Published in final edited form as:

Issues Ment Health Nurs. 2017 April ; 38(4): 317–326. doi:10.1080/01612840.2017.1287790.

Anxiety Disorders among US Immigrants: The Role of Immigrant Background and Social-Psychological Factors

Magdalena Szaflarski^{1,*}, Lisa A. Cubbins², and Karthikeyan Meganathan³

¹Department of Sociology, University of Alabama at Birmingham, Birmingham, AL, USA

²Battelle Health and Analytics and Department of Sociology, University of Washington, Seattle, WA, USA (retired)

³Department of Family and Community Medicine, University of Cincinnati, Cincinnati, OH, USA

Abstract

This study used the National Epidemiological Survey on Alcohol and Related Conditions, a longitudinal adult sample, to estimate the rates of prevalent, acquired, and persisting anxiety disorders by nativity and racial-ethnic origin while adjusting for acculturation, stress, social ties, and sociodemographics. Prevalent and acquired anxiety disorders were less likely among foreign-born than US-born, except Puerto-Rican- and Mexican-born who had higher risks. Persisting cases were similar between foreign-born and US-born, except Asian/Pacific Islanders' lower risk. Stress and preference for socializing outside one's racial-ethnic group were associated with higher while close ties were associated with lower rates of acquired/persisting anxiety disorders.

Keywords

immigrant; foreign-born; race/ethnicity; anxiety disorder; acculturation; social ties

INTRODUCTION

Anxiety disorders are less common among newly arrived immigrants compared to US-natives (Alegria et al., 2008; Burnam, Hough, Karno, Escobar, & Telles, 1987; B. F. Grant et al., 2004). The lower risk of anxiety disorders among foreign-born versus US-born has been reported in studies grouping immigrants into a single group (Breslau et al., 2007; Breslau, Borges, Hagar, Tancredi, & Gilman, 2009) or into racial/ethnic categories such as Hispanic (Alegria, Mulvaney-Day, et al., 2007), non-Hispanic black (Williams et al., 2007), non-Hispanic white (B. F. Grant et al., 2004), and Asian-American (Breslau & Chang, 2006; Takeuchi, Alegria, Jackson, & Williams, 2007). Other studies have grouped individuals by country or region of origin and found no differential risk of anxiety disorders among Puerto Ricans and Cubans (Alegria, Canino, Stinson, & Grant, 2006; Alegria et al., 2008; Ortega, Rosenheck, Alegria, & Desai, 2000) and Western Europeans (Breslau et al., 2009) born within or outside of the US. Additionally, research has shown that any protective effect of

*Corresponding author's contact information: Magdalena Szaflarski, Department of Sociology, University of Alabama at Birmingham, HHB 460Q, 1720 2nd Ave S, Birmingham, AL 35294-1152, USA, Tel. 205-934-0825, Fax 205-975-5614, szaflam@uab.edu.

foreign birth against mental disorders declines over time, resulting in immigrants' risk of disorders resembling that for non-immigrants of the same origin (Escobar, Hoyos Nervi, & Gara, 2000).

How immigrants fare in the host country depends to a large extent on acculturation, social stress, and social support. Acculturation is the process of adopting the norms, beliefs, and practices (e.g., language) of a host culture (Mills & Henretta, 2001). According to the acculturation perspective, experiences that immigrants have after arrival in the host country can protect against or exacerbate mental health problems of immigrants (Al-Issa, 1997a). Acculturation may take several forms: assimilation, or giving up one's own ethnic identity; integration, or accepting parts of the host culture while preserving parts of the home culture; separation, or a result of segregation imposed by the dominant group; or, marginalization, or losing one's own culture while being alienated from the dominant culture (Berry, 1992, 2001). Each of these forms exerts specific – positive or negative – influences on mental health. For example, integration is sometimes linked with favorable outcomes vis-à-vis other types of acculturation (Berry, 1992), but it is not true for all ethnic/immigrant groups (Al-Issa, 1997b).

Furthermore, acculturative experience intertwined with major life changes can result in acculturative stress which can manifest itself in poor mental well-being, symptoms of depression and anxiety, or feelings of marginality and alienation (Berry, 1992). The stress explanation points to immigration-related psychosocial stressors as potential triggers for mental health problems (Al-Issa, 1997a). Social isolation and lack of social networks in the host country may deprive immigrants of needed emotional and instrumental support. This may be compounded by immigrant family separations, such as when men leave their home and family to migrate for work. In addition, immigrants often experience a culture shock and conflicts between norms and values between the original and host society, which can create tensions. Goal striving may also be stressful when there is a gap between one's aspiration and one's actual economic opportunities in the host country. It is not unusual for an immigrant's occupational status to decline due to a lack of needed skills or licenses needed to compete successfully in the host country's economy. Experiences of prejudice and discrimination in the host country based on race and/or ethnicity may cause additional stress for immigrants, leading to poorer mental health outcomes (Al-Issa, 1997a; Finch, Frank, & Hummer, 2000; Gee, Ryan, Laflamme, & Holt, 2006; Williams, Neighbors, & Jackson, 2003; Williams & Williams-Morris, 2000).

Social ties have been identified as a likely contributor to differential risks of mental disorders between foreign-born and US-born and among various racial-ethnic groups (Huang et al., 2006). Having a perception of high social support typically has beneficial effects on mental health by reducing psychological distress and buffering the impact of traumatic events (Ritsner et al. 2000; Turner & Marino 1994) and can reduce the nativity effect on mental disorders (Alegria et al. 2007c), but immigrants may have less support than US-born individuals. Some research on US Latinos has documented stronger social ties being associated with lower levels of psychopathology (Vega, Kolody, Valle, & Weir, 1991). However, levels of ethnically-based social support, and types and quality of social ties altogether, have been suggested to change with time in the US (Viruell-Fuentes & Schulz,

2009). This is related to acculturation; for example, with the acquisition of English language, immigrants become more integrated into the American society and develop more and stronger relationships with people outside of their ethnic group. It is not fully clear to what extent this can protect or damage mental health of immigrants.

Despite a growing knowledge, the role of nativity and immigrant characteristics in anxiety disorders is not well understood. In part, this is because few studies have been able to control sufficiently for social-psychological factors such as acculturation, stress, or social ties, when addressing social factors in the occurrence of anxiety disorders. Further, little is known about the immigrant incidence of or likelihood of recovery from anxiety disorders over time. Such information is critically important considering the growing number of immigrants (Camarota, 2012) and the high burden of mental health problems and racial-ethnic disparities in mental health (Gonzalez, Tarraf, Whitfield, & Vega, 2010; Smedley, Stith, & Nelson, 2003).

This study aims to close some of these gaps by focusing on changes in the risk of anxiety disorders among different immigrant groups over time. In addition, this study examines a broad range of explanatory factors, including acculturation, stress, and social ties, which may account for differences in the risk of anxiety disorders among different immigrant groups. Based on the past literature, we hypothesized that anxiety disorders would be less prevalent in most foreign-born groups versus US-born. However, we expected fewer differences by nativity in the Puerto Rican and European groups; these groups have less difficulty assimilating to the American society due to similarity between their home cultures and American culture. Further, we hypothesized that acculturation, stress, and social integration factors would help to explain the relationship between nativity, racial-ethnic origin, and the risk of anxiety disorders. For example, we hypothesized that English language proficiency and social ties would be associated with a lower while social stress and discrimination would be associated with a higher risk of anxiety disorders.

METHODS

Data

We analyzed data from 2 waves of the National Epidemiological Survey on Alcohol and Related Conditions (NESARC) (B. F. Grant et al., 2009; B.F. Grant, Kaplan, Shepard, & Moore, 2003). The NESARC sample is representative of the civilian, non-institutionalized population of individuals 18 years or older residing in the United States. Sampling procedures included over-sampling of non-Hispanic Black and Hispanic households, and within households it over-sampled 18–24 year olds. In our analysis, we used sample weights provided by NESARC to adjust for its complex sampling design and non-response at the household- and person-level. Wave 1 of the NESARC, administered in 2001–2002 by the US Census Bureau, was conducted with one randomly selected person from each household or group quarter unit in a face-to-face, computer-assisted personal interview. Wave 2 was conducted between 2004 and 2005. The sample size at Wave 1 was 43,093 (81% response rate), and 34,653 cases were re-interviewed at Wave 2 (86.7% response rate) (Ruan et al., 2008). We excluded a small number of cases that had missing data on one or more outcome

or origin variables. Thus, the unweighted sample size for this analysis was 33,373. The descriptive statistics for the sample are shown in Appendix.

Measurement

Most of the measures were assessed at both waves of the NESARC. The exceptions were social network size, level of social support, acculturation, perceived discrimination, and perceived stress, which were only measured at Wave 2.

Outcomes—*Anxiety disorders* were defined according to the DSM-IV (American Psychiatric Association, 1994; B. F. Grant et al., 2009). NESARC's diagnostic classifications were based on the Alcohol Use Disorder and Associated Disability Interview Schedule—DSM-IV Version (AUDADIS-IV), a state-of-the-art, semi-structured diagnostic interview schedule designed for use by lay interviewers. The reliability and validity of this instrument have been documented in many studies (B. F. Grant & Dawson, 2006). We used the NESARC-created indicators for 5 types of anxiety disorders (panic with/without agoraphobia, social phobia, specific phobia, and general anxiety disorder) in Wave 1 and Wave 2. Cases coded as “1” on each of the NESARC-created variables were used as the sample base to create an indicator for any anxiety disorder in the last 12 months without major depression. Cases with a DSM-IV diagnosis of major depression disorder were coded as “0.”

Predictor variables—*Nativity* was a dichotomous variable coded as US-born (primary reference category) or born outside of 50 US states (“foreign-born,” except Puerto-Rico natives). *Origin* was measured based on self-report of the respondents' racial-ethnic origin or descent. NESARC's respondents reported 59 different categories of origin. Given that some groups had small cell sizes, we used 6 racial-ethnic origin categories: African, European, Asian/Pacific Islander, Mexican, Puerto Rican, and other Hispanic/Latino.

For acculturation, we constructed measures of *language preference* and *racial-ethnic social preference* based on the *Brief Acculturation Rating Scale II* (ARSMA-II) (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) (Barry, 2001). Seven questions on *language preference* asked respondents about which language: they generally read and speak; they spoke as a child; they usually speak at home; they usually think in; they usually speak with friends; of the TV and radio programs they usually listen to; and, of the movies and TV and radio programs they prefer to watch and listen to. Response categories for the 7 questions used a 5-point scale and were: only non-English language (e.g., Spanish, Chinese, or another non-English language); more non-English language than English; both equally; more English than non-English language; and, only English. We used factor analysis to generate a single factor on language preference (Cronbach's alpha = .970).

The NESARC questions on *racial-ethnic social preference* 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 respondents of Hispanic, Asian, or Pacific Islander

descent were tailored to their specific race-ethnicity (e.g., Hispanic or Latino), and a general question along the same lines was asked respondents from other racial-ethnic groups. The pattern of possible responses was the same for all respondents and was coded as: all from my racial-ethnic group; more from my racial-ethnic group than other racial-ethnic groups; about half and half; more from other racial-ethnic groups than from my racial-ethnic group; and, all from other racial-ethnic groups. We factor-analyzed these responses to produce a score measure of *racial-ethnic social preference* (Cronbach's alpha = .833). For both *language* and *racial-ethnic social preference*, higher values indicated greater acculturation (i.e., more use of English or having more friends from ethnic groups other than one's own ethnicity).

For the third indicator of acculturation, *racial-ethnic orientation*, we used questions in the NESARC that were adapted from racial-ethnic identity scales (Barry, 2002; Phinney, 1992; Rahim-Williams et al., 2007). The questions asked how strongly the respondents agreed or disagreed 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; racial-ethnic heritage is important in their life; and, they are proud of their racial-ethnic heritage. The scale's Cronbach's alpha was .829. Higher values on the measure indicated less identification with one's own racial-ethnic group, reflecting greater acculturation and assimilation.

Stress was assessed with stressful life events and perceived stress. *Stressful life events* was the total number of the following 12 events that respondents reported experiencing in the 12 months prior to the interview: any family member or close friend died; any family or close friend had serious illness or injury; moved/anyone new came to live with you; fired or laid off from a job; unemployed and looking for a job for more than a month; trouble with their boss or a coworker; changed job, job responsibilities, or work hours; marital separation or divorce or breakup of a steady relationship; had problems with neighbor, friend, or relative; financial crisis, declaration of bankruptcy, or being unable to pay their bills; respondent or family member had serious trouble with the police or law; and, respondent or family member being crime victim. A set of 4 questions in Wave 2 provided a measure of *perceived stress in the last 12 months* (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988). The perceived stress scale was intended to assess the cognitively mediated emotional response to objective stressful events. Using factor analysis, we constructed 2 perceived stress measures: *stress related to personal life* (Cronbach's alpha = .70) and *stress related to a lack of control in life* (Cronbach's alpha = .64).

The NESARC included 6 questions on *perceived racial-ethnic discrimination* in a variety of situations during the last 12 months. We factor-analyzed these data to generate 2 factors indicating *perceived discrimination related to health services* (Cronbach's alpha = .75) and *perceived discrimination in other aspects of life* (e.g., in jobs, schooling, housing, in businesses, or by police; Cronbach's alpha = .75).

Social ties were assessed using measures of social network and level of social support. At wave 2, the NESARC included the *Social Network Index* (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997) which indicated the total number of different types of people respondents see or talk to on the phone or via internet at least once every two weeks. Using these

responses, we constructed continuous (summed) indicators for the *number of close ties* (e.g., grown children, own parents, or close friends) and the *number of instrumental ties* (e.g., students, teachers, or co-workers, or people in organizations at which they volunteer) respondents have in their social network. Higher values indicated a larger network. Furthermore, to measure *level of social support* we used the *Interpersonal Support Evaluation List* (ISEL12) (Cohen & Hoberman, 1983; Cohen, Mermelstein, Kamarck, & Hoberson, 1985), which was included at Wave 2. It had 6 questions on how true it is respondents could find someone to help them or join them in a variety of situations, including: help with daily chores if sick, seek advice about handling problems with family, go to a movie, deal with personal problems, have lunch, and get ride if stranded 10 miles from home. Applying factor analysis, we created a scale of level of social support (Cronbach's alpha = .79).

Other sociodemographic and health-related correlates of mental disorders were also assessed including age, gender, marital status, number of children in the household, education, employment status, US region, community type, household income, health insurance, overall health status, tobacco use, substance abuse, and religiosity.

Procedure of Analysis

The analysis focused on estimating 3 outcomes: the prevalence rate of anxiety disorders and the rates of acquired and persisting cases of anxiety disorders over a 3-year period. First, statistics on the prevalence, or percent with standard error, of anxiety disorders by nativity and origin were generated. The subsequent multivariable analysis entailed testing four predictive logistic regression models for each of the outcomes using a nested approach. The baseline model (Model 1) estimated the effects of nativity status on the likelihood of having anxiety disorders by origin, without accounting for any other variables. US-born Europeans were used as the reference category; however, the reference category was rotated in the analyses to generate all nativity-origin comparisons. The next step involved testing models that built on the baseline models but added sociodemographic factors (Model 2), sociodemographic and health-related factors (Model 3), and sociodemographic, health-related, and substantive factors: acculturation, stress, and social ties variables (Model 4).

Finally, an assessment was conducted of the contribution of nativity, origin, and substantive factors to the likelihood of 1) developing anxiety disorders over a 3-year period (acquired cases=diagnosis at 3 years but not at baseline) and 2) continuing versus recovering from anxiety disorders over a 3-year period (persisting cases=diagnosis both at baseline and at three-year follow-up). For these analyses, the count and percentage distributions with standard errors were first computed for the acquired and persisting cases by nativity and origin. Then logistic regression was used to model the likelihood of acquiring and continuing anxiety disorders over a 3-year period by nativity and origin, adjusting in a step-wise manner for sociodemographic, sociodemographic and health-related, and substantive factors.

All statistical analyses were conducted using SAS software (version 9.3; SAS Institute, Cary, NC). Specifically, the survey-related procedures SURVEYMEANS, SURVEYFREQ, SURVEYREG and SURVEYLOGISTIC, which accommodate complex survey designs,

were used. Thus, all estimates and tests accounted for the stratification, clustering, and unequal weighting in the sampling design. For all regression models, odds ratios (OR) with 95% confidence intervals (CI) were generated.

FINDINGS

A total of 71% of respondents were of European origin, and 14% were foreign-born (Table 1). The foreign-born were most likely to be Mexican (26%) or Asian/Pacific Islander (25%), followed by European (20%) and “Other Hispanic/Latino” (17%). In turn, the US-born were most likely to be European (79%) followed by African (12%).

The prevalence of anxiety disorders was higher among the US-born (13.1%) than among the foreign-born (8.6%, $p < 0.01$; Table 2). There were significant differences by origin ($p < 0.01$; overall distribution): the prevalence of anxiety disorders was the highest among Puerto Ricans (15.8%) and the lowest among Asian/Pacific Islanders (9.5%).

The regression results (Table 3) showed significant ($p < 0.0001$) differences in the risk of anxiety disorders by nativity and origin, most of which remained significant after adjusting for the sociodemographic, health-related, and substantive factors (Models 1–4). Generally, the foreign-born were less likely to have anxiety disorders than their US-born counterparts, with the exception of non-US born Puerto-Ricans and Mexicans. After adjusting for all factors, the foreign-born Africans, Asians/Pacific Islanders, and “other Hispanics/Latinos” remained less likely (coefficient estimates ranging 0.25–0.66, $p = 0.002$) while non-US born Puerto-Ricans and Mexicans were more likely (coefficient estimates of 0.16 and 0.77, respectively; $p = 0.006$) than their US-born counterparts to have anxiety disorders. All substantive factors except racial-ethnic orientation and number of instrumental ties were associated with the likelihood of anxiety disorders over and beyond other factors (Table 4). Stressful life events, perceived stress (both personal life and control), perceived racial-ethnic discrimination—other, language preference, and preference for other racial-ethnic groups socially were positively associated with the risk of anxiety disorders (coefficient estimates ranging 0.05–0.11, $p = 0.0002$). Perceived racial-ethnic discrimination—health, number of close ties, and social support were negatively associated with the risk of anxiety disorders (coefficient estimates ranging –0.01–0.05, $p = 0.0002$).

Next we compared the nativity, origin, and racial/ethnic groups on the incidence of anxiety cases 1) acquired and 2) persisting over a 3-year period. The foreign-born had a slightly lower rate of developing anxiety disorders over a 3-year period than the US-natives (7% versus 9%, respectively; Table 5); the rates ranged 7–11% among the origin groups. The difference was more pronounced for the incidence of anxiety disorders persisting over time—33% versus 43% for the immigrants and the US-natives, respectively. The rates of acquired anxiety disorders varied from 7% among Asians/Pacific Islanders to 11% among Puerto Ricans. The rates of persisting anxiety disorders varied from 35% among Asians/Pacific Islanders to 48% among Puerto Ricans.

After adjusting for demographic, health, and substantive factors (Table 6), only non-US born Mexicans and Puerto Ricans were more likely than US-born Europeans to develop anxiety

disorders over time (coefficient estimates of 0.25 and 0.89, respectively; $p = 0.004$). Most other groups were less likely than US-born Europeans to develop anxiety disorders over time (coefficient estimates ranging from -0.19 for foreign-born Europeans to -0.71 ; $p = 0.02$), except foreign-born and US-born Asians/Pacific Islanders and foreign-born and US-born “other Hispanics/Latinos” who had similar rates to US-born Europeans. In terms of persisting anxiety cases, after controlling for other factors, the foreign-born groups were equally likely as US-born Europeans to continue anxiety disorders over a 3-year period, except foreign-born Asian/Pacific Islanders who were less likely than US-born Europeans to continue anxiety disorders (coefficient estimate of -2.102 , $p < 0.0001$). US-born Africans were less likely while US-born Asians/Pacific Islanders, Mexicans, and Puerto Ricans were more likely than US-born Europeans to have persisting anxiety disorders ($p = 0.03$).

Among the substantive exploratory factors, stressful life events, perceived stress (both personal life and control), and preference for other racial-ethnic groups socially were, in most cases, associated with acquiring or continuing a psychiatric diagnosis over time, independently of other factors (Table 6). On the other hand, number of close ties was consistently associated with a lower likelihood of acquiring or continuing anxiety disorders over a 3-year period. Perceived racial-ethnic discrimination--health was also, in most cases, associated with a lower likelihood of acquiring or continuing anxiety disorders. Other substantive factors had less stable associations across the different outcomes.

DISCUSSION

This study confirms past reports of lower rates of anxiety disorders among foreign-born versus US-born adults across most racial-ethnic backgrounds (Breslau et al., 2009). We also confirmed past reports of a relatively higher prevalence of anxiety disorders among Puerto Ricans regardless of nativity (Alegria et al., 2006; Alegria et al., 2008; Ortega et al., 2000). Our study has extended the past research by examining changes in anxiety disorders over time based on nativity, origin, and other social factors. In particular, our findings showed that new cases of anxiety are still less likely among most foreign-born groups, after adjusting for other factors. Only Asian/Pacific Islanders and other Hispanic/Latinos were no less or more likely than US-born Europeans (the reference group) to acquire anxiety disorders over time. Large subgroups within these categories, such as immigrants from China, India, or Cuba, tend to acculturate faster than some other groups like foreign-born Mexicans or Africans. Perhaps this contributes to their losing protection against anxiety disorders more rapidly than other immigrants. Foreign-born Asian/Pacific Islanders in our study were also significantly less likely to have persisting anxiety disorders, suggesting that they may be more likely to recover than other groups, perhaps because of better access to mental health services and treatments, which are often associated with employment-based insurance and material resources.

The lower prevalence of anxiety disorders among immigrants versus US-natives may be due to the “healthy migrant effect,” the hypothesis that individuals who migrate tend to have good health while the sicker ones stay behind (selection process). Immigrants typically have better mental health at the time of entry to the US than their US-born counterparts, but over time immigrants’ mental health worsens. For example, migrants from Mexico have been

shown to be more likely to suffer anxiety than family members back home (Breslau et al., 2011). Reasons for immigrants' anxiety disorders include living away from home, becoming Americanized, and experiencing stresses of political and economic disenfranchisement and victimization (e.g., discrimination). The original culture could also be protective of mental health. Thus, characteristics of both the host and home cultures could explain the difference in anxiety disorders between migrants and non-migrants.

However, the prevalence of and changes in mental disorders are also uneven across immigrant groups due to racial and ethnic origin. Race, ethnicity, and nativity are overlapping but distinct concepts that have complex relationships to mental health outcomes, as illustrated by our study findings. The patterns of mental health and illness by race, ethnicity, and nativity can be more fully understood only when considering their relationships to each other and to macro- and micro-level sociocultural factors (Brown, Donato, Laske, & Duncan, 2013). Our study shows that, after controlling for a range of social and psychosocial factors, immigrants from some racial-ethnic origins, such as Asian/Pacific Islanders and other Hispanic/Latino, appear to lose their protection against anxiety disorders more rapidly than immigrants from other racial-ethnic groups. With the growing numbers of Hispanic/Latino and Asian/Pacific Islander immigrants, there will be a greater need for mental health services and support systems for these populations.

In terms of explanatory factors, we found that sociodemographic and health-related factors did not typically explain the relationship between nativity, origin, and the likelihood of anxiety disorders. However, the substantive factors – acculturation, stress, and social ties factors -- helped to explain some nativity and origin-based variations. Among these factors, interestingly, English language preference and socializing with other racial-ethnic groups (signs of assimilation) did not typically protect immigrants against anxiety disorders. Prior research showed, for example, that greater proficiency in the English language lowers the risks for depressive disorders among men of Asian descent (Takeuchi et al., 2007). However, the negative association between acculturation and anxiety disorders might be due to feelings of being tested or judged in using the second language. These mixed research findings suggest that acculturation factors might work differently in different mental disorders.

As expected, stress factors were associated with both acquired and persisting anxiety disorders, both in terms of events stress and perceived stress. This finding mirrors other studies. Stressful life events (Wheaton, 1999; Williams et al., 2003), such as illness or death in a family or job loss, are known to contribute to mental health related conditions, such as substance use and abuse (Cooper, Russell, Skinner, Frone, & Mudar, 1992), though their effects may vary by race-ethnicity (Kessler & Neighbors, 1986). Turner and colleagues (Turner, Taylor, & Van Gundy, 2004) did find evidence of racial-ethnic differences in responses to stressors, but the differences were small. The impact of stressors, such as traumatic events and discrimination, on depression, in that study, was lower for Cuban Americans and African Americans compared to non-Hispanic Whites and other Hispanics. However, that research was conducted on only a limited number of racial-ethnic groups using a local sample that did not consider the impact of immigration. Although trauma showed strong associations to mental health outcomes in our study, it did not fully explain

nativity and origin associations with the occurrence of psychiatric disorders. Further research is needed to examine the mediating pathways.

In addition, we found close social ties to be protective against anxiety disorders over time and help with recovery. Other research has shown that having a perception of high social support has beneficial effects on mental health by reducing psychological distress and buffering the impact of stressful events (Ritsner, Modai, & Ponizovsky, 2000; Turner & Marino, 1994) and can reduce the nativity effect on psychiatric disorders (Alegria, Sribney, Woo, Torres, & Guarnaccia, 2007). It has also been noted that social support may have moderating or mediating effects on the stress experienced by ethnic and immigrant groups (Al-Issa, 1997b). Ethnic groups tend to rely on social support from the extended family versus friends, neighbors, or co-workers. For example, among Southeast Asian refugees in Canada, social support modified the effects of pre-migration trauma experiences on mental health (Beiser & Hyman, 1997). Some research finds that avoiding acculturation and maintaining ties with one's own racial-ethnic group is protective against psychiatric ill health (Banchevska, 1981; Koranyi, 1981), though others find that crossing racial-ethnic lines in social relations may promote psychological well-being, especially among immigrants (Quizumbing, 1982).

Racial-ethnic identity is another indicator of acculturation and refers to a person's subjective sense of belonging to a certain group or culture (Phinney, 1990). In our study, a strong racial-ethnic orientation was associated with a lower risk of acquiring an anxiety disorder over time. Some research shows a weak association between racial-ethnic identity and mental health outcomes (e.g., depression) once gender and socioeconomic status are controlled (Cuellar & Roberts, 1997). In contrast, having a stronger racial-ethnic identity has been found to buffer the negative impact of discrimination on psychological distress, though it also may be a risk factor for experiencing discrimination (Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003). The mixed findings across studies may be due to varying research designs and samples. The strength of our study lays in the longitudinal design, racial-ethnic detail, and generalizability. Our findings and the results from previous studies point to the importance of distinguishing between various types of psychiatric disorders when examining racial-ethnic associations with mental health.

One implication of our findings is that immigrant mental health needs grow over time and the mental health system, treatments, and social services must adjust to meet these needs. There are two main obstacles to mental health services for immigrants: (1) the US mental health system is fragmented and largely based on a fee-for-service model, that is, the receipt of services is typically associated with significant out-of-pocket expenses, and, consequently, (2) access to mental health and supporting services is uneven across immigrant groups – based on socioeconomic factors, race and ethnicity, and cultural/linguistic barriers. Thus, the first challenge is to improve and even out access to mental health care for immigrants from different socioeconomic and racial-ethnic backgrounds. In addition, there have been calls for retooling mental health treatments for immigrants -- paying attention to immigrants' specific cultures (incl. ethnic cultures) and needs (American Psychological Association, 2012). Many immigrants face psychological implications of racism, discrimination, and racial profiling while their expressions of distress due to these

factors vary across cultures. Current mental health assessment tools (tests, batteries) are often not adapted to account for culture and language. Further research is needed to identify various immigrant groups' specific needs and to tailor resources.

Some may also ask about the value of research like ours in guiding immigrant re-settlement policies and programs. Coherent resettlement programs are limited in the US, and immigrants are often left to fend for themselves, though ethnic communities and volunteer organizations may provide varying degrees of support. Based on the current US immigration policies and anti-immigrant sentiments, it is unlikely that government-led resettlement programs will be revamped any time soon to increase levels of support for migrants and to protect their mental health or address their mental health needs. However, studies like ours help to disentangle the social, cultural, and psychosocial factors that underlie the mental health of US immigrants and can identify potential points of intervention. Knowing the role of discrimination or social ties in immigrant mental health, for instance, could lead to targeted programs that could have indirect long-term effects on change in policies and resources. Notably, the American Psychological Association Presidential Task Force on Immigration has recommended federal initiatives that support mental health education and training to work with immigrants; training that includes prejudice reduction for teachers and social workers serving immigrant populations; public awareness of mental health impacts of detention/deportation on migrant adults and children; and, policy initiatives for humane detention and family reunification (American Psychological Association, 2012). Effective integration of immigrants is essential for the US society, and increased understanding of the psychological factors related to the immigrant experience is likely to improve mental health policies and services for the US racially and culturally diverse immigrant population.

Our study had several limitations. Epidemiologic research such as the present study sometimes lacks the ability to account for the problem of misdiagnosis of mental disorders among minorities (Al-Issa, 1997b; Good, 1993). Another limitation of this study is the definition of race-ethnicity. Broad ethnic categories such as used in this study (e.g., Asian/Pacific Islander) 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. For example, seemingly negative ones may be protective of mental health (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 – versus foreign-born ethnic identification -- may exacerbate experiences of prejudice and discrimination in the host country).

The limitations of this study may be overcome in future research. Especially, further examinations are warranted that focus more in-depth on specific origin groups and that have more data points and additional predictor variables, such as age at immigration or immigration cohort. Additional evidence may also come from studies exploring mediating mechanisms/pathways among nativity, origin, and social and psychosocial or from qualitative studies that probe social/psychosocial processes in acculturation and mental well-being. Overall, the current study provided some new evidence and suggested a few

directions for future explorations. This study also has implications for mental health services for immigrants, including outreach to at-risk groups, such as Puerto Ricans, and developing interventions to reduce stress and prejudice/discrimination, and to enhance social support systems to keep immigrants at low risk of anxiety and other mental disorders.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This study was funded by a grant from the National Institute on Drug Abuse (R01-IDA023615).

References

- Al-Issa, I. Ethnicity, immigration, and psychopathology. In: Al-Issa, I., Tousignant, M., editors. Ethnicity, immigration, and psychopathology. New York, NY: Plenum Press; 1997a. p. 3-15.
- Al-Issa, I. General issues and research problems. In: Al-Issa, I., Tousignant, M., editors. Ethnicity, Immigration, and Psychopathology. New York, NY: Plenum Press; 1997b. p. 277-289.
- Alegria M, Canino G, Stinson FS, Grant BF. 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*. 2006; 67(1):56-65.
- Alegria M, Chatterji P, Wells K, Cao Z, Chen CN, Takeuchi D, ... Meng XL. Disparity in depression treatment among racial and ethnic minority populations in the United States. *Psychiatr Serv*. 2008; 59(11):1264-1272. [PubMed: 18971402]
- Alegria M, Mulvaney-Day N, Torres M, Polo A, Cao Z, Canino G. Prevalence of psychiatric disorders across Latino subgroups in the United States. *Am J Public Health*. 2007; 97(1):68-75. [PubMed: 17138910]
- Alegria M, Sribney W, Woo M, Torres M, Guarnaccia P. 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*. 2007; 4(1):19-47. [PubMed: 19412354]
- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). 4. Washington, DC: Author; 1994.
- American Psychological Association, Presidential Task Force on Immigration. [Accessed 20 January 2017] Crossroads: the psychology of immigration in the new century. 2012. Available at <http://www.apa.org/topics/immigration/immigration-report.pdf>
- Banchevska, R. Uprooting and settling: The transplanted family. In: Fittinger, L., Schwartz, D., editors. *Strangers in the World*. Bern: Hans Huber; 1981. p. 107-132.
- Barry D. Development of a new scale for measuring acculturation: the East Asian acculturation measure (EAAM). *J Immigr Health*. 2001; 3:193-197. [PubMed: 16228786]
- Barry D. An ethnic identity scale for East Asian immigrants. *J Immigr Health*. 2002; 4:87-94. [PubMed: 16228764]
- Beiser, M., Hyman, I. Southeast Asian refugees in Canada. In: Al-Issa, I., Tousignant, M., editors. Ethnicity, immigration, and psychopathology. New York, NY: Plenum Press; 1997. p. 35-56.
- Berry JW. Acculturation and adaptation in a new society. *International Migration*. 1992; 30(s1):69-85.
- Berry JW. A psychology of immigration. *Journal of Social Issues*. 2001; 57(3):615-631.
- Breslau J, Aguilar-Gaxiola S, Borges G, Kendler KS, Su M, Kessler RC. Risk for psychiatric disorder among immigrants and their US-born descendants: evidence from the National Comorbidity Survey Replication. *J Nerv Ment Dis*. 2007; 195(3):189-195. [PubMed: 17468677]
- Breslau J, Borges G, Hagar Y, Tancredi D, Gilman S. Immigration to the USA and risk for mood and anxiety disorders: variation by origin and age at immigration. *Psychol Med*. 2009; 39(7):1117-1127. [PubMed: 19000338]

- Breslau J, Borges G, Saito N, Tancredi DJ, Benjet C, Hinton L, ... Medina-Mora ME. Migration from Mexico to the United States and conduct disorder: a cross-national study. *Arch Gen Psychiatry*. 2011; 68(12):1284–1293. DOI: 10.1001/archgenpsychiatry.2011.140 [PubMed: 22147845]
- Breslau J, Chang DF. Psychiatric disorders among foreign-born and US-born Asian-Americans in a US national survey. *Soc Psychiatry Psychiatr Epidemiol*. 2006; 41(12):943–950. [PubMed: 16988789]
- 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. p. 255-276.
- Burnam MA, Hough RL, Karno M, Escobar JI, Telles CA. Acculturation and lifetime prevalence of psychiatric disorders among Mexican Americans in Los Angeles. *Journal of Health and Social Behavior*. 1987; 28(1):89–102. [PubMed: 3571910]
- Camarota, SA. *Immigrants in the United States: a profile of America's foreign-born population*. Washington, DC: Center for Immigration Studies; 2012.
- Cohen S, Doyle WJ, Skoner DP, Rabin BS, Gwaltney JM Jr. Social ties and susceptibility to the common cold. *JAMA*. 1997; 277(24):1940–1944. [PubMed: 9200634]
- Cohen S, Hoberman HM. Positive events and social supports as buffers of life changes stress. *J Appl Soc Psychol*. 1983; 13:99–125.
- Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983; 24:385–396. [PubMed: 6668417]
- Cohen, S., Mermelstein, R., Kamarck, T., Hoberman, HM. Measuring the functional components of social support. In: Sarason, IG., Sarason, BR., editors. *Social Support: Theory, Research and Applications*. Newbury, NJ: Sage; 1985. p. 73-94.
- Cohen, S., Williamson, G. Perceived stress in a probability sample of the United States. In: Spacek, S., Oskamp, S., editors. *The Social Psychology of Health: Claremont Symposium on Applied Social Psychology*. Newbury Park, NJ: Sage; 1988. p. 31-67.
- Cooper ML, Russell M, Skinner JB, Frone MR, Mudar P. Stress and alcohol use: moderating effects of gender, coping, and alcohol expectancies. *Abnorm Psychol*. 1992; 101(1):139–152.
- Coronado GD, Thompson B, McLerran D, Schwartz SM, Koepsell TD. A short acculturation scale for Mexican-American populations. *Ethn Dis*. 2005; 15:53–62. [PubMed: 15720049]
- Cuellar I, Roberts R. Relations of depression, acculturation, and socioeconomic status in a Latino sample. *Hispanic Journal of Behavioral Sciences*. 1997; 19(2):230–238.
- Deyo RA, Diehl AK, Hazoda H, Stern MP. A simple language-based acculturation scale for Mexican Americans: validation and application to health care research. *Am J Public Health*. 1985; 75:51–55. [PubMed: 3966599]
- Escobar JI, Hoyos Nervi C, Gara MA. Immigration and mental health: Mexican Americans in the United States. *Harvard Review of Psychiatry*. 2000; 8(2):64–72. [PubMed: 10902095]
- Finch BK, Frank R, Hummer RA. Racial/ethnic disparities in infant mortality: the role of behavioral factors. *Soc Biol*. 2000; 47(3–4):244–263. [PubMed: 12055697]
- Gee GC, Ryan A, Laflamme DJ, Holt J. Self-reported discrimination and mental health status among African descendants, Mexican Americans, and other Latinos in the New Hampshire REACH 2010 Initiative: the added dimension of immigration. *Am J Public Health*. 2006; 96(10):1821–1828. [PubMed: 17008579]
- Gonzalez HM, Tarraf W, Whitfield KE, Vega WA. The epidemiology of major depression and ethnicity in the United States. *J Psychiatr Res*. 2010; 44(15):1043–1051. [PubMed: 20537350]
- Good. 1993
- Grant BF, Dawson DA. Introduction to the National Epidemiologic Survey on Alcohol and Related Conditions. *Alcohol Res Health*. 2006; 29(2):74–78.
- Grant BF, Goldstein RB, Chou SP, Huang B, Stinson FS, Dawson DA, ... Compton WM. Sociodemographic and psychopathologic predictors of first incidence of DSM-IV substance use, mood and anxiety disorders: results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *Mol Psychiatry*. 2009; 14(11):1051–1066. [PubMed: 18427559]
- Grant, BF., Kaplan, K., Shepard, J., Moore, T. Source and accuracy statement for Wave 1 of the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism; 2003.

- Grant BF, Stinson FS, Hasin DS, Dawson DA, Chou SP, Anderson K. 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*. 2004; 61(12):1226–1233. [PubMed: 15583114]
- Huang B, Dawson DA, Stinson FS, Hasin DS, Ruan WJ, Saha TD, ... Grant BF. Prevalence, correlates, and comorbidity of nonmedical prescription drug use and drug use disorders in the United States: Results of the National Epidemiologic Survey on Alcohol and Related Conditions. *J Clin Psychiatry*. 2006; 67(7):1062–1073. [PubMed: 16889449]
- Kessler RC, Neighbors HW. A new perspective on the relationships among race, social class, and psychological distress. *J Health Soc Behav*. 1986; 27(2):107–115. [PubMed: 3734380]
- Koranyi, E. Decline and stress: immigrant's adaptation in aged population. In: Schwartz, LFaD, editor. *Strangers in the World*. Bern: Hans Huber; 1981. p. 220-232.
- Mills T, Henretta J. Racial, ethnic, and sociodemographic differences in the level of psychosocial distress among older Americans. *Research on Aging*. 2001; 23(2):131–152.
- Ortega AN, Rosenheck R, Alegria M, Desai RA. Acculturation and the lifetime risk of psychiatric and substance use disorders among Hispanics. *J Nerv Ment Dis*. 2000; 188(11):728–735. [PubMed: 11093374]
- Phinney JS. Ethnic identity in adolescents and adults: Review of research. *Psychological Bulletin*. 1990; 108(3):499–514. [PubMed: 2270238]
- Phinney JS. The multigroup ethnic identity measure: a new scale for use with diverse groups. *J Adolesc Res*. 1992; 7:156–176.
- Quizumbing, MS. PhD. University of Chicago; 1982. Life events, social support and personality: Their impact on Filipino psychological adjustment.
- Rahim-Williams FB, Riley JL 3rd, Herrera D, Campbell CM, Hastie BA, Fillingim RB. Ethnic identity predicts experimental pain sensitivity in African Americans and Hispanics. *Pain*. 2007; 129(1–2): 177–184. [PubMed: 17296267]
- Ritsner M, Modai I, Ponizovsky A. The stress-support patterns and psychological distress of immigrants. *Stress Medicine*. 2000; 16:139–147.
- Ruan WJ, Goldstein RB, Chou SP, Smith SM, Saha TD, Pickering RP, ... Grant BF. The alcohol use disorder and associated disabilities interview schedule-IV (AUDADIS-IV): reliability of new psychiatric diagnostic modules and risk factors in a general population sample. *Drug Alcohol Depend*. 2008; 92(1–3):27–36. [PubMed: 17706375]
- Sellers RM, Caldwell CH, Schmeelk-Cone KH, Zimmerman MA. Racial identity, racial discrimination, perceived stress, and psychological distress among African American young adults. *J Health Soc Behav*. 2003; 44(3):302–317. [PubMed: 14582310]
- Smedley, BD, Stith, AY., Nelson, AR., editors. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: The National Academy Press; 2003.
- Solis JM, Marks G, Garcia M, Shelton D. Acculturation, access to care, and use of preventive services by Hispanics: findings from HHANES: 1982–1984. *Am J Public Health*. 1990; 80(Suppl):11–19. [PubMed: 9187576]
- Takeuchi DT, Alegria M, Jackson JS, Williams DR. Immigration and mental health: diverse findings in Asian, black, and Latino populations. *Am J Public Health*. 2007; 97(1):11–12. [PubMed: 17138903]
- Turner RJ, Marino F. Social support and social structure: a descriptive epidemiology. *J Health Soc Behav*. 1994; 35(3):193–212. [PubMed: 7983334]
- Turner RJ, Taylor J, Van Gundy K. Personal resources and depression in the transition to adulthood: ethnic comparisons. *J Health Soc Behav*. 2004; 45(1):34–52. [PubMed: 15179906]
- Vega WA, Kolody B, Valle JR, Weir J. Social networks, social support, and their relationship to depression among immigrant Mexican women. *Hum Organ*. 1991; 50:154–162.
- Virell-Fuentes EA, Schulz AJ. Toward a dynamic conceptualization of social ties and context: implications for understanding immigrant and Latino health. *Am J Public Health*. 2009; 99(12): 2167–2175. DOI: 10.2105/AJPH.2008.158956 [PubMed: 19833986]

- 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, NY: Cambridge University Press; 1999. p. 176-197.
- Williams DR, Haile R, Gonzalez HM, Neighbors H, Baser R, Jackson JS. The mental health of Black Caribbean immigrants: results from the National Survey of American Life. *Am J Public Health*. 2007; 97(1):52–59. [PubMed: 17138909]
- Williams DR, Neighbors HW, Jackson JS. Racial/ethnic discrimination and health: findings from community studies. *Am J Public Health*. 2003; 93(2):200–208. [PubMed: 12554570]
- Williams DR, Williams-Morris R. Racism and mental health: the African American experience. *Ethn Health*. 2000; 5(3–4):243–268. [PubMed: 11105267]

Table 1

Frequency and percentage distributions of nativity and racial-ethnic origin: NESARC Wave 2

	n^a	%^b		
		Overall	US-born	Foreign-born
Total	33,373			
Nativity				
US-born	28,083	85.9		
Foreign-born	5,290	14.2		
Racial-ethnic origin				
African	6,640	11.8	12.3	8.4
Asian/Pacific Islander	1,131	5.0	1.7	25.0
European	19,174	70.9	79.3	19.7
Mexican	3,556	6.8	3.7	25.7
Puerto Rican	786	1.3	0.9	3.9
Other Hispanic/Latino	2,086	4.2	2.1	17.2

^aUnweighted^bWeighted

Table 2

Prevalence of anxiety disorders, total and by nativity and racial-ethnic origin: NESARC Wave 2

	%	SE
Total	12.4	0.1
Nativity	**	
US-born	13.1	0.1
Foreign-born	8.6	0.1
Racial-ethnic origin	**	
African	12.4	0.2
Asian/Pacific Islander	9.5	0.3
European	12.9	0.1
Mexican	10.4	0.4
Puerto Rican	15.8	0.4
Other Hispanic/Latino	10.8	0.3
Racial-ethnic origin x nativity		
African	**	
US-born	13.1	0.3
Foreign-born	6.0	0.5
Asian/Pacific Islander	**	
US-born	16.2	1.0
Foreign-born	6.6	0.1
European	**	
US-born	13.0	0.1
Foreign-born	10.5	0.5
Mexican	**	
US-born	12.6	0.4
Foreign-born	8.5	0.4
Puerto Rican	**	
US-born	13.8	0.6
Foreign-born	18.7	0.2
Other Hispanic/Latino	**	
US-born	14.0	0.7
Foreign-born	8.5	0.3

Nativity, racial-ethnic difference significant at **p < 0.01 or *p < 0.05

Table 3

Logistic regression models predicting the prevalence of anxiety disorders for nativity and racial-ethnic origin groups

	Model 1		Model 2		Model 3		Model 4	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
US-born								
African	0.012	0.03	-0.106**	0.03	-0.168***	0.03	-0.327***	0.03
Asian/Pacific Islander	0.261**	0.08	0.111	0.08	0.135	0.08	0.063	0.10
European	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Mexican	-0.030	0.04	-0.268***	0.04	-0.186***	0.04	-0.237***	0.06
Puerto Rican	0.069	0.05	-0.172*	0.05	-0.262***	0.07	-0.192*	0.08
Other Hispanic/Latino	0.087	0.06	-0.023	0.06	-0.002	0.06	-0.011	0.06
Foreign-born								
African	-0.866***	0.10	-0.811***	0.10	-0.707***	0.09	-0.589***	0.11
Asian/Pacific Islander	-1.005***	0.07	-0.861***	0.07	-0.760***	0.08	-0.659***	0.10
European	-0.237***	0.06	-0.231***	0.06	-0.195**	0.06	-0.084	0.06
Mexican	-0.440***	0.04	-0.377***	0.04	-0.145**	0.04	0.156*	0.06
Puerto Rican	0.362***	0.05	0.466***	0.05	0.618***	0.06	0.768***	0.06
Other Hispanic/Latino	-0.564***	0.07	-0.541***	0.07	-0.408***	0.07	-0.245*	0.08
<i>p for nativity</i>	***		***		***		***	
<i>p for racial-ethnic origin</i>	***		***		***		***	

Model 1 is unadjusted. Model 2 is adjusted for sociodemographic factors. Model 3 is adjusted for sociodemographic and health-related factors. Model 4 adjusted for sociodemographic, health-related, and substantive factors.

p < 0.0001;

**
p < 0.001;

*
p < 0.05;

otherwise not significant at p < 0.05

Table 4

Associations of the substantive factors with mood and anxiety disorder variables in a fully-adjusted model^a

	Estimate	SE
Stressful life events	0.108***	0.01
Social stress--personal life	0.085***	0.01
Social stress--control	0.396***	0.01
Perceived racial-ethnic discrimination--health	-0.045***	0.01
Perceived racial-ethnic discrimination--other	0.106***	0.01
Language preference	0.088***	0.01
Preference for other racial-ethnic groups socially	0.047**	0.01
Race-ethnic orientation	-0.021	0.01
Social network--close ties	-0.014***	0.00
Social network--instrumental ties	0.002	0.00
Social support	-0.050**	0.01

^aModel 4, Table 3

p < 0.0001;

**
p < 0.001;

*
p < 0.05;

otherwise not significant at p < 0.05

Table 5

Rates of anxiety disorders (1) acquired and (2) persisting over a 3-year period, by nativity and racial-ethnic origin (W1 = Wave 1)

	(1) Anxiety in W2 when W1=0		(2) Anxiety in W2 when W1=1	
	%	SE	%	SE
Total	8.8	0.1	41.6	0.4
Nativity				
US-born	9.2	0.1	42.5	0.5
Foreign-born	6.7	0.1	32.7	1.1
Racial-ethnic origin				
African	9.8	0.2	36.0	1.0
Asian/Pacific Islander	7.2	0.2	34.8	2.4
European	8.9	0.1	42.6	0.6
Mexican	7.7	0.3	42.2	1.6
Puerto Rican	11.2	0.4	47.5	0.7
Other Hispanic/Latino	7.7	0.3	41.2	1.7

Table 6

Modeling of anxiety disorders (1) acquired and (2) persisting over a 3-year period: associations of nativity, racial-ethnic origin, and substantive factors, adjusted for sociodemographic and health-related correlates (W1 = Wave 1; W2 = Wave 2)

	(1) Anxiety in W2 when W1=0		(2) Anxiety in W2 when W1=1	
	<i>Estimate</i>	<i>SE</i>	<i>Estimate</i>	<i>SE</i>
US-born				
African	−0.233 ***	0.04	−0.447 ***	0.07
Asian/Pacific Islander	−0.165	0.11	0.547 *	0.20
European	(ref)	(ref)	(ref)	(ref)
Mexican	−0.324 **	0.09	0.337 *	0.12
Puerto Rican	−0.284 *	0.11	0.228 *	0.11
Other Hispanic/Latino	−0.128	0.09	0.012	0.14
Foreign-born				
African	−0.709 ***	0.04	−0.240	0.30
Asian/Pacific Islander	−0.141	0.11	−2.102 ***	0.21
European	−0.185 *	0.08	−0.006	0.13
Mexican	0.253 *	0.09	0.020	0.13
Puerto Rican	0.892 ***	0.09	0.129	0.08
Other Hispanic/Latino	−0.072	0.11	0.203	0.14
<i>p for racial-ethnic origin</i>	***		***	
<i>p for nativity</i>	*		*	
<i>Substantive factors</i>				
Stressful life events	0.124 ***	0.01	0.048 **	0.01
Social stress--personal life	0.094 ***	0.02	0.053 *	0.03
Social stress--control	0.428 ***	0.02	0.169 ***	0.03
Perceived racial-ethnic discrimination--health	−0.037 **	0.01	−0.028	0.02
Perceived racial-ethnic discrimination--other	0.086 ***	0.01	0.156 ***	0.03
Language preference	0.058 **	0.02	0.133 *	0.05
Preference for other racial-ethnic groups socially	0.045 *	0.02	0.033	0.03
Racial-ethnic orientation	−0.033 *	0.01	−0.025	0.02
Social network--close ties	−0.012 ***	0.00	−0.017 ***	0.00
Social network--instrumental ties	0.002	0.00	0.002	0.00
Social support	−0.057 **	0.02	−0.033	0.02

p < 0.0001;

**
p < 0.001;

*
 $p < 0.05$;

otherwise not significant at $p < 0.05$

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript