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

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Background: There exist no national prevalence data on specific DSM-IV Axis I psychiatric disorders among foreign-born and US-born Mexican Americans and non-Hispanic whites.

Objective: To present nationally representative data on the prevalence of DSM-IV lifetime psychiatric disorders among foreign-born and US-born Mexican Americans and non-Hispanic whites.

Design: Face-to-face survey conducted in the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions.

Setting: The United States and District of Columbia, including Alaska and Hawaii.

Participants: Household and group-quarters residents, aged 18 years and older (n=43093).

Main Outcome Measures: Prevalence of DSM-IV substance use disorders and mood and anxiety disorders.

Results: With few exceptions, foreign-born Mexican Americans and foreign-born non-Hispanic whites were at significantly lower risk ($P<.05$) of DSM-IV substance use and mood and anxiety disorders compared with their US-born counterparts. Although the risk of specific psychiatric disorders was similar between foreign-born Mexican Americans and foreign-born non-Hispanic whites, US-born Mexican Americans were at significantly lower risk ($P<.05$) of psychiatric morbidity than US-born non-Hispanic whites.

Conclusions: Data favoring foreign-born Mexican Americans with respect to mental health may extend to foreign-born non-Hispanic whites. Future research among foreign-born and US-born Mexican Americans and the foreign-born and US-born of other origins and descents is needed to understand what appears to be the protective effects of culture and the deleterious effects of acculturation on psychiatric morbidity in the United States.

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IN 2003, HISPANICS RESIDING IN the United States became the largest ethnic minority group in the country. The Hispanic population rose from about 9.1% (22 million) in 1990 to 13.4% (39 million) in 2003.¹ Current census projections predict that the number of Hispanics in the United States will double by 2050 to more than 25% of the total US population.² Mexican Americans are by far the largest Hispanic subgroup today, constituting about 60% of the US Hispanic population. In light of this large representation among the US population, knowledge of psychiatric morbidity among Mexican Americans is becoming increasingly important. A major aspect of this is whether immigrant status affects the risk of psychiatric disorders.

Three large-scale epidemiological studies have addressed the mental health of Mexican Americans, including comparisons of foreign-born Mexican Americans with their US-born counterparts and/or with non-Hispanic whites. The first was the Los Angeles, Calif, site of the Epidemiologic Catchment Area (LAECA) survey conducted in 1983-1984.³ US-born Mexican Americans were significantly more likely than foreign-born Mexican Americans to have lifetime diagnoses of major depression, dysthymia, phobia, alcohol abuse and/or depen-
At the National Comorbidity Survey (NCS), 4 the prevalence of psychiatric disorders among US-born Mexican Americans was lower than that found among the total US-born Hispanic population and the total US population in the NCS. In contrast, rates of psychiatric disorders among US-born Mexican Americans were comparable with those found in the NCS. The third study 5 made use of a small subset of Mexican Americans within the NCS, also showing that US-born Mexican Americans had higher rates of any psychiatric disorder and post-traumatic stress disorder than their foreign-born counterparts.

Although all of these studies found that immigrant status had a significant effect on the prevalence of psychiatric disorders, they do not provide us with current information and have several other limitations. The LAECA and MAPSS samples consisted of Mexican Americans in Los Angeles and Fresno County, precluding generalization to the entire US Mexican American population. The NCS was a national survey but the number of Mexican Americans (n=484) was quite small, precluding analyses of specific disorders to determine if immigration status affected some disorders but not others. The NCS also did not interview in Spanish, which may have excluded some of the less-acculturated, Hispanic, foreign-born population. Further, none of these surveys assessed psychiatric disorders according to the American Psychiatric Association’s classification DSM-IV. 9 The LAECA survey used DSM-III 10 criteria, whereas the MAPSS used DSM-III-R 11 criteria.

Non-Hispanic white comparison groups in these studies also were limited. The MAPSS, NCS, and 1 LAECA study compared US-born and foreign-born Mexican Americans with the entire non-Hispanic white population without regard to immigration status, thereby confounding race-ethnicity and immigration status. Only 1 LAECA study 5 used a US-born non-Hispanic white comparison group, and no study has compared US-born and foreign-born Mexican Americans with foreign-born non-Hispanic whites. The latter comparison group is critical in determining if the lower rates of disorders found among foreign-born Mexican Americans are generalizable to foreign-born non-Hispanic whites.

The issue of immigrant status is of general importance, both in terms of policy and needs for service delivery and for a better understanding of the etiology of mental disorders. Given the large proportion of Mexican Americans among immigrant groups to the United States during the last few decades, a focus on this group is timely and important. Therefore, the major objective of this study was to examine the relationship between immigration status and specific DSM-IV mood, anxiety, and substance use disorders in a nationally representative sample of Mexican Americans as assessed in the National Institute on Alcohol Abuse and Alcoholism’s (NIAAA) 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). 12 Oversampling of Hispanics in the NESARC importantly yielded a sample of 7995 Hispanics, of which 4558 were of Mexican American origin. These sample sizes allowed for precise comparisons of specific psychiatric disorders by immigration status. In addition, US-born and foreign-born Mexican Americans could be compared with US-born and foreign-born non-Hispanic whites.

**METHODS**

**NESARC SAMPLE**

The 2001-2002 NESARC is a representative sample of the United States sponsored by the NIAAA that has been described in detail elsewhere. 12,13 The target population of the NESARC was the civilian, non-institutional population, aged 18 years and older, residing in households as well as in group quarters. The survey included those residing in the continental United States, the District of Columbia, and Alaska and Hawaii. Face-to-face personal interviews were conducted with 43,093 respondents. The overall survey response rate was 81%. African Americans and Hispanics and young adults (aged 18 to 24 years) were oversampled in the NESARC.

The data were weighted to reflect the design characteristics of the NESARC and to account for oversampling. Adjustment for nonresponse across numerous variables, including age, race, ethnicity, sex, region, and place of residence, was performed at the household level and person level. The weighted data were then adjusted to be representative of the US civilian population on a variety of sociodemographic variables, including region, age, race, ethnicity, and sex, based on the 2000 Decennial Census.

**INTERVIEWER TRAINING FIELD QUALITY CONTROL**

Approximately 1800 professional interviewers from the census bureau administered the NESARC using laptop computer-assisted software that included built-in skip, logic, and consistency checks. On average, the interviewers had 5 years’ experience working on census and other health-related national surveys. Training was standardized through centralized sessions under the direction of NIAAA.
Regional supervisors recontacted a random 10% of all respondents for quality control purposes and to verify the accuracy of the interviewers' performance. In addition, 2657 respondents were randomly selected to participate in a reinterview study after completion of their NESARC interview. Each respondent was readministered 1 to 3 complete sections of the NESARC interview. These interviews not only served as a check on survey data quality but formed the basis of an additional test-retest reliability study of wave 1 NESARC measures.14

The census bureau maintains a cadre of Spanish-speaking interviewers at each of their 12 regional offices, who were rigorously trained in the administration of the Spanish version of the NESARC instrument. Hispanic respondents preferring to have their interviews conducted in Spanish (15.5%) were interviewed by these specially trained interviewers. Because these interviewers were regionally based, they possessed extensive knowledge of cultural and linguistic adaptations appropriate for use with Mexican-origin populations. Translation and back-translation of the survey instrument were done by the linguistic experts at the census bureau.

**SOCIO DEMOGRAPHIC AND SOCIOECONOMIC MEASURES**

Mexican origin or descent was established by the respondent's self-identification as Chicano, Mexican, or Mexican American. Sociodemographic measures included age, sex, race-ethnicity (Mexican American vs non-Hispanic white), immigration status (US-born vs foreign-born), marital status (married/living with someone as if married, widowed/divorced/separated, or never married), place of residence (urban, rural, or town), and region of the country (Northeast, Midwest, South, or West). Socioeconomic measures included education (less than high school, high school graduate, or some college or beyond) and family income, measured as a continuous variable. Race-ethnicity and immigration were cross-classified to yield 4 groups for comparative purposes: (1) foreign-born Mexican Americans; (2) US-born Mexican Americans; (3) foreign-born non-Hispanic whites; and (4) US-born non-Hispanic whites.

**DSM-IV MOOD AND ANXIETY DISORDER ASSESSMENT**

The NESARC diagnostic interview used to generate diagnoses presented in this report was the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version (AUDADIS-IV), a state-of-the-art, structured diagnostic interview designed for use by lay interviewers.13 The DSM-IV mood and anxiety diagnoses included in the AUDADIS-IV were major depression, dysthymia, mania, hypomania, panic disorder, social phobia, specific phobia, and generalized anxiety disorder.

Lifetime mood and anxiety diagnoses presented in this report are defined in the DSM-IV as “primary” or independent diagnoses. In the DSM-IV, the term primary is used as shorthand to indicate those mental disorders that are not substance induced and that are not due to a general medical condition.19 Respondents classified with disorders that only were substance induced and/or due to a general medical condition were not included in the analyses presented herein. Depressive episodes entirely accounted for by bereavement were also excluded.

The reliability of AUDADIS-IV measures of DSM-IV mood and anxiety disorders is documented in test-retest studies among several general population and clinical samples, some of which included substantial percentages of Hispanics (21.7%, 33.9%, and 41.1% in Denver, Colo; Dallas, Tex; and Los Angeles samples, respectively).14,16-18 A test-retest of major AUDADIS-IV diagnostic measures also was conducted in a Hispanic population.19 In these test-retest studies, the reliabilities of mood and anxiety disorders were fair to good, ranging from $\kappa = 0.42$ for specific phobia to $\kappa = 0.64$ for major depression.

The validity of AUDADIS-IV mood and anxiety disorders was assessed in a series of linear regression analyses, using the NESARC data, that examined the associations between each mood and anxiety disorder and 4 Short Form-12v2 mental disability scores, controlling for age, alcohol and drug use disorders, and all other mood and anxiety disorders. The Short Form-12v2 is a reliable and valid measure of generic quality of life used in large population surveys. The focus was on 4 mental disability Short Form-12v2 scores: the mental component summary score; the social functioning score; the role emotional function score; and the mental health score. Each mood and anxiety disorder assessed in the NESARC was shown to be a highly significant ($P < 0.01$ to $P < 0.001$) predictor of the mental component summary, social functioning, role emotional, and mental health scores. Respondents with these mood and anxiety disorders had significantly greater disability and social/occupational dysfunction than respondents who did not have the particular mood or anxiety disorder.

**DSM-IV ALCOHOL AND DRUG USE DISORDER ASSESSMENT**

The AUDADIS-IV included an extensive list of symptom questions that separately operationalized DSM-IV criteria for alcohol and drug-specific abuse and dependence for 10 classes of drugs, including sedatives, tranquilizers, opiates (other than heroin or methadone), stimulants, hallucinogens, cannabis, cocaine (including crack cocaine), inhalants/solvents, heroin, and other drugs.

Consistent with the DSM-IV, lifetime AUDADIS-IV diagnoses of alcohol abuse required a respondent to meet at least 1 of the 4 criteria defined for abuse either in the 12-month period preceding the interview and/or before that 12-month period. The AUDADIS-IV dependence diagnoses required the respondent to satisfy at least 3 of the 7 DSM-IV criteria for dependence either during the past year and/or prior to the past year. Diagnoses of alcohol dependence prior to the past year were required to satisfy the time-clustering criteria defined in the DSM-IV. That is, to meet criteria for “prior to the past year,” at least 3 dependence symptoms must have occurred within the same 1-year period. The drug-specific diagnoses of abuse and dependence were derived using the same algorithm described for alcohol use disorders.

The reliability14,16-19 and validity1-3 of the AUDADIS-IV alcohol and drug diagnoses are well documented in numerous psychometric studies conducted in clinical and general population samples, including a Hispanic population (in which reliability and validity coefficients ranged from good to excellent).14 The psychometric properties of the alcohol and drug abuse and dependence modules of the AUDADIS-IV also were examined and found to be excellent in several countries as part of the World Health Organization/National Institutes of Health International Study on Reliability and Validity.36,36-41

**STATISTICAL ANALYSIS**

Cross-tabulations were used to calculate prevalences of lifetime DSM-IV substance use disorders and mood and anxiety disorders by immigration status among Mexican Americans and non-Hispanic whites. Odds ratios were then used to examine associations between the 4 comparison groups and each spe-
cific psychiatric disorder, controlling for a broad range of sociodemographic and socioeconomic factors. Standard errors and 95% confidence limits related to all of these analyses were estimated using SUDAAN, a software package that uses Taylor series linearization to adjust for complex sample survey design characteristics.

**RESULTS**

**SOCIODEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS AMONG US-BORN AND FOREIGN-BORN MEXICAN AMERICANS AND NON-HISPANIC WHITES**

The distribution of sociodemographic and socioeconomic characteristics by immigration status among Mexican Americans and non-Hispanic whites is shown in Table 1. There were 4558 respondents who identified themselves as being of Chicano, Mexican, or Mexican American origin or descent, of which 2227 (49%) were immigrants and 2331 (51%) were US-born. Of the 24803 non-Hispanic white respondents, 1541 (6%) were immigrants and the remaining 23262 (94%), US-born.

Compared with non-Hispanic whites, Mexican Americans were much more likely to have less than a high school education (11.1% vs 47.6%), to earn less than $20000 a year (43.5% vs 65.5%), to live in an urban area (23.3% vs 45.9%), and to reside in the West (19.5% vs 54.7%).

Striking differences in socioeconomic indicators (educational attainment, family income) and marital status were found between US-born and foreign-born Mexican Americans. The foreign-born Mexican Americans were much more likely than the US-born Mexican Americans to have less than a high school education (64.0% vs 26.1%) and to earn less than $20000 a year (71.1% vs 58.0%). However, foreign-born Mexican Americans were more likely than US-born Mexican Americans to be married (73.4% vs 55.3%). In contrast, the distributions of these and other sociodemographic and socioeconomic indicators across the US-born and foreign-born non-Hispanic whites were quite similar.

**LIFETIME RATES OF DSM-IV PSYCHIATRIC DISORDERS AMONG US-BORN AND FOREIGN-BORN MEXICAN AMERICANS AND NON-HISPANIC WHITES**

Lifetime rates of DSM-IV psychiatric disorders by immigration status among Mexican Americans and non-Hispanic whites are shown in Table 2. Overall, the non-Hispanic whites’ rate of any psychiatric disorder (51.2%) was nearly twice that for Mexican Americans (36.7%).
The rate of any disorder was much greater for the US-born (47.6% and 52.5%) than for their foreign-born counterparts (28.3% and 32.3%). Prevalences of any alcohol use disorder, any mood disorder, and any anxiety disorder among US-born Mexican Americans and non-Hispanic whites also were nearly twice as large as the corresponding foreign-born rates. The rate of any drug use disorder among US-born Mexican Americans was 8.3 times greater than for foreign-born Mexican Americans, while for non-Hispanic whites the ratio was about 2.4:1.0.

**COMPARISONS BETWEEN US-BORN AND FOREIGN-BORN MEXICAN AMERICANS AND NON-HISPANIC WHITES**

A series of logistic regressions, adjusted for age, sex, marital status, place of residence, region of the country, education, and family income, was used to examine associations between the 4 comparison groups and each specific psychiatric disorder (Table 3).

Column 1 of Table 3 indicates that the odds ratios of all specific psychiatric disorders, except hypomania and panic disorder, were significantly lower among US-born Mexican Americans compared with US-born whites. Columns 2, 3, 4, and 5 compare the foreign-born with the US-born. Column 2 indicates that US-born non-Hispanic whites are at greater risk of all psychiatric disorders than foreign-born Mexican Americans. US-born Mexican Americans also had significantly greater rates of alcohol and drug use disorders (except any drug dependence) compared with foreign-born whites (column 3). However, there were no differences in the odds ratios of mood and anxiety disorders between these groups with the exception of panic disorder, which was significantly greater among US-born Mexican Americans than among foreign-born whites.

US-born Mexican Americans were at significantly higher risk of all psychiatric disorders except hypomania and social and specific phobias compared with foreign-born Mexican Americans (column 4). Similarly, the odds of most psychiatric disorders among non-Hispanic whites were significantly greater among the US-born than foreign-born individuals (column 5). However, there were no differences observed in the odds of mania and hypomania between US-born and foreign-born non-Hispanic whites.

Column 6 of Table 3 indicates that the odds of all psychiatric disorders did not differ between Mexican American and non-Hispanic white foreign-born individuals.

**COMMENT**

To our knowledge, this study is the first to show that, with few exceptions, foreign-born Mexican Americans and foreign-born non-Hispanic whites were at significantly lower risk of DSM-IV disorders compared with their US-born counterparts. These included alcohol and drug use disorders, major depression, dysthymia, mania, hypomania, panic disorder, social and specific phobia, and generalized anxiety disorder. Similarly, foreign-born Mexican Americans also were at significantly lower risk of psychiatric morbidity compared with US-born non-Hispanic whites. Previous studies compared rates of disorder among US-born and foreign-born Mexican Americans with rates in the entire non-Hispanic white population or the total US population without regard to immigration status or with rates only among US-born non-Hispanic whites and thus were unable to reveal this rather remarkable pattern. It appears that the results favoring foreign-born Mexican Americans with respect to mental health may extend to foreign-born non-Hispanic whites.

In this set of results, foreign-born Mexican Americans as well as non-Hispanic whites were at lower risk for most disorders compared with US-born individuals, and rates of foreign-born non-Hispanic whites were at lower risk for most disorders compared with US-born Mexican Americans.

The prevalence of DSM-IV disorders among Mexican Americans and non-Hispanic whites is presented in Table 2.

<table>
<thead>
<tr>
<th>Disorders</th>
<th>Foreign-Born (n = 2227)</th>
<th>US-Born (n = 2331)</th>
<th>Total (n = 4558)</th>
<th>Foreign-Born (n = 1541)</th>
<th>US-Born (n = 23262)</th>
<th>Total (n = 24803)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any disorder</td>
<td>28.5 (1.40)</td>
<td>47.6 (2.08)</td>
<td>36.7 (1.14)</td>
<td>32.3 (2.08)</td>
<td>52.5 (2.01)</td>
<td>51.2 (0.77)</td>
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<tr>
<td>Any alcohol use disorder</td>
<td>15.3 (1.11)</td>
<td>30.5 (1.82)</td>
<td>21.9 (1.07)</td>
<td>16.2 (1.64)</td>
<td>35.0 (6.00)</td>
<td>33.9 (0.68)</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>9.1 (0.78)</td>
<td>16.0 (1.12)</td>
<td>12.1 (0.64)</td>
<td>9.6 (1.24)</td>
<td>20.8 (0.43)</td>
<td>20.2 (0.48)</td>
</tr>
<tr>
<td>Alcohol dependence</td>
<td>6.2 (0.78)</td>
<td>14.5 (1.29)</td>
<td>9.8 (0.78)</td>
<td>6.6 (0.85)</td>
<td>14.2 (0.35)</td>
<td>13.7 (0.36)</td>
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<tr>
<td>Any drug use disorder</td>
<td>1.7 (0.43)</td>
<td>12.0 (1.12)</td>
<td>6.1 (0.63)</td>
<td>4.8 (0.70)</td>
<td>11.6 (0.33)</td>
<td>11.2 (0.33)</td>
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<tr>
<td>Any drug abuse</td>
<td>1.3 (0.30)</td>
<td>8.3 (0.84)</td>
<td>4.3 (0.46)</td>
<td>3.2 (0.49)</td>
<td>8.9 (0.25)</td>
<td>8.5 (0.25)</td>
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<tr>
<td>Any drug dependence</td>
<td>0.4 (0.18)</td>
<td>3.7 (0.63)</td>
<td>1.8 (0.33)</td>
<td>1.6 (0.50)</td>
<td>2.8 (0.16)</td>
<td>2.7 (0.15)</td>
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<td>Any mood disorder</td>
<td>10.2 (0.72)</td>
<td>19.3 (1.41)</td>
<td>14.1 (0.75)</td>
<td>14.7 (1.11)</td>
<td>20.9 (0.39)</td>
<td>20.6 (0.39)</td>
</tr>
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<td>Major depression</td>
<td>7.7 (0.62)</td>
<td>15.2 (1.35)</td>
<td>10.9 (0.68)</td>
<td>12.0 (1.00)</td>
<td>18.2 (0.35)</td>
<td>17.8 (0.36)</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>1.7 (0.30)</td>
<td>2.8 (0.57)</td>
<td>2.2 (0.34)</td>
<td>3.1 (0.57)</td>
<td>4.6 (0.16)</td>
<td>4.5 (0.16)</td>
</tr>
<tr>
<td>Mania</td>
<td>2.0 (0.47)</td>
<td>3.8 (0.52)</td>
<td>2.8 (0.35)</td>
<td>2.7 (0.64)</td>
<td>3.2 (0.15)</td>
<td>3.2 (0.15)</td>
</tr>
<tr>
<td>Hypomania</td>
<td>1.5 (0.32)</td>
<td>3.2 (0.52)</td>
<td>2.2 (0.28)</td>
<td>1.8 (0.38)</td>
<td>2.3 (0.12)</td>
<td>2.3 (0.12)</td>
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<tr>
<td>Any anxiety disorder</td>
<td>9.1 (0.87)</td>
<td>16.3 (1.45)</td>
<td>12.2 (0.96)</td>
<td>12.4 (1.03)</td>
<td>18.7 (0.45)</td>
<td>18.3 (0.45)</td>
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<tr>
<td>Panic disorder</td>
<td>1.3 (0.31)</td>
<td>5.0 (0.73)</td>
<td>2.9 (0.41)</td>
<td>3.4 (0.48)</td>
<td>5.7 (0.19)</td>
<td>5.5 (0.18)</td>
</tr>
<tr>
<td>Social phobia</td>
<td>2.1 (0.38)</td>
<td>4.1 (0.65)</td>
<td>2.9 (0.34)</td>
<td>3.4 (0.63)</td>
<td>5.7 (0.22)</td>
<td>5.5 (0.22)</td>
</tr>
<tr>
<td>Specific phobia</td>
<td>5.9 (0.77)</td>
<td>8.7 (1.24)</td>
<td>7.1 (0.81)</td>
<td>5.9 (0.61)</td>
<td>10.1 (0.33)</td>
<td>9.8 (0.32)</td>
</tr>
<tr>
<td>Generalized anxiety</td>
<td>1.5 (0.35)</td>
<td>3.3 (0.72)</td>
<td>2.3 (0.37)</td>
<td>3.2 (0.52)</td>
<td>4.7 (0.21)</td>
<td>4.6 (0.20)</td>
</tr>
</tbody>
</table>

*Values are expressed as percentage (standard error).*
of major psychiatric disorders compared with their US-born counterparts, even though they may experience greater stress owing to low socioeconomic status and/or adapting to a new culture. In view of this, it is apparent that social stress hypotheses of immigration and mental health, which would predict greater risk of psychiatric disorders among the foreign-born, cannot explain these results. However, this set of findings is consistent with the “selection” or “healthy migrant” model.4,6,43 This model asserts that foreign-born individuals with good mental health are more likely to immigrate to the United States than those with poor mental health and thus are at lower risk of psychiatric morbidity. The selection model predicts that the foreign-born would have lower risk of disorder compared with the US-born. In most comparisons, the risk of psychiatric disorders examined in this study was lower among foreign-born Mexican Americans and US-born counterparts, even though they may experience greater stress owing to low socioeconomic status and/or adapting to a new culture.

Table 3. Adjusted Odds Ratios of Lifetime DSM-IV Psychiatric Disorders Among Groups Defined by Race-Ethnicity and Immigration Status

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Any disorder</td>
<td>1.8 (1.3-1.9)</td>
<td>3.8 (3.2-4.5)</td>
<td>1.7 (1.1-2.9)</td>
<td>2.1 (1.7-2.7)</td>
<td>2.4 (2.1-2.8)</td>
<td>1.0 (0.8-1.3)</td>
</tr>
<tr>
<td>Any alcohol use disorder</td>
<td>1.5 (1.2-1.8)</td>
<td>4.1 (3.3-5.2)</td>
<td>2.1 (1.6-2.8)</td>
<td>2.6 (2.0-3.3)</td>
<td>3.1 (2.5-3.8)</td>
<td>1.0 (0.7-1.4)</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>1.3 (1.1-1.5)</td>
<td>2.5 (1.9-3.2)</td>
<td>1.9 (1.5-2.7)</td>
<td>2.2 (1.6-3.0)</td>
<td>2.5 (2.0-3.2)</td>
<td>0.9 (0.6-1.3)</td>
</tr>
<tr>
<td>Alcohol dependence</td>
<td>1.5 (1.2-1.8)</td>
<td>4.2 (3.1-5.8)</td>
<td>1.8 (1.2-2.5)</td>
<td>2.2 (1.6-3.1)</td>
<td>2.6 (2.0-3.3)</td>
<td>1.2 (0.7-1.9)</td>
</tr>
<tr>
<td>Any drug use disorder</td>
<td>1.8 (1.5-2.2)</td>
<td>18.7 (10.3-33.9)</td>
<td>2.0 (1.3-3.1)</td>
<td>7.5 (3.9-14.7)</td>
<td>3.1 (2.3-4.2)</td>
<td>2.5 (1.0-5.9)</td>
</tr>
<tr>
<td>Any drug abuse</td>
<td>1.8 (1.5-2.2)</td>
<td>14.5 (8.5-24.6)</td>
<td>2.4 (1.5-3.7)</td>
<td>6.5 (3.4-12.1)</td>
<td>3.4 (2.4-4.6)</td>
<td>1.8 (0.9-3.5)</td>
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<tr>
<td>Any drug dependence</td>
<td>1.7 (1.1-2.4)</td>
<td>23.1 (8.3-64.8)</td>
<td>1.3 (0.5-3.3)</td>
<td>8.6 (3.4-21.7)</td>
<td>2.0 (1.1-4.0)</td>
<td>4.8 (0.8-23.9)</td>
</tr>
<tr>
<td>Any mood disorder</td>
<td>1.5 (1.3-1.8)</td>
<td>3.0 (2.5-3.7)</td>
<td>1.1 (0.8-1.5)</td>
<td>1.7 (1.2-2.2)</td>
<td>1.6 (1.3-1.9)</td>
<td>1.3 (0.9-1.9)</td>
</tr>
<tr>
<td>Major depression</td>
<td>1.7 (1.3-2.1)</td>
<td>3.3 (2.7-4.0)</td>
<td>1.7 (1.0-2.7)</td>
<td>1.6 (1.1-2.3)</td>
<td>1.7 (1.4-2.0)</td>
<td>1.5 (0.9-2.2)</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>2.0 (1.3-3.9)</td>
<td>3.2 (2.5-5.8)</td>
<td>0.6 (0.3-1.2)</td>
<td>1.8 (1.1-3.1)</td>
<td>1.6 (1.1-2.2)</td>
<td>1.7 (0.9-3.3)</td>
</tr>
<tr>
<td>Mania</td>
<td>1.5 (1.1-2.0)</td>
<td>3.6 (2.1-6.2)</td>
<td>0.8 (0.4-1.6)</td>
<td>2.1 (1.2-3.9)</td>
<td>1.3 (0.7-2.1)</td>
<td>1.8 (0.6-6.3)</td>
</tr>
<tr>
<td>Hypomania</td>
<td>1.1 (0.8-1.7)</td>
<td>2.9 (1.6-5.0)</td>
<td>1.1 (0.6-2.3)</td>
<td>1.4 (0.7-2.6)</td>
<td>1.3 (0.8-2.0)</td>
<td>1.5 (0.8-3.3)</td>
</tr>
<tr>
<td>Any anxiety disorder</td>
<td>1.4 (1.1-1.8)</td>
<td>2.8 (2.2-3.6)</td>
<td>1.2 (0.9-1.6)</td>
<td>1.8 (1.4-2.5)</td>
<td>1.7 (1.4-2.0)</td>
<td>1.1 (0.8-1.5)</td>
</tr>
<tr>
<td>Panic disorder</td>
<td>1.3 (0.9-1.8)</td>
<td>3.8 (2.4-6.1)</td>
<td>1.7 (1.1-2.6)</td>
<td>2.4 (1.4-4.1)</td>
<td>2.0 (1.4-2.8)</td>
<td>1.1 (0.6-2.1)</td>
</tr>
<tr>
<td>Social phobia</td>
<td>1.9 (1.4-2.6)</td>
<td>4.1 (2.7-6.3)</td>
<td>0.8 (0.5-1.5)</td>
<td>1.8 (0.9-3.5)</td>
<td>1.7 (1.2-2.5)</td>
<td>1.5 (0.7-2.9)</td>
</tr>
<tr>
<td>Specific phobia</td>
<td>1.5 (1.1-2.1)</td>
<td>2.4 (1.7-3.4)</td>
<td>1.3 (0.9-1.9)</td>
<td>1.5 (0.9-2.2)</td>
<td>1.8 (1.5-2.3)</td>
<td>0.9 (0.6-1.4)</td>
</tr>
<tr>
<td>Generalized anxiety</td>
<td>1.7 (1.1-2.7)</td>
<td>3.0 (2.1-5.6)</td>
<td>0.7 (0.4-1.2)</td>
<td>2.5 (1.2-5.4)</td>
<td>1.5 (1.1-2.0)</td>
<td>2.1 (1.2-3.9)</td>
</tr>
</tbody>
</table>

Abbreviation: RG, reference group associated with comparison.

*Values are expressed as odds ratio (95% confidence interval). Odds ratios adjusted for sociodemographic (sex, age, marital status, place of residence, region of country) and socioeconomic (education, family income) factors.

Evidence found in other studies examining mental health among Mexican Americans for the “frustrated status”4,6,6 hypothesis can also not explain these results. This model posits that the foreign-born may be at lower risk of disorder because of a lower set of expectations about what constitutes success in America. US-born Mexican Americans, having higher expectations for status attainment, may be more distressed and experience a greater sense of deprivation and greater risk of psychiatric morbidity than their foreign-born counterparts. This model predicts that US-born Mexican Americans will have higher rates of disorder than US-born non-Hispanic whites. However, as previously mentioned, US-born Mexican Americans were at lower risk of most psychiatric disorders compared with US-born non-Hispanic whites.

Alternatively, some of the findings of this study may argue in support of a negative effect of acculturation on mental health. Foreign-born Mexican Americans and foreign-born non-Hispanic whites appear to share the lower risk status of their national origins, but acculturation appears to have a deleterious effect on their mental health.4,6,7,44 Further, the results of this study also, in part, support the role of traditional cultural retention as a protective factor of the mental health of individuals of Mexican descent.4,6,44 The traditional Mexican family is more closely knit than most non-Hispanic white families, with many extended family members who offer a great deal of psychological and financial support. That traditional Mexican family networks may be protective against psychiatric morbidity is consistent with the findings that foreign-born Mexican Americans and non-Hispanic whites did not differ in the risk of psychiatric disorders, but US-born Mexican Americans had a clear mental health advantage over US-born non-Hispanic whites. These results further suggest that the
protective effects of cultural retention found for Mexican Americans may not be generalizable to immigrants of other descents and origins.

In addition to the explanatory models explored in this study, there are 2 methodological artifacts that also may account, in part, for the pattern of associations observed between place of birth and psychiatric morbidity. The first is bias owing to language (ie, the nonequivalent assessment of disorder when the interview was administered in English vs Spanish), which could lead to differential reliability and validity of the psychiatric measures across subgroups of the population defined by race-ethnicity and immigration status. Differences in response tendencies (eg, social approval, trait desirability, or acquiescence) among English-speaking Mexican Americans can also be implicated. Further research is critically needed to ascertain the degree to which language bias and differential response patterns influence the rates of psychiatric disorders and, in turn, the reliability and validity of case ascertainment.

Reports from other countries15-47 that have found high rates of psychopathology among immigrants suggest that risk status of national origin, patterns of immigration, motivations for immigration, and characteristics of the host country are all likely to be important determinants of the mental health status of immigrants. Further research among foreign-born and US-born Mexican Americans is sorely needed to understand processes underlying what appear to be the protective effects of culture and the deleterious effects of acculturation on mental health. The findings of this study also suggest that such research be extended to US-born and foreign-born individuals of other origin and descents. Identifying the specific components of various cultures that are protective against psychopathology and those components of acculturation that increase risk of psychiatric morbidity holds great promise in helping to guide future prevention and treatment efforts.

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