Mood and anxiety disorders carry a significant human and social burden. The lifetime prevalence for anxiety and mood disorders in the contemporary United States stands at roughly 30 and 20 percent, respectively. Depression, for instance, has been identified as a leading cause of disability and a common medical comorbidity (González et al. 2010), and major depressive disorder alone accounts for 3.7 percent of all disability-adjusted life years—years lost to illness, disability, and premature death—in the United States (Kessler 2012; National Institute of Mental Health 2014). Overall, mental health disorders cost $57.5 billion in expenditures in 2006, making it the third most expensive group behind heart disease and cancer (National Institute of Mental Health 2014).

Mental health care and treatments are available that could help alleviate the social and economic costs of mental disorders, but there are subgroups of the population that underutilize such services. In particular, mental health care utilization rates vary by nativity and across racial/ethnic groups. In the general population, approximately 17 percent of white adults use mental health services in a given year, compared with 9 percent of blacks, 7 percent of Hispanics, and 5 percent of Asians (Substance Abuse and Mental Health Services Administration [SAMSA] 2015). Furthermore, a recent systematic review found that in most studies where nativity status was examined, immigrants had lower rates of mental health services use than U.S. natives (Derr 2015). Utilization rates also vary within some immigrant groups by national origin. For instance, Hispanics, Cubans, and Puerto Ricans are more likely to seek mental health care than Mexicans and Hispanics from other national origins (Alegría et al. 1991, 2007; Portes, Kyle, and Eaton 1992; Vega et al. 1999). Among Asian Americans and Hispanics from most nationalities, foreign-born are much less likely to seek mental health care than those born in the United States (Abe-Kim et al. 2007; Alegría et al. 2007; Vega et al. 1999; Vega, Kolody, and Aguilar-Gaxiola 2001). Utilization rates for some ethnic groups (e.g., European immigrants), however, are simply not available (Derr 2015), calling for further, more inclusive studies.

Past studies have explored whether a few isolated socioeconomic and cultural factors might help explain some of the observed nativity-based disparities in mental health care utilization. Socioeconomic factors, such as education, income, and health insurance, account for some of the observed disparities in utilizing mental health care (Alegría et al. 2002, 2007). Culture barriers to seeking treatment include stigma associated with mental illness, limited English language proficiency, challenges navigating the American health care system, options for care and treatment that may be inconsistent

Abstract
Studies of immigrant-based disparities in mental health care have been limited by small sample sizes and a lack of measures of different dimensions of acculturation. This study draws on the National Epidemiological Survey on Alcohol and Related Conditions to address these limitations. Results indicate first-generation immigrants have lower rates of utilization for both mood and anxiety disorders. Nativity-based disparities in treatment are particularly notable among people from African and Hispanic origins, while there is little evidence of disparities among people from European origins. Of three dimensions of acculturation, only the identity dimension has a positive association with mental health care utilization.

Keywords
mental health care utilization, immigrant, acculturation

Immigrant-based Disparities in Mental Health Care Utilization

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with cultural sensitivity among mental health care providers (Abe-Kim et al. 2007; Alegría et al. 2007; Kung 2004; Le Meyer et al. 2009; Mclean, Campbell, and Cornish 2003; Nguyen and Anderson 2005; Sentell, Shumway, and Snowden 2007). Although some of the cultural factors in part reflect acculturation processes, various dimensions of acculturation as they relate to mental health care utilization have not been systematically explored.

This study has two aims. The first aim is to provide a more detailed examination of nativity-based disparities in mental health care utilization within groups from five different racial-ethnic origins (European, African and Afro-Caribbean, Asian and Pacific Islander, Hispanic, and Puerto Rican) than has been explored in past studies. This examination also distinguishes first- and second-generation immigrants from third- or higher generation immigrants and natives. The second aim is to analyze the relationship between different dimensions of acculturation and mental health care utilization among first- and second-generation immigrants. To address these aims, this study draws on two waves of data from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC). In support of the first aim, NESARC contains a much larger, nationally representative sample of people suffering from mental disorders (roughly 8,000) than has been examined in past studies (roughly 200 to 1,500). The larger number of people with a mental disorder in NESARC as compared with past studies stems from the fact that NESARC’s full sample (N = 43,093) is the largest and most current source of psychiatric epidemiologic data for U.S. adults (Grant and Dawson 2006). In support of the second aim, NESARC includes a broader number of measures that tap into different dimensions of acculturation than have been available in past studies.

Disparities in Mental Health Care Utilization

Using data from the National Comorbidity Survey—Replication (NCS-R) fielded between 2001 and 2003, Wang et al. (2005) report 17.9 percent of the general population utilized mental health care services in the prior 12 months.1 They found that blacks, Hispanics, and “other” racial/ethnic groups were between 40 and 50 percent less likely to utilize mental health care than non-Hispanic whites. Consistent with these findings, a study focused on a nationally representative sample of Asian Americans found an 8.6 percent rate of mental health care utilization in the prior 12 months (Abe-Kim et al. 2007). Abe-Kim and colleagues (2007) also found that U.S.-born Asian Americans were about 85 percent more likely to seek mental health care than foreign-born Asian Americans, but they did not find any differences in utilization rates by ethnic origin (Chinese, Filipino, Vietnamese, and “other”). Similarly, a study focused on a nationally representative sample of Latinos living in the United States found mental health care utilization rates around 10 percent for most ethnic groups but close to 20 percent for Puerto Ricans (Alegria et al. 2002). This study also found that U.S.-born Latinos are about 55 percent more likely to seek mental health care than foreign-born Latinos. Finally, a study based on a nationally representative sample of African Americans and Caribbean Blacks found mental health care utilization rates around 10 percent for both ethnic groups (Jackson et al. 2007). This study identified an even greater nativity-based disparity in utilization rates than observed among other ethnic groups—an 18 percent utilization rate for U.S.-born as compared with a 5 percent utilization rate for foreign-born African American and Caribbean Blacks. Taken together, these studies, all based on high-quality nationally representative data from the early 2000s, document a clear pattern of nativity-based disparities in mental health care utilization in the general population.

Disparities among People with a Mental Disorder

The patterns of nativity-based disparities in mental health care utilization observed in the general population largely disappear when one considers only people with a mental disorder. Wang et al. (2005) report 41.1 percent of people suffering from a mental disorder sought treatment in the prior 12 months (N = 1,443). They found no significant differences across racial/ethnic groups in the likelihood of utilizing mental health care conditional on suffering from a mental disorder. Furthermore, none of the studies of specific racial/ethnic group found any national origin or nativity-based differences in the mental health care utilization once they restricted the sample to people suffering from a mental disorder.

Alegria and colleagues (2008), however, did find racial/ethnic disparities in types of depression treatment (none, general medical, and mental specialty care) among people with any depressive disorder in the past 12 months (n = 1,082). Among people with the condition, 64 percent of Latinos, 69 percent of Asians, and 59 percent of African Americans received no depression treatment, compared with 40 percent of non-Latino whites. Another study (N = 1,198) found

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1Mental health care providers include psychiatrists, general practitioners or family physicians, any other type of physician, social workers, counselors, any other mental health professional, religious or spiritual advisors, or any other type of healer (e.g., chiropractors, herbalists, or spiritualists).

2In this section and throughout the paper, we refer to people who meet DSM-based criteria for depressive and anxiety disorders on a community-based survey as having a mental disorder. In reality, of course, survey instruments may miss some people who have a disorder and conversely flag some people as having a disorder when they do not (Horwitz 2002).
persisting gaps in the use of any mental health care, general medical care, or specialty mental health care between blacks and whites but not between Latinos and whites in 1990–1992 and 2001–2003 time periods (Ault-Brutus 2012). These two studies did not consider nativity-based disparities.

**Acculturation and Mental Health Care Utilization**

Acculturation, and the closely related concept of assimilation, has a long history in sociology. Early work explored the experience of European immigrants around the turn of the nineteenth century based on a unidirectional model of assimilation (Gordon 1964; Warner and Srole 1945). An expanded consideration of immigrants from Asia and from Central and South America as well as a reconsideration of earlier European immigrants complicated the unidirectional model and identified different processes of acculturation and assimilation across racial-ethnic groups (Alba and Nee 1997; Perlmutter and Waldinger 1997; Portes and Rumbaut 2001).

At the individual level, acculturation encompasses changes in individuals’ attitudes, values, and identity as a result of being in contact with other cultures. Berry and colleagues (Berry 1980; Segall et al. 1999) proposed a two-dimensional model of acculturation in which one dimension represented “contact and participation (to what extent should immigrants become involved in other cultural groups, or remain primarily among themselves)” and the other dimension represented “cultural maintenance (to what extent are cultural identity and characteristics considered to be important and their maintenance striven for)” (Segall et al. 1999:304–05).

Szapocznik and colleagues (1978) elaborated on the concept of acculturation as specific changes in behaviors and values. They proposed that acculturation includes a behavioral dimension consisting of language use and active participation in cultural practices of the host society (e.g., food consumption) and another value dimension that includes relational style, person-nature relationships, beliefs about human nature, and time orientation. Further empirical research pointed to acculturation and enculturation (re/learning and maintaining the norms of the indigenous culture) having four dimensions: *behavior, values, knowledge, and identity* (Kim and Abreu 2001). *Behavior* is reflected in friendship choices, preferences for TV programming and reading, participation in cultural activities, contact with original culture, language use, and food and music preferences. *Values* encompass attitudes and beliefs about social relations, cultural customs, and cultural traditions, as well as gender roles and attitudes and health and illness–related ideas. *Knowledge* is defined in terms of specific information about the culture of origin and the dominant culture (e.g., history, political figures). *Cultural identity* refers to attitudes toward one’s cultural identification (e.g., preferred name in the original language vs. in the language of the dominant culture; a concept similar to *ethnic and racial identity*), attitudes toward original and dominant culture groups, and the level of comfort toward the two types of groups. Despite the four dimensions being considered distinct, correlations among the dimensions were not ruled out (Kim and Abreu 2001).

Considering these theoretical refinements and growing empirical evidence, acculturation is typically conceptualized as a multidimensional construct with domains that include, for example, (1) English language proficiency, (2) racial-ethnic preferences for socialization, (3) knowledge of culture-specific history, (4) engagement in culturally specific behaviors (e.g., diet, music, and TV), and (5) a sense of cultural identity (see e.g., Kim and Abreu 2001; Lara et al. 2005; Thomson and Hoffman-Goetz 2009). Many studies, however, rely on proxies to measure acculturation, such as years spent in the United States, U.S. citizenship, or distinguishing first-from second-generation immigrants. As discussed in the following section, this study draws on items for three scales that capture the language, racial-ethnic preferences for socialization, and cultural identity dimensions of acculturation.

On balance, past studies find that a greater degree of acculturation is associated with relatively poor health behaviors and worse health (Gordon-Larsen et al. 2003; Gorman, Read, and Krueger 2010; Lara et al. 2005; Lopez-Gonzalez, Aravena, and Hummer 2005; Markides and Eschbach 2005) and mental health in particular (Moscicki et al. 1989; Vega, Sribney, and Achara-Abrahams 2003). The health declines associated with acculturation are generally attributed to the immigrant health paradox, namely, that immigrants in general are healthier than one would expect and that advantage fades with acculturation.

Although acculturation is associated with worse health outcomes, past studies have generally found a positive association with accessing health care (Abe-Kim et al. 2007; Alegria et al. 2002; Chen and Vargas-Bustamante 2011; Chesney et al. 1982; Lara et al. 2005; Marks, Garcia, and Solis 1990; Wells et al. 1989). The positive association is typically attributed to a combination of factors including a higher degree of English language proficiency that helps with navigating the health care system, greater access to health care, and particularly with mental health, a reduction in cultural stigmas associated with issues surrounding mental health and seeking mental health care (Abe-Kim et al. 2007; Alegria et al. 1991, 2002, 2008).

**Data and Methods**

Data for this analysis came from the National Epidemiological Survey on Alcohol and Related Conditions, a two-wave longitudinal survey (Grant and Dawson 2006). NESARC includes a nationally representative sample of the civilian, noninstitutionalized population of people ages 18 and older living in the United States and the District of Columbia (including Alaska and Hawaii). NESARC includes people living in households and in the following noninstitutional group quarters: boarding houses, rooming houses, nontransient hotels and motels,
of 34,653 respondents at Wave II, 3,487 met the criteria for at least one of the mood disorders, and 4,570 met the criteria for at least one of the anxiety disorders. From the mood disorder analysis sample, an additional 2 cases were discarded due to missing information on racial-ethnic origin, and an additional 330 cases were excluded who were of Canadian, Australian, or Middle Eastern origins, leaving N = 4,239.3

3A number of respondents (N = 1,470) meet the criteria for both a mood disorder and an anxiety disorder. In auxiliary analyses, we included an indicator for comorbid mood and anxiety disorders in our primary analysis of treatment and found that the inclusion of the indicator did not significantly affect the parameter estimates for first- and second-generation immigrants.

NESARC collected information on mental health care utilization as follows. There are separate sections in the questionnaire for mood and anxiety disorders. Within each section, a series of questions concerning mental health care was asked only of respondents who met the diagnostic criteria for the specific types of disorders. The series of questions concerning mental health care utilization asked of respondents who met the diagnostic criteria for some form of mental disorder included: (1) Since your LAST interview, did you go to any kind of counselor, therapist, doctor, psychologist or any person like that to [reference to specific disorder]; (2) Since your LAST interview, were you a patient in a hospital for at least one night because you [reference to specific disorder]; (3) Since your LAST interview, did you go to an emergency room for help during any time when you [reference to specific disorder]; and (4) Since your LAST interview, did a doctor prescribe any medicines or drugs to [reference to specific disorder]. The last interview occurred roughly three years prior—namely, there’s a three-year gap between Waves I and II—therefore NESARC included an additional question to elicit whether respondents utilized mental health care in the past year to be consistent with the one-year period considered in the diagnostic criteria. Respondents who indicated yes to any of the preceding four questions were asked, “During the last 12 months, did you go anywhere or see anyone to get help for [reference to specific disorder]?” This final question is used in this analysis to identify respondents who utilized any type of mental health care. Thirty-six percent of respondents suffering from a mood disorder and 22 percent suffering from an anxiety disorder reported utilizing mental health care in the past year.

Nativity Status and Racial-ethnic Origin

The analysis differentiates first-generation immigrants, second-generation immigrants (defined as people who had at least one parent born outside the United States), and third- or higher generation immigrants (treated as non-immigrants) along with five categories of racial-ethnic origins based on responses to a race/ethnicity question and a national origin question. The five categories are (1) European, (2) African, (3) Asian or Pacific Islander, (4) Hispanic (Mexican, Central American, Cuban, South American, and Other Spanish-speaking Caribbean or West Indian), and (5) Puerto Rican (see Appendix A for a complete list of nationalities included and additional details about the coding of each racial-ethnic group). For people of Puerto Rican origin, those born in Puerto Rico are coded as first-generation immigrants, and those who had at least one parent born in Puerto Rico are coded as second-generation immigrants. Table 1 reports the proportion of respondents utilizing mental health care by nativity status, and Table 2 reports the joint distribution of nativity status and racial-ethnic origins in the samples of people suffering from either a mood or an anxiety disorder.
Acculturation Factors

The second aim of this study involves analyzing the relationships between different dimensions of acculturation and mental health care utilization among first- and second-generation immigrants. As discussed previously, acculturation is a multidimensional concept, and this analysis draws on four different measures to capture the different dimensions (see Appendix B for details about the individual items and additional descriptive statistics). All of the measures come from Wave II (they were not included in Wave I). The first measure is the number of years the respondent spent in the United States (see Table 3). This is a commonly used, albeit crude, measure of acculturation. The second measure is a scale that captures the language dimension of acculturation. The scale was constructed as the average of seven indicators that includes the language respondents read/speak, the language respondents read/spoke as a child, the language respondents speak at home, the language respondents think in, the language respondents speak with friends in, the language respondents usually watch TV or listen to the radio in, and the language respondents prefer to watch TV or listen to the radio in. Responses to the questions included: (1) only ___, (2) more ___ than English, (3) both equally, (4) more English than ___, and (5) only English where ___ was Spanish, Asian/Pacific Islander language, or “non-English” depending on the respondent.

The third measure is a scale that captures the social preferences dimension of acculturation. The scale was constructed as the average of four indicators that include the race/ethnicity of respondent’s close friends, the racial/ethnic composition of social gatherings the respondent attends, the race/ethnicity of the people respondents visit, and the respondent’s desired race/ethnicity of his or her children’s friends. Responses ranged from (1) all ___, (2) more ___ than other ethnic groups, (3) about half and half, (4) more other ethnic group than ___, and (5) all other ethnic groups where the blanks are Hispanics/Latinos, Asian/Pacific Islander, or “my race/ethnic group” depending on the respondent.

The fourth measure is a scale that captures the identity dimension of acculturation. The scale was constructed as the average of eight indicators that include a strong sense of self as ___, identify with other ___, most close friends are ___, ___ heritage is important in your life, more comfortable in social situations with ___, proud of ___ heritage, ___ background plays a big part in interactions, and values/attitudes/behaviors shared by ___, where the blanks are either Hispanics/Latinos or “other racial/ethnic groups” depending on the respondent. Responses ranged from 1 = strongly agree to 6 = strongly disagree.

Additional Covariates

The analyses adjust for a number of sociodemographic correlates that have potential relationships with mental health care utilization among first- and second-generation immigrants. As discussed previously, acculturation is a multidimensional concept, and this analysis draws on four different measures to capture the different dimensions (see Appendix B for details about the individual items and additional descriptive statistics). All of the measures come from Wave II (they were not included in Wave I). The first measure is the number of years the respondent spent in the United States (see Table 3). This is a commonly used, albeit crude, measure of acculturation. The second measure is a scale that captures the language dimension of acculturation. The scale was constructed as the average of seven indicators that includes the language respondents read/speak, the language respondents read/spoke as a child, the language respondents speak at home, the language respondents think in, the language respondents speak with friends in, the language respondents usually watch TV or listen to the radio in, and the language respondents prefer to watch TV or listen to the radio in. Responses to the questions included: (1) only ___, (2) more ___ than English, (3) both equally, (4) more English than ___, and (5) only English where ___ was Spanish, Asian/Pacific Islander language, or “non-English” depending on the respondent.

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care utilization (see Appendix B for descriptive statistics). These covariates include age, sex, marital status (married, cohabiting, previously married, never married), the presence of any child age 0 to 17 in the household, region (northeast, midwest, south, and west), community type (center of a metropolitan statistical area [MSA], non-center of an MSA, not an MSA), education (years of schooling), employment status (not working, part-time, full-time), household income, and insurance coverage (private, public, other, no insurance). All of the sociodemographic measures come from Wave I.

**Analytic Strategy**

Both aims are assessed using a series of separate logit models for respondents with mood disorders and respondents with anxiety disorders with mental health care utilization as the outcome. For the first aim, the series of logit models consists of (1) a bivariate model that just includes nativity status, (2) a model that adds racial-ethnic origin and all of the sociodemographic covariates, and (3) a series of fully adjusted models stratified by racial-ethnic groups. An auxiliary analysis also examined interactions between nativity status and sex, but no significant interactions were found. For the second aim, the sample is restricted to just first- and second-generation immigrants, and the measures of acculturation are added to the models. For this analysis, the sample sizes are insufficient for the series of models within racial-ethnic groups. Instead, in addition to the complete sample, separate models examine European immigrants and non-European immigrants.

Stata 14 was used to prepare the data and conduct the analysis (StataCorp 2015). All of the models incorporate the NESARC Wave II sample weights and adjust for the complex survey design. The NESARC sample was weighted to adjust for nonresponse at the household and person levels, the selection of one person per household, and the oversampling of young adults, Hispanics, and blacks (Grant and Dawson 2006). Once weighted, the data are representative of the U.S. population for various sociodemographic variables, including region, age, sex, race, and ethnicity based on the 2000 decennial census. The Stata code to prepare the data and conduct the analysis is maintained in a public repository to facilitate replications and extensions (https://github.com/sbauldry/imhtrt).

**Results**

**Aim 1: Mental Health Care Utilization Disparities**

The analysis begins with a bivariate consideration of disparities in mental care utilization by nativity status (see Table 4). For both mood disorders and anxiety disorders, the odds of mental health care utilization are, respectively, 43 percent and 33 percent lower for first-generation immigrants as compared with non-immigrants. The odds of mental health care utilization are not significantly different for second-generation as compared with non-immigrants for either mood disorders or anxiety disorders, but the first-generation immigrants have significantly lower odds of treatment for both categories of disorders than second-generation immigrants.

### Table 3. Descriptive Statistics for Acculturation Measures.

|                      | Mood Disorder Sample |                          | Anxiety Disorder Sample |                          |
|----------------------|----------------------|--------------------------|-------------------------|--------------------------|
|                      | First Generation (N = 441) | Second Generation (N = 481) | First Generation (N = 527) | Second Generation (N = 567) |
|                      | Mean  | SD    | Mean  | SD    | Mean  | SD    | Mean  | SD    |
| Years in the US      | 24.31 | 13.11 | —     | —     | —     | —     | —     | —     |
| Language             | 2.83  | 1.34  | 4.46  | .85   | 2.75  | .89   |
| Social preferences   | 2.59  | .94   | —     | —     | —     | —     |
| Identity             | —     | —     | 2.01  | .92   | 2.49  | .92   |
| Years in the US      | 25.27 | 14.60 | —     | —     | —     | —     |
| Language             | 2.88  | 1.34  | 4.50  | .81   | 2.71  | .88   |
| Social preferences   | 2.61  | .90   | 2.47  | .94   |
| Identity             | 2.05  | .89   | —     | —     |

Note: Unweighted descriptives. One first-generation immigrant and four second-generation immigrants are excluded due to missing data for at least one of the acculturation measures in the mood disorders sample. Two first-generation immigrants and three second-generation immigrants are excluded due to missing data for at least one of the acculturation measures in the anxiety disorders sample. All of the acculturation measures are scaled such that higher values indicate greater degrees of acculturation. The language and social preferences scales range from 1 to 5 and the identity scale ranges from 1 to 6. See Appendix B, Table A1 for descriptive statistics for individual items and Cronbach’s alphas.
Once one adjusts for racial-ethnic origins and sociodemographic covariates, the significant reduction in odds for first-generation immigrants as compared with non-immigrants remains for mood disorders but not for anxiety disorders. The difference in the odds of treatment between first generation and second generation is not significant for mood disorders but remains significant for anxiety disorders. It is also notable that people of African and Hispanic origin have lower odds of utilizing mental health care for either mood or anxiety disorders than people of European origins.

Stratifying the analysis by racial-ethnic origins reveals that for mood disorders, first-generation immigrants of African and Hispanic origin have significantly lower odds, 74 percent and 56 percent, respectively, than non-immigrants. This same pattern is evident for anxiety disorders, but the parameter estimates are not statistically significant.

Table 4. Estimates (Odds Ratios) from Logit Models Regressing Mental Health Care Utilization on Sets of Covariates.

|                  | Bivariate | Adjusted | European | African | Hispanic |
|------------------|-----------|----------|----------|---------|----------|
| **Treatment for Mood Disorders** |           |          |          |         |          |
| Non-immigrant (reference)       |           |          |          |         |          |
| Second generation               | .91       | .93      | .87      | .62     | .71      |
|                                 | (.12)     | (.13)    | (.15)    | (.29)   | (.27)    |
| First generation                | .57***    | .66*     | 1.08     | .26*    | .44*     |
|                                 | (.09)     | (.13)    | (.32)    | (.16)   | (.15)    |
| European (reference)            |           |          |          |         |          |
| African                       | .44****   |          |          |         |          |
|                                 | (.06)     |          |          |         |          |
| Asian/Pacific Islander          | .50       |          |          |         |          |
| Hispanic                      | .63*      |          |          |         |          |
|                                 | (.19)     |          |          |         |          |
| Puerto Rican                  | .97       |          |          |         |          |
|                                 | (.29)     |          |          |         |          |
| N                               | 3,230     | 3,230    | 1,917    | 646     | 476      |
| Second versus first generation p value | .02 | .11 | .51 | .22 | .18 |

|                  | Bivariate | Adjusted | European | African | Hispanic |
|------------------|-----------|----------|----------|---------|----------|
| **Treatment for Anxiety Disorders** |           |          |          |         |          |
| Non-immigrant (reference)       |           |          |          |         |          |
| Second generation               | 1.23      | 1.31     | 1.36     | .49     | .90      |
|                                 | (.17)     | (.18)    | (.23)    | (.20)   | (.39)    |
| First generation                | .67*      | .70      | .87      | .32     | .54      |
|                                 | (.12)     | (.15)    | (.26)    | (.20)   | (.22)    |
| European (reference)            |           |          |          |         |          |
| African                       | .55****   |          |          |         |          |
|                                 | (.08)     |          |          |         |          |
| Asian/Pacific Islander          | .99       |          |          |         |          |
| Hispanic                      | .57**     |          |          |         |          |
|                                 | (.34)     |          |          |         |          |
| Puerto Rican                  | 1.01      |          |          |         |          |
|                                 | (.26)     |          |          |         |          |
| N                               | 4,239     | 4,239    | 2,556    | 900     | 559      |
| Second versus first generation p value | .00 | .01 | .18 | .56 | .26 |

Note: Odds ratios with standard errors in parentheses. Second versus first generation p value refers to the p value from a Wald test for the difference in coefficients between second-generation and first-generation immigrants. Models weighted using National Epidemiological Survey on Alcohol and Related Conditions (NESARC) Wave II sample weights. The adjusted model and all of the models for the specific racial-ethnic groups include age, sex, marital status, child in the household, region, community type, education, work status, household income, and insurance type. Due to the small sample sizes, we do not report parameter estimates from models for Asian/Pacific Islanders and Puerto Ricans.

*p < .05. **p < .01. ***p < .001.
As an additional aid to interpretation, Figure 1 illustrates the predicted probabilities and 95 percent confidence intervals from the fully adjusted models using the overall sample and the samples stratified by racial-ethnic origin. Beginning with the combined sample, the predicted probabilities of treatment for mood disorders are a little less than .4 for non-immigrants and second-generation immigrants and around .3 for first-generation immigrants. The predicted probabilities of treatment for anxiety disorders are all lower, around .2, and the predicted probability for second-generation immigrants is higher, though with an overlapping confidence interval, than for non-immigrants.

For both mood and anxiety disorders, the predicted probabilities are pretty similar across nativity status for people of European origin (around .4 for mood disorders and a bit over .2 for anxiety disorders). This is in contrast with the pattern among people from African and Hispanic origins in which a clearer gradient is evident, especially for treatment for mood disorders.

**Figure 1.** Predicted probabilities with 95 percent confidence intervals of mental health care utilization for mood disorders and anxiety disorders by nativity status based on the fully adjusted models reported in Table 4. Eur refers to European, Afr refers to African, and His refers to Hispanic. Due to small sample sizes, we do not report separate predicted probabilities for Asian/Pacific Islanders and Puerto Ricans.

As an additional aid to interpretation, Figure 1 illustrates the predicted probabilities and 95 percent confidence intervals from the fully adjusted models using the overall sample and the samples stratified by racial-ethnic origin. Beginning with the combined sample, the predicted probabilities of treatment for mood disorders are a little less than .4 for non-immigrants and second-generation immigrants and around .3 for first-generation immigrants. The predicted probabilities of treatment for anxiety disorders are all lower, around .2, and the predicted probability for second-generation immigrants is higher, though with an overlapping confidence interval, than for non-immigrants.

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**Aim 2: Acculturation and Mental Health Care Utilization**

The second aim of this analysis examines whether the four measures of acculturation are associated with mental health care utilization. Table 5 reports the estimated odds ratios from models using the full sample and then stratified by European and non-European racial-ethnic origins. In the full sample, the identity dimension of acculturation is associated with both treatment for mood and anxiety disorders. A unit increase, equivalent to roughly one standard deviation, is associated with a 42 percent increase and a 37 percent increase in the odds of treatment for mood and anxiety disorders, respectively. The estimated odds ratio for identity remains significant and of the same magnitude in the non-European sample for mood disorders but is otherwise non-significant for people of European origins and for either group for anxiety disorders. The estimates, however, are all of a similar magnitude, so the lack of statistical significance likely reflects a combination of the smaller sample sizes and changes in the residual variance.

**Discussion**

This study had two aims to contribute to our understanding of nativity-based mental health care disparities. The first aim sought to evaluate the extent of mental health care disparities along two dimensions: (1) distinguishing first- and second-generation immigrants from third-generation or higher immigrants and natives (labeled as non-immigrants) and (2) examining mental health care disparities among a broader group of racial-ethnic origins than has been
Table 5. Estimates (Odds Ratios) from Logit Models Regressing Mental Health Care Utilization on Sets of Covariates and Acculturation Measures among First- and Second-generation Immigrants.

|                          | Treatment for Mood Disorders | Treatment for Anxiety Disorders |
|--------------------------|-----------------------------|--------------------------------|
|                          | All            | European | Non-European   | All            | European | Non-European   |
| Second generation (reference) |                |          |                |                |          |                |
| First generation          | 0.67           | 1.24     | 0.43           | 0.61           | 0.98     | 0.46*           |
| Years in the US           | 0.99           | 0.98     | 1.00           | 1.00           | 1.01     | 0.99           |
| Language                  | 1.17           | 1.27     | 0.93           | 1.11           | 1.50     | 0.81           |
| Social preferences        | 0.85           | 0.77     | 0.98           | 0.85           | 0.53     | 0.13           |
| Identity                  | 1.42**         | 1.42     | 1.42*          | 1.37*          | 1.45     | 1.32           |
| N                         | 922            | 315      | 607            | 1,094          | 400      | 694            |

Note: Odds ratios with standard errors in parentheses. Models weighted using National Epidemiological Survey on Alcohol and Related Conditions (NESARC) Wave II sample weights. The adjusted model and all of the models for the specific racial-ethnic groups include age, sex, marital status, child in the household, region, community type, education, work status, household income, and insurance type.

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

considered in past studies (in particular, among people from European origins). In support of this aim, the study draws on data from a much larger, nationally representative sample than has been used in past studies. The results indicate first-generation immigrants have lower rates of mental health care utilization than either second-generation immigrants or non-immigrants for mood disorders and than second-generation immigrants for anxiety disorders. Furthermore, nativity-based disparities in treatment are particularly notable among people from African and Hispanic origin, while there is little evidence of any nativity-based disparities among people from European origins. Our findings are consistent with and complement past reports. Abe-Kim and colleagues (2007) have found nativity status and generation to be the most important indicators of within-group differences in mental health services use among Asian Americans. In their study, any service and specialty mental health use increased with generational status (first, second, and third or later generation), though in the use of general medical services for mental health problems, the difference was noted mainly between first or second generation and the third or later generation. Another study observed that poor Latinos and Africans not classified as poor were less likely than their white counterparts to receive specialty mental health services (Alegría et al. 2007). Our study complements the earlier reports by specifying psychiatric diagnoses and using multiple nativity and racial-ethnic origin groupings while controlling for socioeconomic factors. Further focus on Latinos and African Americans in future studies is needed as these are two key groups for which eliminating disparities in mental health care could result in substantial financial savings in addition to reducing human cost of mental disease.

The second aim of the study was to assess whether different dimensions of acculturation are associated with mental health care utilization among first- and second-generation immigrants. Results indicate that of years spent in the United States and the three dimensions of acculturation, only the identity dimension is associated with treatment. In particular, a higher degree of acculturation with respect to identity is associated with an increased likelihood of mental health care utilization for both mood and anxiety disorders. Acculturation with respect to racial-ethnic identity may in part reflect a movement away from or a rejection of cultural beliefs among some groups (e.g., Asians) that stigmatize mental health problems and seeking treatment (SAMSA 2015; Suinn 2010). It is surprising that a significant association with the language dimension of acculturation did not emerge as it has been suggested that language barriers may account for some of the observed disparities in mental health care (e.g., Chen and Vargas-Bustamante 2011). Evidence for the importance of language barriers in past studies, however, has been mixed (Derr 2015). Some authors suggest that language preference may not be as good an indicator in studying immigrant health as English proficiency. For example, English proficiency had more consistent associations with self-reported health than language preference (Gee, Walsemann, and Takeuchi 2010). The study authors posit that how people interpret the questions related to language preference may vary while English proficiency questions appear more robust. Racial-ethnic differences, however, in the association of English proficiency and self-reported health have been reported (Lommel and Chen 2016), and more importantly, other research has found no association between English language proficiency and use of mental health services (Abe-Kim et al. 2007) and psychiatric drug use (Chen and Vargas-Bustamante 2011).
There are a couple limitations of this study that should be kept in mind. First, NESARC does not include information on whether immigrants are or are not documented. Given the sampling frame, it is possible that NESARC includes some undocumented immigrants, but it is likely that undocumented immigrants are underrepresented in this analysis. Rates of mental health services use among undocumented immigrants are difficult to estimate, but undocumented Latinos have been reported to have lower rates of service use (mental health appointments and lifetime inpatient and outpatient service) than U.S.-born Latinos and Latino immigrants with legal status (Perez and Fortuna 2005). Also, lack of U.S. citizenship was found to be associated with a very low, 6 percent rate of treatment use, which is 40 percent of the rate observed for U.S. citizens (Lee and Matejkowski 2012). In other studies, not having documentation prohibited some immigrants from seeking treatment, for example, due to fear of being asked for documentation and being deported (Derr 2015). As documentation status appears to have a strong effect on the utilization of mental health care, the disparities observed in our study could be even greater. Future studies should seek to address the role of documentation status in mental health care use among diverse racial-ethnic and nativity-based groups.

Second, the NESARC has a more limited method of documenting mental health care services than some past studies (e.g., Abe-Kim et al. 2007; Alegría et al. 2007). In the NESARC, it is not possible to analyze the specific type of mental health care received. For example, in the general population, Hispanics are less likely than whites to use outpatient services, and blacks and Hispanics are less likely than whites to use prescription medication (SAMSA 2015). Racial-ethnic differences in screening for mental disorders have also been reported (Hahn et al. 2015). While we were unable to examine various types of treatment, the other studies did not consider nativity-based differences in treatment. Thus, future research should focus on addressing both limitations. There is also some evidence that provider characteristics (e.g., collective vs. individualistic treatment approach) are important to certain groups (e.g., Asians; Suinn 2010) and that immigrants and racial-ethnic minorities rely on more informal sources of mental health care that may have been missed by the NESARC questions (Derr 2015). In particular, immigrants often turn to family, religious leaders, and friends first for support with mental health problems, seeing formal treatment as the last resort. However, alternative medicine (e.g., acupuncture, natural healing) for mental health problems has been reported not to lower formal mental health care use among immigrants (Derr 2015).

These limitations notwithstanding, drawing on a larger sample than has been used in past studies, this study documents nativity-based disparities in mental health care utilization for both mood and anxiety disorders and variation in these disparities across different racial-ethnic groups. In addition, this study finds evidence that the racial-ethnic identity dimension of acculturation has a relationship with mental health care utilization, and future studies should seek to explore this relationship in greater detail.

Appendix A

The following list indicates the specific reports of origin or descent used in the coding of racial-ethnic origins.

- European: Austrian, Belgian, Czechoslovakian, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Irish, Italian, Norwegian, Polish, Portuguese, Russian, Scottish, Spanish (Spain), Swedish, Swiss, Welsh, Yugoslavian, Other Eastern European, Other Spanish
- African: African American, African (e.g., Egyptian, Nigerian, Algerian), Other Caribbean or West Indian (non-Spanish speaking)
- Asian/Pacific Islander: Chinese, Filipino, Guamanian, Indian/Afghanistani/Pakistani, Indonesian, Japanese, Korean, Malaysian, Samoan, Taiwanese, Vietnamese, Other Asian, Other Pacific Islander
- Hispanic: Central American, Chicano, Cuban, Mexican, Mexican American, South American, Other Caribbean or West Indian (Spanish speaking)
- Puerto Rican: Puerto Rican

For any respondent who did not report a country of national origin or descent (N = 131 for the mood disorder sample and N = 171 for the anxiety disorder sample), we relied on self-reported racial-ethnic identity to code racial-ethnic origins as follows.

- Non-Hispanic white: coded as European
- Non-Hispanic black: coded as African
- Non-Hispanic Asian/Native Hawaiian/Pacific Islander: coded as Asian/Pacific Islander
- Hispanic or Latino: coded as Hispanic

Appendix B

Table A1 provides descriptive statistics for the individual items for the language, social preferences, and identity scales and Cronbach’s alphas. Table A2 provides descriptive statistics for the acculturation measures by European and non-European respondents. Table A3 provides descriptive statistics for the sociodemographic covariates that are included in the adjusted models.
**Table A1.** Descriptive Statistics for Individual Items of Acculturation Scales.

|                           | Mood Disorder Sample | Anxiety Disorder Sample |
|---------------------------|----------------------|-------------------------|
|                           | First Generation     | Second Generation       | First Generation     | Second Generation       |
|                           | Mean | SD   | Mean | SD   | Mean | SD   | Mean | SD   |
| Language                  |      |      |      |      |      |      |      |      |
| Read/speak                | 2.78 | 1.35 | 4.38 | .93  | 2.84 | 1.34 | 4.42 | .89  |
| Read/speak as a child     | 1.91 | 1.45 | 4.02 | 1.36 | 1.95 | 1.48 | 4.06 | 1.36 |
| Speak at home             | 2.69 | 1.60 | 4.42 | 1.10 | 2.69 | 1.62 | 4.52 | .98  |
| Think in                  | 2.74 | 1.64 | 4.56 | .95  | 2.76 | 1.64 | 4.54 | .96  |
| Speak with friends        | 2.90 | 1.63 | 4.55 | .97  | 2.97 | 1.60 | 4.58 | .90  |
| Listen to radio/TV        | 3.37 | 1.54 | 4.60 | .86  | 3.43 | 1.53 | 4.66 | .78  |
| Prefer to listen to radio/TV | 3.45 | 1.56 | 4.68 | .82  | 3.52 | 1.56 | 4.68 | .81  |
| Cronbach’s alpha          | .95  | .93  | .94  | .92  |      |      |      |      |
| Social preferences        |      |      |      |      |      |      |      |      |
| Close friends             | 2.40 | 1.16 | 2.61 | 1.15 | 2.40 | 1.14 | 2.55 | 1.14 |
| Social gatherings         | 2.62 | 1.18 | 2.90 | 1.04 | 2.63 | 1.16 | 2.83 | 1.02 |
| People you visit          | 2.31 | 1.21 | 2.50 | 1.20 | 2.30 | 1.18 | 2.48 | 1.13 |
| Desired children’s friends| 3.11 | .95  | 3.03 | .97  | 3.14 | .90  | 3.02 | .94  |
| Cronbach’s alpha          | .84  | .83  | .81  | .85  |      |      |      |      |
| Identity                  |      |      |      |      |      |      |      |      |
| Strong sense of self      | 1.74 | 1.05 | 2.10 | 1.19 | 1.76 | 1.05 | 2.07 | 1.24 |
| Identify with others      | 1.83 | 1.01 | 2.19 | 1.12 | 1.81 | .96  | 2.12 | 1.12 |
| Close friends             | 2.31 | 1.43 | 2.84 | 1.54 | 2.35 | 1.39 | 2.79 | 1.51 |
| Heritage important        | 1.74 | 1.07 | 2.24 | 1.30 | 1.77 | 1.06 | 2.23 | 1.30 |
| Comfortable in social settings | 2.48 | 1.51 | 3.05 | 1.42 | 2.54 | 1.49 | 3.09 | 1.48 |
| Proud of heritage         | 1.47 | .75  | 1.79 | .93  | 1.51 | .83  | 1.78 | .95  |
| Important in interactions | 2.22 | 1.46 | 2.95 | 1.57 | 2.28 | 1.40 | 2.96 | 1.53 |
| Shared values, attitudes, and behaviors | 2.24 | 1.34 | 2.72 | 1.35 | 2.34 | 1.35 | 2.75 | 1.33 |
| Cronbach’s alpha          | .89  | .85  | .88  | .86  |      |      |      |      |

Note: Unweighted descriptives.

**Table A2.** Descriptive Statistics for Acculturation Measures by European and Non-European Origins.

|                           | Mood Disorder Sample | Anxiety Disorder Sample |
|---------------------------|----------------------|-------------------------|
|                           | European             | Non-European            | European             | Non-European            |
|                           | Mean | SD   | Mean | SD   | Mean | SD   | Mean | SD   |
| Years in the US           | 27.98 | 12.83 | 23.45 | 13.04 | 30.46 | 17.17 | 23.89 | 13.52 |
| Language                  | 4.53 | .91  | 3.24 | 1.38 | 4.58 | .83  | 3.21 | 1.35 |
| Social preferences        | 2.61 | .88  | 2.71 | .94  | 2.55 | .81  | 2.73 | .93  |
| Identity                  | 2.57 | .91  | 2.10 | .93  | 2.54 | .93  | 2.11 | .91  |

Note: Unweighted descriptives. Years in the US reported for first-generation immigrants only.

**Table A3.** Descriptive Statistics for Sociodemographic Covariates.

|                           | Mood Disorder Sample | Anxiety Disorder Sample |
|---------------------------|----------------------|-------------------------|
|                           | Mean | SD   | Mean | SD   |
| Age                       | 44.52 | 15.47 | 45.57 | 15.22 |
| Female                    | .71  | .45  | .72  | .45  |
| Never married             | .28  | .45  | .25  | .43  |

(continued)
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Appendix A3. (continued)

|                      | Mood Disorder Sample | Anxiety Disorder Sample |
|----------------------|----------------------|-------------------------|
|                      | Mean | SD   | Mean | SD   |
| Previously married   | .27  | .44  | .27  | .44  |
| Cohabitng            | .03  | .18  | .04  | .19  |
| Married              | .42  | .49  | .44  | .50  |
| Child in household   | .44  | .50  | .43  | .50  |
| Northeast            | .18  | .39  | .18  | .38  |
| Midwest              | .22  | .42  | .22  | .41  |
| South                | .36  | .48  | .38  | .48  |
| West                 | .24  | .43  | .23  | .42  |
| Center MSA           | .38  | .48  | .36  | .48  |
| Non-center MSA       | .45  | .50  | .47  | .50  |
| Non-MSA              | .17  | .38  | .18  | .38  |
| Education            | 9.56 | 2.26 | 9.66 | 2.25 |
| Not working          | .40  | .49  | .38  | .49  |
| Part-time work       | .12  | .32  | .11  | .31  |
| Full-time work       | .48  | .50  | .51  | .50  |
| Household income ($) | 4.13 | 4.01 | 4.57 | 4.54 |
| No insurance         | .21  | .41  | .20  | .40  |
| Other insurance      | .02  | .13  | .02  | .14  |
| Public insurance     | .18  | .39  | .17  | .37  |
| Private insurance    | .59  | .49  | .61  | .49  |

Note: Unweighted descriptives. MSA = metropolitan statistical area.
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