to a non-immigrant of the same nativity. Except for West Europeans (women and men) and other Hispanic (men), the signs of the immigrant coefficients were consistently negative and usually statistically significant. The estimated effects were especially large for Asian and Mexican female immigrants and for African, Asian/Pacific-Islander, and East European male immigrants. The effects of years in the US were positive, indicating that immigrants become more like the natives the longer they are in the US. The effects were significant for West European male and female immigrants, Mexican and other Hispanic female immigrants, and African and Asian/Pacific-Islander male immigrants. For women, the significance of level for years in the US tended to improve as more controls were added to the models.

Risky Alcohol Use

Table 3 displays results for models of risky drinking and are restricted to women and men who drank in the past year. The models were estimated as bivariate probit selection models which incorporate the decision to drink when estimating the coefficients for the risking drinking portion of the model. Note that the estimated values of rho were usually statistically significant, indicating that estimation of the risky drinking portion of the model as a single equation model would have led to biased estimates of the coefficients in the model of risky drinking. As expected, the estimates of rho tended to decline as more control terms are added. Although the joint test for the significance of origin and foreign-born status were generally statistically significant for both men and women, and were largely unaffected by the addition of more control variables, the effects were concentrated among a few coefficients. For women, the effects were dominated by being of African descent (lower risk than Western Europeans) and Asian/Pacific-Islander immigrants (lower risk than native-born Asian/Pacific-Islander). For men, the effects were dominated by being of African descent (lower risk than Western Europeans) and Asian/Pacific-Islander and African immigrants

(lower risk than native born Asians/Pacific-Islanders and Africans). None of the other terms were statically significant.

Alcohol Use Disorder

Table 4 displays results for models of having an alcohol use disorder. For this outcome, the joint significance of origin tended to decline as more control variables were added. With the addition of the substantive controls origin was no longer significant for men or women. For both men and women, the effect of immigrant status was negative. The likelihood of having an alcohol use disorder was higher for women of Mexican descent. Note that the estimate of rho was non-significant in the final models.

Treatment-Seeking

Table 5 displays results for a model of treatment-seeking. As more control variables were added to the model, the significance of the origin terms became non-significant. The significance of the immigrant coefficient and of rho increased .10 (the latter indicating that potential selection bias is unlikely). Thus, these results are only suggestive of a negative impact of immigration on seeking treatment for alcohol problems, and indicate that there are no effects of origin on treatment seeking.

Table 6 expands on the results shown in Table 5 for treatment-seeking by including indicators of whether a respondent was a risky alcohol user and whether they have an alcohol use disorder as predictors of treatment-seeking, and interactions of these terms with immigrant status. In general, we expected those with alcohol problems to be more likely to seek treatment. The estimation problem is that these alcohol behaviors are endogenous with respect to treatment-seeking. Because the results in Table 5 indicated that estimation of treatment-seeking on the subsample of respondents who used alcohol in the last 12 months did not introduce significant sample selection bias, if the full set of control variables were employed, we could estimate a bivariate model that included the decision to use alcohol in a risky way or having an alcohol use disorder as part of the model.

The first column of Table 6 displays a model that includes risky alcohol use and the interaction of risky use with immigrant status. These results indicate that risky alcohol use was not related to seeking treatment. The second column displays a model that includes alcohol use disorder diagnosis and its interaction with immigrant status. These results indicate that having an alcohol use disorder was positively and strongly associated with seeking treatment. They also indicate that immigrants were less likely to seek treatment, but that immigrants with an alcohol use disorder were no less likely to seek treatment than non-immigrants since the combined effect of immigrant status (-.740) with the immigrant alcohol use disorder interaction (.665) is essentially zero. In none of the models was origin statistically significant.

Effects of Sociodemographic and Substantive (Explanatory) Factors

We also examined the effects of the other variables included in the models (Supplementary Material). For alcohol use, age, not working, greater religious activity, and personal life social stress were negatively associated for both men and women, while education, physical

disability, income, stressful life events, and race-ethnic orientation were positively associated for both men and women. For men only, alcohol use was negatively associated with never being married, having more children, perceived discrimination associated with health, and control over social stress. It was positively associated with perceived discrimination over other issues. For women only, alcohol use was negatively associated with the number of close ties, and positively associated with never married, cohabiting, English language preference, and preferring one's own racial or ethnic group socially.

For risky alcohol use, age, greater education, and greater religious activity were negatively associated, and cohabiting, never married, and stressful life events were positively associated for both men and women. For men only, preferring one's own racial-ethnic group socially and having an own race/ethnic group orientation were negatively associated with risky alcohol use, while having more close ties was positively associated. For women only, having more children was negatively associated with risky alcohol use, while having a physical disability was positively associated.

For the alcohol use disorder diagnosis, age, having health insurance, having a mental disability, and greater religious activity were negatively associated, and cohabiting, never married, stressful life events, English preference, and social stress over control over life were positively associated. For men only, having more children and social support were negatively associated with having an alcohol use disorder, while living in the West was positively associated. For women only, college degree, not working, preferring one's own racial-ethnic social group, and having an own race/ethnic group orientation was negatively associated with having an alcohol use disorder, while number of instrumental ties was positively associated.

For seeking treatment, being female, college degree, and having a mental disability were negatively associated with seeking treatment. In contrast, cohabiting, stressful life events, and perceived social stress over control were positively associated with seeking treatment. As mentioned earlier, having an alcohol use disorder was also positively associated with seeking treatment.

DISCUSSION

Our findings paint a complex picture of relationships between racial-ethnic origin, nativity, and alcohol use/abuse and treatment-seeking outcomes. We found that the effects of origin, foreign-born status, and years living in the US were statistically significant for both men and women, for drinking and risky alcohol use, but that the effects were somewhat stronger for women than men. Although the point estimates and levels of significance declined as we added control variables, the effects remained significant for both men and women. People of European origin were the most likely to drink, as were males of Mexican origin, while females of African, Asian, and Puerto Rican origins were less likely to drink. Immigrants of Asian and African origins were less likely to drink compared to the same native-born groups, as were females of Mexican origin and males of European origin. For all groups, additional years in the US were associated with a higher risk of drinking. These results indicate that the effects of origin and foreign-born status were strong and largely unaffected

even when we controlled for a large number of demographic and substantive variables thought to be related to both alcohol use and origin and immigration status. The findings for years in the US support the notion that immigrants become more like the native-born, or become more acculturated, the longer they are in the US.

The major strength of the study is its reliance on nationally representative longitudinal data to be able to measure the timing of the outcomes. In addition, the study examines several alcohol use/abuse and help-seeking outcomes by race-ethnicity, nativity, and gender while accounting for a set of explanatory factors which have not been investigated simultaneously in previous studies. Furthermore, we were able to assess several complex concepts, such as acculturation, race and ethnicity, stress/stressors (incl. discrimination), and social ties, in a more detailed and comprehensive manner than done in many past studies.

However, our study also had some limitations. For example, we could not address other potential correlates of origin, nativity, and alcohol use/abuse patterns, such as age at immigration or historical cohort (Alegria, Sribney, Woo, Torres, & Guarnaccia, 2007). In addition, past studies have raised the issue of the potential for misdiagnosis of mental and behavioral disorders among minorities (Al-Issa, 1997). In the NESARC, where data on alcohol use/abuse were obtained for all respondents in a standardized manner, it seems unlikely that the degree of misdiagnosis would differ based on origin or immigrant status. Nevertheless, due to cultural/language misunderstandings, this study may have underestimated alcohol use/abuse among ethnic/immigrant groups.

Another limitation of this study was the definition of race-ethnicity. As noted above, broad racial-ethnic categories tend to mask cultural heterogeneity of individuals from different countries and cultures. It is also unclear to what extent members of the same ethnic group are similar and different in terms of acculturation modes. Acculturation modes may follow varying patterns (Acevedo-Garcia & Bates, 2008). For example, seemingly negative ones may be protective against alcohol abuse and alcohol use disorders (e.g., failure to assimilate may be protective through retaining same-ethnicity social networks), while seemingly positive ones may not protect against prejudice and discrimination (e.g., acceptance of the host country's definitions of race-ethnicity – instead of preserving foreign-born ethnic identification – may exacerbate experiences of prejudice and discrimination in the host country). In addition, race and ethnicity are intertwined with the cultural context in which people reside (e.g., racial and ethnic neighborhood composition and culture). Although this study assessed both racial-ethnic origin and racial-ethnic identity, other dimensions – such as feelings of belonging, cultural pride, or family- or community-based norms and values – would provide more insights into the meaning of race and ethnicity and their associations with alcohol use and help-seeking behaviors (Unger, 2012).

Furthermore, this study assessed only some types of social stress. In particular, the study did not address stress and trauma experienced before and during migration. Research has shown that adverse childhood experiences are associated with multiple substance use behaviors among emerging adult Hispanics in the US (Allem, Lisha, Soto, Baezconde-Garbanati, & Unger, 2013; Allem, Soto, Baezconde-Garbanati, & Unger, 2015). Also, traumatic experiences, which are prevalent among refugees and other involuntary migrants, can

predispose individuals to substance misuse and alcohol use disorders (D'Avanzo, 1997; D'Avanzo, Frye, & Froman, 1994). These other types of stress may further explain variations in alcohol use/abuse and help-seeking based on nativity and racial-ethnic origin.

Our analytic approach was also only one of potential strategies that one could take to understand the research problem at hand and the data. Specifically, our examination focused on estimating the patterns of alcohol use/abuse and treatment-seeking while accounting for multiple theoretical explanations, based on past theory and research. Our aim was to close a research gap, as earlier studies have typically been unable to address a fuller range of explanatory factors. However, including a large number of independent variables in regression modeling can be problematic and sometimes lead to model overfitting (Babyak, 2004). The strength of our analysis was that it was theoretically-driven and that we employed strategies to guard against overfitting (e.g., relied on a large sample size; combined categories with small cell counts; and, where possible, used continuous variables and aggregated measures/scales). Although we did what we could to minimize a risk of spurious findings, future studies should take alternative approaches and consider further means of guarding against overfitting (e.g., fixing coefficients a priori) (Babyak, 2004).

These limitations notwithstanding, the study results confirm and extend the past literature. Many studies have already examined alcohol use/abuse by Hispanic/Latino ethnicity and found both similarities and differences – depending on the alcohol-related outcome – by place of origin, acculturation as measured by nativity and years in the US, gender, and age (Lipsky & Caetano, 2009). For example, among Mexican Americans, Puerto Ricans, and "other Hispanics" in one study, women were more likely to abstain from alcohol while men were more likely to report frequent heavy drinking (Nielsen, 2000). Gender roles are likely to contribute to differences in alcohol use patterns between women and men, with traditional norms softening over time, as immigrant men and women accept the more permissible and gender-equal drinking culture of the US society (Zemore 2005).

Furthermore, past research has specifically examined nativity as a factor in alcohol use/abuse and alcohol use disorders using the first wave of the NESARC data (Alegria et al., 2006; Grant et al., 2004; Szaflarski et al., 2011). The prevalence of clinical alcohol abuse/dependence, excessive drinking, and incidence of intoxication were found to be significantly lower among US-natives compared to the foreign-born population. Other studies have also reported that US-born non-Hispanic whites were more likely to abuse or be dependent on alcohol compared to US-born or foreign-born Mexican Americans (Alegria et al., 2006; Grant et al., 2004), but nativity was found not to be a factor when comparing US-born and island-born Puerto Ricans and US-born and "other Hispanics/Latinos" (Alegria et al., 2006; Szaflarski et al., 2011). The current study adds to the existing knowledge by drawing on longitudinal data, a larger number of racial-ethnic categories, and a wide range of social correlates.

In terms of ethnic groups for which data have so far been limited, we found that people of African origin were less likely to display risky drinking and that immigrants of Asian origin were less likely to display risky drinking than native-born of Asian origin, as were males of African origin. Earlier studies reported lower alcohol use among African and Asian

immigrants compared with their native counterparts (Breslau & Chang, 2006; D. R. Williams et al., 2007). In our study, we were able to further confirm that the effects of origin and foreign-born status on problem drinking in these groups were strong and largely unaffected even when we controlled for a large number of demographic and substantive variables thought to be related to both alcohol use and origin and immigration status. However, it should be noted that Asians are a heterogeneous group and their alcohol use patterns vary by country of origin (Marshall et al., 2005; Rebhun, 1998), something that we were unable to investigate in more detail.

Our study also revealed more information in regard to alcohol use/abuse and treatment-seeking outcomes. Specifically, for these outcomes, the statistical significance of origin became non-significant as more control variables were added, but foreign-born status remained significant and negative. These results suggest that foreign-born status remained an important predictor of both alcohol use disorder and treatment-seeking, independent of origin. Importantly, we found that the effects of alcohol use disorder were significant and positive for seeking treatment and for the interaction of seeking treatment and foreign-born status. Specifically, our study indicates that while immigrants are less likely to seek treatment than natives, they are no less likely to seek treatment if they are abusing or are dependent on alcohol. The challenge for alcohol treatment services for minorities and immigrants then lays in the need for culturally-sensitive approaches that include an understanding of specific ethnic contexts (Botvin, Schinke, Epstein, Diaz, & Botvin, 1995).

In addition to origin and foreign-born status, we found that a number of important substantive controls were also associated with patterns of alcohol use/abuse outcomes. Especially notable is that stressful life events was significant and positive for both men and women for all four outcomes. The association between stressful life events and substance use/abuse is well established (Cooper, Russell, Skinner, Frone, & Mudar, 1992; Wheaton, 1999; D. R. Williams, Neighbors, & Jackson, 2003). Our study confirms this relationship for nativity and racial-ethnic groupings by gender and while controlling for other potential correlates. In addition, in our study, acculturation, social network, stress, and discrimination factors were also associated with alcohol use/abuse outcomes, but the associations varied by gender. Furthermore, the two dimensions of discrimination – in health care and in other domains – had inconsistent associations. Specifically, for men, perceived discrimination in other domains was positively associated with alcohol use/abuse, while discrimination in health care was negatively associated. These findings are not a total surprise. Earlier research (Verissimo et al., 2014) has examined the relationship between discrimination and alcohol and drug use disorders among Latinos and found a positive association, but, as in our study, the relationship varied by gender, nativity, and ethnicity. More research is needed to disentangle all these complex patterns.

Despite the many unanswered questions, our study helps to build further knowledge about alcohol use/abuse and treatment-seeking in racial-ethnic minority and immigrant populations. This information can guide prevention and treatment strategies for minorities and immigrants. For example, intervention programs focusing on cultural competence among service providers and programs/policies addressing stress affecting immigrants at the individual and social levels (e.g., stigma, discrimination, lack of socioeconomic

opportunities) could help immigrants to cope with stressors and prevent unhealthy alcohol use (National Institute on Alcohol Abuse and Alcoholism, 2005). More research is also needed to guide health services and policy interventions. In particular, there have been calls – per socio-ecological framework (Bronfenbrenner, 1979) – for integrating micro-level (family), meso-level (neighborhood), and macro-level (politics) cultural factors via multilevel analyses to better understand the complex influences of race, ethnicity, nativity, and culture on behaviors including substance use (Brown et al., 2013; Unger, 2012). Assessing the cultural context should go beyond individual perceptions and include census data on neighborhood composition, analyses of local policies and the history of intergroup relations, as well as data on education, employment, and housing opportunities available to various groups (Trickett, 2009; Unger & Schwartz, 2012). Future research should also investigate the mediating mechanisms underlying the relationship between origin, nativity, and alcohol use/abuse and treatment-seeking, as well social norms and attitudes (drinking cultures) among specific racial-ethnic groups. The former may be accomplished by examining the available secondary data with advanced mediation procedures (e.g., structural equation modeling [SEM]). The latter could be addressed through in-depth, context-specific explorations of ethnic drinking and help-seeking cultures.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

References

Acevedo-Garcia, D, Bates, LM. Latino Health Paradoxes: Empirical Evidence, Explanations, Future Research, and Implications. In: Rodriguez, H, Saenz, R, Menjivar, C, editors. Latinas/os in the United States: Changing the Face of América. New York, NY: Springer; 2008. 101–113.

Adrian M. 1996; Substance use and multiculturalism. Subst Use Misuse. 31(11–12):1459–1501. [PubMed: 8908704]

Agency for Healthcare Research and Quality (AHRQ). 2005 National Healthcare Disparities Report. Rockville, MD: US Department of Health and Human Services; 2005.

Al-Issa, I. General issues and research problems. In: Al-Issa, I, Tousignant, M, editors. Ethnicity, Immigration, and Psychopathology. New York, NY: Plenum Press; 1997. 277–289.

Alegria M, Canino G, Stinson FS, Grant BF. 2006; Nativity and DSM-IV psychiatric disorders among Puerto Ricans, Cuban Americans, and non-Latino Whites in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. J Clin Psychiatry. 67(1):56–65.

Alegria M, Mulvaney-Day N, Torres M, Polo A, Cao Z, Canino G. 2007; Prevalence of psychiatric disorders across Latino subgroups in the United States. Am J Public Health. 97(1):68–75. [PubMed: 17138910]

Alegria M, Sribney W, Woo M, Torres M, Guarnaccia P. 2007; Looking Beyond Nativity: The Relation of Age of Immigration, Length of Residence, and Birth Cohorts to the Risk of Onset of Psychiatric Disorders for Latinos. Res Hum Dev. 4(1):19–47. [PubMed: 19412354]

Allem JP, Lisha NE, Soto DW, Baezconde-Garbanati L, Unger JB. 2013; Emerging adulthood themes, role transitions and substance use among Hispanics in Southern California. Addict Behav. 38(12): 2797–2800. DOI: 10.1016/j.addbeh.2013.08.001 [PubMed: 24018219]

Allem JP, Soto DW, Baezconde-Garbanati L, Unger JB. 2015; Adverse childhood experiences and substance use among Hispanic emerging adults in Southern California. Addict Behav. 50:199–204. DOI: 10.1016/j.addbeh.2015.06.038 [PubMed: 26160522]

Amaro H, Whitaker R, Coffman G, Heeren T. 1990; Acculturation and marijuana and cocaine use: findings from HHANES 1982–84. Am J Public Health. 80(Suppl):54–60.

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Washington, DC: American Psychiatric Association; 2000. (4th Text Revision ed)

Arroyo JA, Miller WR, Tonigan JS. 2003; The influence of Hispanic ethnicity on long-term outcome in three alcohol-treatment modalities. J Stud Alcohol. 64(1):98–104. [PubMed: 12608489]

Babyak MA. 2004; What you see may not be what you get: a brief, nontechnical introduction to overfitting in regression-type models. Psychosomatic Medicine. 66:411–421. [PubMed: 15184705]

Barry D. 2001; Development of a new scale for measuring acculturation: the East Asian acculturation measure (EAAM). J Immigr Health. 3:193–197. [PubMed: 16228786]

Barry D. 2002; An ethnic identity scale for East Asian immigrants. J Immigr Health. 4:87–94. [PubMed: 16228764]

Berry JW. 1992; Acculturation and adaptation in a new society. International Migration. 30(s1):69–85.

Berry JW. 2001; A psychology of immigration. Journal of Social Issues. 57(3):615–631.

Botvin GJ, Schinke SP, Epstein JA, Diaz T, Botvin EM. 1995; Effectiveness of culturally focused and generic skills training approaches to alcohol and drug abuse prevention among minority adolescents: two-year follow-up results. Psychology of Addictive Behaviors. 9(3):183–194.

Breslau J, Chang DF. 2006; Psychiatric disorders among foreign-born and US-born Asian-Americans in a US national survey. Soc Psychiatry Psychiatr Epidemiol. 41(12):943–950. [PubMed: 16988789]

Bronfenbrenner, U. The ecology of human development. Cambridge, MA: Harvard University Press; 1979.

Brown, TN, Donato, KM, Laske, MT, Duncan, EM. Race, nativity, ethnicity, and cultural influences. In: Aneshensel, CS, Phelan, JC, Bierman, A, editors. Handbook of the Sociology of Mental Health. New York: Springer; 2013. 255–276.

Center for Behavioral Health Statistics and Quality. [Accessed 9 May 2017] Key substance use and mental health indicators in the United States: Results from the 2015 National Survey on Drug use and Health (HHS Publication No. SMA 16-4984, NSDUH Series H-51). 2016. http://www.samhsa.gov/data

Cohen S, Doyle WJ, Skoner DP, Rabin BS, Gwaltney JM Jr. 1997; Social ties and susceptibility to the common cold. JAMA. 277(24):1940–1944. [PubMed: 9200634]

Cohen S, Hoberman HM. 1983; Positive events and social supports as buffers of life changes stress. J Appl Soc Psychol. 13:99–125.

Cohen, S, Mermelstein, R, Kamarck, T, Hoberson, HM. Measuring the functional components of social support. In: Sarason, IG, Sarason, BR, editors. Social Support: Theory, Research and Applications. Newbury, NJ: Sage; 1985. 73–94.

Cohen, S, Williamson, G. Perceived stress in a probability sample of the United States. In: Spaceapam, S, Oskamp, S, editors. The Social Psychology of Health: Claremont Symposium on Applied Social Psychology. Newbury Park, NJ: Sage; 1988. 31–67.

Cooper ML, Russell M, Skinner JB, Frone MR, Mudar P. 1992; Stress and alcohol use: moderating effects of gender, coping, and alcohol expectancies. J Abnorm Psychol. 101(1):139–152. [PubMed: 1537960]

Coronado GD, Thompson B, McLerran D, Schwartz SM, Koepsell TD. 2005; A short acculturation scale for Mexican-American populations. Ethn Dis. 15:53–62. [PubMed: 15720049]

Cuellar I, Roberts R. 1997; Relations of depression, acculturation, and socioeconomic status in a Latino sample. Hispanic Journal of Behavioral Sciences. 19(2):230–238.

D'Avanzo CE. 1997; Southeast Asians: Asian-Pacific Americans at risk of substance misuse. Subst Use Misuse. 32(7–8):829–848. [PubMed: 9220559]

D'Avanzo CE, Frye B, Froman R. 1994; Culture, stress and substance use in Cambodian refugee women. J Stud Alcohol. 55(4):420–426. [PubMed: 7934049]

Delaney HD, Forcehimes AA, Campbell WP, Smith BW. 2009; Integrating spirituality into alcohol treatment. Journal of Clinical Psychology. 65:185–198. [PubMed: 19132739]

Deyo RA, Diehl AK, Hazoda H, Stern MP. 1985; A simple language-based acculturation scale for Mexican Americans: validation and application to health care research. Am J Public Health. 75:51–55. [PubMed: 3966599]

Escobar JI, Hoyos Nervi C, Gara MA. 2000; Immigration and mental health: Mexican Americans in the United States. Harvard Review of Psychiatry. 8(2):64–72. [PubMed: 10902095]

Esser MB, Hedden SL, Kanny D, Brewer RD, Gfroerer JC, Naimi TS. 2014; Prevalence of alcohol dependence among US adult drinkers, 2009–2011. Prev Chronic Dis. 11:E206.doi: 10.5888/pcd11.140329 [PubMed: 25412029]

Fiscella K, Franks P, Doescher MP, Saver BG. 2002; Disparities in health care by race, ethnicity, and language among the insured: findings from a national sample. Medical Care. 40(1):52–59. [PubMed: 11748426]

Gibson MA. 2001; Immigrant adaptation and patterns of acculturation. Human Development. 44:19–23.

Grant BF, Stinson FS, Hasin DS, Dawson DA, Chou SP, Anderson K. 2004; Immigration and lifetime prevalence of DSM-IV psychiatric disorders among Mexican Americans and non-Hispanic whites in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. Archives of General Psychiatry. 61(12):1226–1233. [PubMed: 15583114]

Grieco, EM, Acosta, YD, Cruz, GPdl; Gambino, C, Gryn, T, Larsen, LJ, … Walters, NP. American Community Survey Reports. Washington, DC: 2012. The foreign-born population in the United States: 2010. https://www.census.gov/prod/2012pubs/acs-19.pdf [Accessed 11 May 2017]

Haughwout, SP, LaVallee, RA, Castle, I-JP. National Institute on Alcohol Abuse and Alcoholism. Surveillance Report #102. Arlington, VA: 2015. Apparent per capita alcohol consumption: national, state, and regional trends, 1977–2013.

Johnson TP. 1997; Substance use among homeless, immigrant, and refugee populations: an international perspective. Introduction. Subst Use Misuse. 32(7–8):793–803. [PubMed: 9220557]

Kam JA, Cleveland MJ, Hecht ML. 2010; Applying general strain theory to examine perceived discrimination's indirect relation to Mexican-heritage youth's alcohol, cigarette, and marijuana use. Prev Sci. 11(4):397–410. DOI: 10.1007/s11121-010-0180-7 [PubMed: 20490921]

Keyes KM, Hasin DS. 2008; Socio-economic status and problem alcohol use: the positive relationship between income and the DSM-IV alcohol abuse diagnosis. Addiction. 103(7):1120–1130. [PubMed: 18494841]

Koenig, HG, McCullough, ME, Larson, DB. Handbook of Religion and Health. Oxford, UK: Oxford University Press; 2001.

Kraemer KL, Roberts MS, Horton NJ, Palfai T, Samet JH, Freedner N, … Saitz R. 2005; Health utility ratings for a spectrum of alcohol-related health states. Med Care. 43(6):541–550. [PubMed: 15908848]

Krieger N. 1990; Racial and gender discrimination: risk factors for high blood pressure? Soc Sci Med. 30(12):1273–1281. [PubMed: 2367873]

Krieger N. 2003; Does racism harm health? Did child abuse exist before 1962? On explicit questions, critical science, and current controversies: an ecosocial perspective. Am J Public Health. 93(2):194–199. [PubMed: 12554569]

Krieger N, Sidney S. 1997; Prevalence and health implications of anti-gay discrimination: a study of black and white women and men in the CARDIA cohort. Coronary Artery Risk Development in Young Adults. Int J Health Serv. 27(1):157–176. [PubMed: 9031018]

Krieger N, Sidney S, Coakley E. 1998; Racial discrimination and skin color in the CARDIA study: implications for public health research. Coronary Artery Risk Development in Young Adults. Am J Public Health. 88(9):1308–1313. [PubMed: 9736868]

Krieger N, Smith K, Naishadham D, Hartman C, Barbeau EM. 2005; Experiences of discrimination: validity and reliability of a self-report measure for population health research on racism and health. Soc Sci Med. 61(7):1576–1596. [PubMed: 16005789]

Liebkind K. 1996; Acculturation and stress: Vietnamese refugees in Finland. Journal of Cross-Cultural Psychology. 27:161–180.

Lipsky S, Caetano R. 2009; Epidemiology of substance abuse among Latinos. J Ethn Subst Abuse. 8(3):242–260. DOI: 10.1080/15332640903110435 [PubMed: 25985069]

Lui CK, Sterling SA, Chi FW, Lu Y, Campbell CI. 2017; Socioeconomic differences in adolescent substance abuse treatment participation and long-term outcomes. Addict Behav. 68:45–51. [PubMed: 28088743]

Marshall GN, Schell TL, Elliott MN, Berthold SM, Chun CA. 2005; Mental health of Cambodian refugees 2 decades after resettlement in the United States. JAMA. 294(5):571–579. [PubMed: 16077051]

Mattoo SK, Sarkar S, Gupta S, Nebhinani N, Parakh P, Basu D. 2015; Stigma towards substance use: comparing treatment seeking alcohol and opiod dependent men. International Journal of Mental Health and Addiction. 13(1):73–81.

Moffit R, Fitzgerald J, Gottschalk P. 1999; Sample attrition in panel data: the role of selection on observables. Annale d'Economie et de Statistique. 55/56:129–152.

National Institute on Alcohol Abuse and Alcoholism. [Accessed 15 May 2017] NIAAA: Social Work Education for the Prevention and Treatment of Alcohol Use Disorders. Module 10F: Immigrants, Refugees, and Alcohol. 2005. https://pubs.niaaa.nih.gov/publications/Social/Module10FImmigrants&Refugees/Module10F.html

Nemoto T, Operario D, Soma T. 2002; Risk behaviors of Filipino methamphetamine users in San Francisco: implications for prevention and treatment of drug use and HIV. Public Health Rep. 117(Suppl 1):S30–38. [PubMed: 12435825]

Nielsen AL. 2000; Examining drinking patterns and problems among hispanic groups: results from a national survey. J Stud Alcohol. 61(2):301–310. [PubMed: 10757141]

Oetting ER, Beauvais F. 1990; Orthogonal cultural identification theory: the cultural identification of minority adolescents. International Journal of Addiction. 25:655–685.

Phinney J, Ong A. 2007; Conceptualization and measurement of ethnic identity: Current status and future directions. J Counseling Psychol. 54:271–281.

Phinney JS. 1992; The multigroup ethnic identity measure: a new scale for use with diverse groups. J Adolesc Res. 7:156–176.

Popovici I, French MT. 2013; Does Unemployment Lead to Greater Alcohol Consumption? Ind Relat (Berkeley). 52(2):444–466. [PubMed: 23543880]

Rahim-Williams FB, Riley JL 3rd, Herrera D, Campbell CM, Hastie BA, Fillingim RB. 2007; Ethnic identity predicts experimental pain sensitivity in African Americans and Hispanics. Pain. 129(1–2):177–184. [PubMed: 17296267]

Rastogi M, Wadhwa S. 2006; Substance abuse1 among Asian Indians in the United States: a consideration of cultural factors in etiology and treatment. Subst Use Misuse. 41(9):1239–1249. DOI: 10.1080/10826080600754470 [PubMed: 16861175]

Rebhun, LA. Substance use among immigrants to the United States. In: Loue, S, editor. Handbook of Immigrant Health. New York, NY: Plenum Press; 1998. 493–519.

Rodriguez LM, Neighbors C, Foster DW. 2014; Priming effects of self-reported drinking and religiosity. Psychol Addict Behav. 28(1):1–9. [PubMed: 23528191]

Ruther, M, Tesfai, R, Madden, J. Foreign-born population concentration and neighbourhood growth and development within US metropolitan areas. Urban Studies; 2016. Oct 18, Epub ahead of print

Sacco P, Bucholz KK, Harrington D. 2014; Gender differences in stressful life events, social support, perceived stress, and alcohol use among older adults: results from a National Survey. Subst Use Misuse. 49(4):456–465. DOI: 10.3109/10826084.2013.846379 [PubMed: 24131262]

Schwartz SJ, Unger JB, Zamboanga BL, Szapocznik J. 2010; Rethinking the concept of acculturation: implications for theory and research. Am Psychol. 65(4):237–251. DOI: 10.1037/a0019330 [PubMed: 20455618]

Solis JM, Marks G, Garcia M, Shelton D. 1990; Acculturation, access to care, and use of preventive services by Hispanics: findings from HHANES: 1982–1984. Am J Public Health. 80(Suppl):11–19. [PubMed: 9187576]

Szaflarski M, Cubbins LA, Ying J. 2011; Epidemiology of alcohol abuse among US immigrant populations. J Immigr Minor Health. 13(4):647–658. DOI: 10.1007/s10903-010-9394-9 [PubMed: 20882346]

Tamers SL, Okechukwu C, Bohl AA, Gueguen A, Goldberg M, Zins M. 2014; The impact of stressful life events on excessive alcohol consumption in the French population: findings from the GAZEL cohort study. PLoS One. 9(1):e87653.doi: 10.1371/journal.pone.0087653 [PubMed: 24475318]

Trickett EJ. 2009; Community psychology: individuals and interventions in community context. Ann Rev Psychol. 60:395–419. [PubMed: 19035828]

Tucker MB. 1985; U.S. ethnic minorities and drug abuse: an assessment of the science and practice. International Journal of Addiction. 20:1021–1047.

Unger JB. 2012; The most critical unresolved issues associated with race, ethnicity, culture, and substance use. Subst Use Misuse. 47(4):390–395. DOI: 10.3109/10826084.2011.638017 [PubMed: 22217334]

Unger JB, Schwartz SJ. 2012; Conceptual considerations in studies of cultural influences on health behaviors. Prev Med. 55(5):353–355. DOI: 10.1016/j.ypmed.2012.09.024 [PubMed: 23046899]

Unger JB, Schwartz SJ, Huh J, Soto DW, Baezconde-Garbanati L. 2014; Acculturation and perceived discrimination: predictors of substance use trajectories from adolescence to emerging adulthood among Hispanics. Addict Behav. 39(9):1293–1296. DOI: 10.1016/j.addbeh.2014.04.014 [PubMed: 24837753]

van Geest J, Johnson K. 1997; Substance use patterns among homeless migrants and nonmigrants in Chicago. Substance Use and Misuse. 32(7–8):877–907. [PubMed: 9220561]

Verissimo ADO, Grella CE, Amaro H, Gee GC. 2014; Discrimination and substance use disorders among Latinos: the role of gender, nativity, and ethnicity. Am J Public Health. 104(8):1421–1428. [PubMed: 24922159]

Wheaton, B. The nature of stressors. In: Horwitz, AV, Schied, TL, editors. A Handbook of the Study of Mental Health: Social Contexts, Theories, and Symptoms. New York, NH: Cambridge University Press; 1999. 176–197.

Williams DR, Haile R, Gonzalez HM, Neighbors H, Baser R, Jackson JS. 2007; The mental health of Black Caribbean immigrants: results from the National Survey of American Life. Am J Public Health. 97(1):52–59. [PubMed: 17138909]

Williams DR, Mohammed SA. 2009; Discrimination and racial disparities in health: evidence and needed research. J Behav Med. 32(1):20–47. [PubMed: 19030981]

Williams DR, Neighbors HW, Jackson JS. 2003; Racial/ethnic discrimination and health: findings from community studies. Am J Public Health. 93(2):200–208. [PubMed: 12554570]

Williams DR, Neighbors HW, Jackson JS. 2008; Racial/ethnic discrimination and health: findings from community studies. Am J Public Health. 98(9 Suppl):S29–37. [PubMed: 18687616]

Wooldridge, JM. Econometric Analysis of Cross Section and Panel Data. Cambridge, Mass: The MIT Press; 2002.

Yen IH, Ragland DR, Greiner BA, Fisher JM. 1999a; Racial discrimination and alcohol-related behavior in urban transit operators: findings from the San Francisco Muni Health and Safety Study. Public Health Rep. 114(5):448–458. [PubMed: 10590767]

Yen IH, Ragland DR, Greiner BA, Fisher JM. 1999b; Workplace discrimination and alcohol consumption: findings from the San Francisco Muni Health and Safety Study. Ethn Dis. 9(1):70–80. [PubMed: 10355476]

Zong, J; Batalova, J. [Accessed 28 October 2016] Frequently requested statistics on immigrants and immigration in the United States 2015. 2015. Retrieved from Migration Policy Institute website: http://www.migrationpolicy.org/article/frequently-requested-statistics-immigrants-and-immigration-united-states/

Table 1

Alcohol use by nativity and origin[a], NESARC Wave 2.

	Sample size	Used alcohol	Risky alcohol use	Alcohol use disorder	Sought treatment
Women					
African				#	
US-born	3969	48.8***	14.4***	5.8***	0.7***
Foreign-born	319	44.3***	12.6***	3.1**	0.4
Asian/Pacific Islands		###	###	#	
US-born	216	55.0***	22.2***	6.2**	0.0
Foreign-born	417	30.9***	3.9***	1.4	0.0
Eastern Europe		###	###	###	#
US-born	767	75.4***	24.8***	5.9***	0.6
Foreign-born	122	55.8***	10.3***	1.2	0.0
Western Europe		##		##	
US-born	9471	67.3***	24.0***	6.0***	0.7***
Foreign-born	352	73.7***	22.8***	3.5***	0.4**
Mexico		###	###	###	
US-born	1130	66.3***	25.8***	7.5***	0.3
Foreign-born	891	30.2***	7.0***	0.9**	0.0
Puerto Rico (PR)		###	###	#	
Born in US states	272	53.5***	18.3***	3.5**	0.2
Born in PR	205	33.0***	11.0***	0.7	0.2
Other Hispanic/Latino		###	###	###	
US-born	458	64.1***	22.8***	6.6***	0.3
Foreign-born	735	43.1***	10.6***	1.9***	0.0
Men					
African			###	###	
US-born	2147	63.8***	29.4***	13.6***	1.2***
Foreign-born	205	60.2***	13.9***	7.0***	1.3

	Sample size	Used alcohol	Risky alcohol use	Alcohol use disorder	Sought treatment
Asian/Pacific Islands		##	###	###	##
US-born	171	70.3***	39.6***	21.4***	6.9**
Foreign-born	327	59.3***	16.1***	4.0***	0.0
Eastern Europe		###	###	##	###
US-born	721	83.2***	38.2***	15.0***	1.1**
Foreign-born	69	66.5***	20.9***	6.5	0.0
Western Europe		###			
US-born	7427	73.7***	38.9***	15.6***	1.4***
Foreign-born	245	85.0***	42.8***	13.7***	1.7**
Mexico		###	##	###	
US-born	802	80.3***	53.8***	20.8***	2.5**
Foreign-born	733	68.9***	44.1***	9.5***	0.7**
PR			##		#
Born in US states	185	74.3***	48.5***	15.9***	1.5
Born in PR	124	62.4***	28.7***	7.7**	0.0
Other Hispanic/Latino		#	#	#	#
US-born	347	72.7***	39.1***	13.7***	2.0
Foreign-born	546	65.6***	31.3***	8.8***	0.1

*** p<.01.

** p<.05.

Nativity by origin difference significant at p<.10.

Nativity by origin difference significant at p<.05.

Nativity by origin difference significant at p<.01.

[a] People of Middle Eastern descent and American Indians were excluded because there were too few cases for these groups to include them in the multivariate analyses.

Table 2

Probit model of used alcohol in past 12 months – women and men.

	Women			Men		
	No adjustment	**Demographic factors[a]**	**Demographic & substantive factors[b]**	**No adjustment**	**Demographic factors[a]**	**Demographic & substantive factors[b]**
Origin						
African	−.456(.035)***	−.451(.041)***	−.462(.044)***	−.271(.042)***	−.151(.045)***	−.127(.052)**
Asian/Pacific Islands	−.269(.155)*	−.621(.139)***	−.560(.142)***	−.072(.137)	−.243(.142)*	−.153(.136)
East Europe	.235(.057)***	.242(.065)***	.260(.066)***	.321(.064)***	.274(.065)***	.298(.073)***
West Europe						
Mexico	.000(.065)	−.045(.074)	.066(.076)	.221(.073)***	.182(.079)**	.264(.099)***
Puerto Rico (PR)	−.356(.107)***	−.509(.109)***	−.407(.119)***	.002(.161)	−.157(.165)	−.128(.200)
Other Hispanic/Latino	−.058(.089)	−.169(.103)	−.174(.114)	−.025(.099)	−.104(.104)	−.102(.112)
Foreign-born						
African	−.339(.233)	−.629(.243)***	−.426(.259)*	−.405(.272)	−.672(.290)**	−.589(.301)*
Asian/Pacific Islander	−.699(.213)***	−.844(.208)***	−.507(.247)**	−.338(.190)*	−.629(.189)***	−.596(.192)***
East European	−.628(.198)***	−.865(.210)***	−.363(.241)	−.657(.300)**	−.923(.283)***	−.918(.308)***
West European	.543(.271)**	−.003(.269)	.026(.240)	.463(.205)**	.009(.217)	.066(.248)
Mexican	−.984(.107)***	−1.058(.118)***	−.596(.141)***	−.392(.144)***	−.397(.158)**	−.288(.180)
Puerto Rican born in PR	−.504(.309)	−.459(.391)	−.116(.377)	−.022(.520)	.030(.511)	.107(.584)
Other Hispanic/Latino	−.593(.157)***	−.747(.167)***	−.301(.182)*	.004(.142)	−.014(.149)	.181(.174)
Years in US						
African	.014(.009)	.023(.009)**	.019(.010)*	.027(.012)**	.032(.013)**	.034(.014)**
Asian	.005(.006)	.021(.007)***	.014(.008)*	.001(.008)	.015(.007)**	.015(.008)**
East European	−.011(.006)	.007(.006)	.007(.005)	−.001(.005)	.012(.006)**	.012(.007)*
West European	.007(.005)	.022(.006)***	.014(.007)**	.008(.011)	.024(.010)**	.024(.011)**
Mexican	.003(.005)	.019(.005)***	.014(.005)***	.002(.006)	.010(.007)	.009(.007)
Puerto Rican	−.000(.008)	.013(.010)	.010(.009)	−.011(.012)	.000(.011)	.001(.013)

	Women			Men		
	No adjustment	**Demographic factors[a]**	**Demographic & substantive factors[b]**	**No adjustment**	**Demographic factors[a]**	**Demographic & substantive factors[b]**
Other Hispanic/Latino	.001(.006)	.016(.006) ***	.013(.005) **	−.009(.004) **	−.004(.005)	−.005(.006)
P-value for sig. of origin	<.0001	<.0001	<.0001	<.001	<.0001	<.0001
P-value for sig. of foreign-born	<.0001	<.0001	.004	.003	<.0001	.001
P-value for sig. of years in US	.473	<.0001	<.0001	.043	.021	.050

*** p<.01.

** p<.05.

* p<.10.

[a] Demographic factors include gender, age, marital status, number of children, education, working status, health insurance, region, MSA, physical or mental disability, income, and religious activity.

[b] Substantive factors include trauma, perceived discrimination, prefer speaking in English, prefer own social group socially, race/ethnic orientation, number of close ties, number of instrumental ties, social support, and social stress.

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Table 3

Probit sample selection model of risky alcohol use in past 12 months – women and men[a].

	Women			Men		
	No adjustment	**Demographic factors[b]**	**Demographic & substantive factors[c]**	**No adjustment**	**Demographic factors[b]**	**Demographic & substantive factors[c]**
Origin						
African	.143(.042)***	−.126(.052)**	−.207(.060)***	.033(.043)	.258(.054)***	−.304(.055)***
Asian	.272(.116)**	.037(.121)	.039(.122)	.151(.110)	−.028(.123)	.019(.130)
Eastern Europe	−.157(.062)**	−.064(.064)	−.043(.068)	−.237(.065)***	−.121(.069)*	−.086(.070)
Western Europe						
Mexico	.106(.081)	−.044(.082)	−.010(.090)	.318(.070)***	.135(.073)*	.167(.090)*
Puerto Rico (PR)	.119(.133)	−.161(.142)	−.160(.147)	.250(.152)	−.081(.166)	−.073(.168)
Other Hispanic	.156(.094)*	.036(.100)	.052(.105)	.061(.107)	−.131(.116)	−.106(.122)
Foreign-Born						
African foreign-born	−.017(.128)	−.071(.170)	−.051(.181)	−.503(.149)***	−.565(.181)***	−.563(.170)***
Asian foreign-born	−.521(.181)***	−.804(.217)***	−.875(.221)***	−.445(.155)***	−.655(.187)***	−.769(.211)***
Eastern Europe foreign-born	−.119(.180)	−.345(.212)	−.558(.246)	.260(.238)	−.093(.252)	−.159(.279)
Western Europe foreign-born	−.050(.102)	.044(.109)	.079(.111)	−.143(.113)	−.002(.122)	.064(.127)
Mexico foreign-born	.131(.127)	−.194(.156)	−.276(.159)*	.021(.111)	−.132(.129)	−.221(.164)
Puerto Rican born in PR	.290(.272)	.243(.310)	.218(.311)	−.262(.188)	−.163(.213)	−.235(.231)
Other Hispanic foreign-born	−.036(.128)	−.208(.138)	−.237(.159)	.007(.131)	−.065(.147)	−.153(.189)
P-value for sign. of origin	<.0001	.189	.017	<.0001	<.0001	<.0001
P-value for sig. of foreign-born status	.095	.003	.001	<.0001	<.0001	<.0001
Rho	−.816(.019)***	−.432(.071)***	−.257(.111)**	−.911(.019)***	−.413(.130)***	−.206(.172)

*** p<.01.

** p<.05.

* p<.10.

[a]Models are bivariate probit with sample selection on whether a respondent used alcohol in the past 12 months. Identification comes from the inclusion of first wave control measures in the used alcohol portion of the model. The addition of these factors significantly improved model fit for used alcohol at better than the .01 level. Note that the years in US is not included in the models shown because the joint tests on its inclusion were never statistically significant.

[b]Demographic factors include gender, age, marital status, number of children, education, working status, health insurance, region, MSA, physical or mental disability, income, and religious activity.

[c]Substantive factors include trauma, perceived discrimination, prefer speaking in English, prefer own social group socially, race/ethnic orientation, number of close ties, number of instrumental ties, social support, and social stress.

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Table 4

Probit sample selection model of having an alcohol use disorder in past 12 months[a].

	No adjustment	Demographic factors[b]	Demographic & substantive factors[c]
Females			
Foreign-born	−.293 (.060)***	−.296(.072)***	−.160(.087)*
African	.172(.045)***	−.013(.050)	−.120(.063)*
Asian	.108(.087)	.045(.092)	−.002(.129)
Eastern Europe	−.205(.065)***	−.130(.068)*	−.030(.075)
Western Europe			
Mexico	.156(.065)**	−.054(.068)	.221(.096)**
Puerto Rico	.073(.156)	−.109(.168)	−.032(.162)
Other Hispanic	.140(.095)	.009(.095)	.115(.105)
Rho	−.804(.039)***	−.952(.198)***	.056(.284)
P-value for sig. of origin	<.0001	.501	.112
Males			
Foreign-born	−.132(.083)	−.200(.097)**	−.195(.116)*
African	.408(.047)***	.230(.060)***	.068(.090)
Asian	.292(.170)*	.172(.189)	.050(.215)
Eastern Europe	−.166(.081)**	−.089(.089)	−.008(.102)
Western Europe			
Mexico	.158(.095)*	−.001(.091)	.126(.121)
Puerto Rico	.012(.138)	−.192(.137)	−.227(.173)
Othe Hispanic	.210(.098)**	.111(.107)	.177(.126)
Rho	−.804(.026)***	−.674(.082)***	−.168(.223)
P-value for sig. of origin	<.0001	<.0001	.218

*** p<.01.

** p<.05.

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*p<.10.

[a]Models are bivariate probit with sample selection on whether a respondent used alcohol in the past 12 months. Identification comes from the inclusion of first wave control measures in the used alcohol portion of the model. The addition of these factors significantly improved model fit for used alcohol at better than the .01 level. Note that foreign-born status is no longer included by origin because there are too few instances of having an alcohol use disorder.

[b]Demographic factors include gender, age, marital status, number of children, education, working status, health insurance, region, MSA, physical or mental disability, income, and religious activity.

[c]Substantive factors include trauma, perceived discrimination, prefer speaking in English, prefer own social group socially, race/ethnic orientation, number of close ties, number of instrumental ties, social support, and social stress.

Table 5

Probit sample selection model of seeking treatment in past 12 months[a].

	No adjustment	Demographic factors[b]	Demographic & substantive factors[c]
Foreign-born	−.421(.153)***	−.247(.114)**	−.329(.183)*
Origin			
African	.198(.087)**	.075(.085)	−.099(.125)
Asian/Pacific Islands	.535(.220)**	.520(.170)***	.404(.246)
Eastern Europe	−.267(.124)**	−.195(.116)*	−.164(.140)
Western Europe			
Mexico	.219(.108)**	.052(.098)	.019(.110)
Puerto Rico	.079(.223)	.029(.163)	−.145(.215)
Other Hispanic	.066(.196)	.028(.154)	−.057(.223)
Rho	−.460(.092)***	−.774(.074)***	−.452(.240)*
P-value of F-test for sig. of origin	.001	.029	.312

*** p<.01.

** p<.05.

* p<.10.

[a] Models are bivariate probit with sample selection on whether a respondent used alcohol in the past 12 months. Identification comes from the inclusion of first wave control measures in the used alcohol portion of the model. The addition of these factors significantly improved model fit for used alcohol at better than the .01 level.

[b] Demographic factors include gender, age, marital status, number of children, education, working status, health insurance, region, MSA, physical or mental disability, income, and religious activity.

[c] Substantive factors include trauma, perceived discrimination, prefer speaking in English, prefer own social group socially, race/ethnic orientation, number of close ties, number of instrumental ties, social support, and social stress.

Table 6

Bivariate probit model of seeking treatment in past 12 months[a].

	Risky alcohol use	Alcohol use disorder
Foreign-born	−.440(.317)	−.740(.351)**
Risky alcohol use	2.328(.292)	
Alcohol use disorder		1.909(.500)***
Risky alcohol use * foreign-born	.313(.337)	
Alcohol use disorder * foreign-born		.665(.356)*
African	.058(.109)	−.181(.124)
Asian	.346(.190)*	.188(.243)
Eastern Europe	−.061(.125)	−.052(.144)
Western Europe		
Mexico	−.049(.110)	−.094(.135)
Puerto Rico	−.135(.184)	−.347(.240)
Other Hispanic	−.054(.196)	−.102(.243)
Rho	−.719(.115)***	−.390(.236)
P-value of F-test for sig. of origin	.428	.580

*** p<.01.

** p<.05.

* p<.10.

[a]Models are bivariate probit estimated along with risky use of alcohol or alcohol use disorder in the last 12 months. Identification comes from the use of first wave control measures in the estimation of with risky use of alcohol or alcohol use disorder. Models employ the full set of demographic and substantive controls. The addition of these factors significantly improves model fit. Demographic factors include gender, age, marital status, number of children, education, working status, health insurance, region, MSA, physical or mental disability, income, and religious activity. Substantive factors include trauma, perceived discrimination, prefer speaking in English, prefer own social group socially, race/ethnic orientation, number of close ties, number of instrumental ties, social support, and social stress.