
# Immigration and Mental Disorders among Asian Americans

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# Immigration-Related Factors and Mental Disorders Among Asian Americans

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*Objectives.* We examined lifetime and 12-month rates of any depressive, anxiety, and substance abuse disorders in a national sample of Asian Americans. We focused on factors related to nativity and immigration as possible correlates of mental disorders.

*Methods.* Data were derived from the National Latino and Asian American Study, the first national epidemiological survey of Asian Americans in the United States.

*Results.* The relationships between immigration-related factors and mental disorders were different for men and women. Among women, nativity was strongly associated with lifetime disorders, with immigrant women having lower rates of most disorders compared with US-born women. Conversely, English proficiency was associated with mental disorders for Asian men. Asian men who spoke English proficiently generally had lower rates of lifetime and 12-month disorders compared with nonproficient speakers.

*Conclusions.* For Asian Americans, immigration-related factors were associated with mental disorders, but in different ways for men and women. Future studies will need to examine gender as an important factor in specifying the association between immigration and mental health. (*Am J Public Health.* 2007; 97:84–90. doi:10.2105/AJPH.2006.088401)

Past epidemiological studies were likely to show that, with some exceptions (e.g., tuberculosis and smoking), Asian immigrants in the United States have lower levels of health problems than do their US-born counterparts.[1] The early 1970s study of coronary heart disease among Japanese people in Japan, Hawaii, and California provided some of the empirical foundation about immigration and health among Asian Americans.[2] That study showed that the rate of coronary heart disease was lowest in Japan, intermediate in Hawaii, and highest in California. Lifestyle factors such as diet or smoking did not completely explain this gradient. Instead, analyses indicated that facets of immigration had an effect on coronary heart disease independent of coronary risk factors.[3,4]

Contemporary empirical investigations tend to support the assertion that nativity is an important correlate of health among Asian Americans. For example, in an analyses of the 1992 to 1995 National Health Interview Survey (NHIS), Asian immigrants had significant health advantages over their US-born counterparts in terms of self-reported health, activity limitations, and bed days owing to illness.[5] The 2000 NHIS found that Asian immigrants had lower levels of obesity than did US-born persons but that levels of obesity converged after the immigrants had lived in the United States for 15 years.[6] Similarly, years in the United States was positively associated with coronary calcification among Chinese immigrants in the Multi-Ethnic Study of Atherosclerosis.[7]

Although the literature on the association between immigration and physical health among Asian Americans is increasing, relatively less is known about their mental health. Previous studies on immigration and mental health among Asian Americans usually focused on a relatively common type of disorder—depression. Immigration is associated with depression, but the direction of the association is inconsistent.[8] Some studies find that individuals born in a country other than the United States are more likely to be depressed, but other studies find the opposite pattern.[9] Part of the inconsistency can be attributed to the use of different data collection methods, sampling designs, and measures for assessing depression. For example, studies on college students tend to use depression symptom scales and find that Asian immigrants have higher levels of depressive symptoms than do US-born Asians.[8] On the contrary, community studies that use standardized diagnostic interview schedules often show that Asian immigrants have lower rates of major depression than do US-born Asians.[8,10–12]

The age at which Asians immigrate to the United States is also strongly associated with major depression. For example, Chinese immigrants who immigrate after 20 years of age are nearly 1.5 to 3.0 times more likely to experience major depression than are those who immigrate before age 20 years.[10] English proficiency is another important immigration-related factor that may affect mental health. The ability to speak English proficiently is a key feature in the social integration and acculturation of immigrants in such areas as the entry into the US labor force.[13–15] Also, the circumstances under which people migrate to the United States are associated with depression. Asian refugees are more likely to report depressive symptoms than are Asian immigrants who voluntarily come to the United States.[16–18]

Until recently, no national estimates were available on the prevalence of mental disorders among Asian Americans in community settings. Much of what we know about immigration and mental health comes from admissions data from mental health treatment settings, small-scale community surveys, or studies of college students. Registries across different states can be compiled, and the NHIS has useful health information on Asian Americans, especially when analyses have compiled data over several years. No similar resources are available on the prevalence rates of mental disorders.

Given the relatively small population size of Asian Americans, it is not entirely surprising that no national study has been conducted using state-of-the-art epidemiological

methods. Despite their rapid growth relative to other ethnic minority populations, Asian Americans still constitute only a small portion of most communities. Sampling and other methodological barriers (e.g., translations, development of equivalent instruments to measure depression) make it costly and difficult to conduct a well-designed national survey of psychiatric disorders. Despite these difficulties, we were able to examine how immigration is associated with mental disorders on the basis of data from the first national study of Asian Americans: the National Latino and Asian American Study (NLAAS).

The purpose of our study was to examine the lifetime and 12-month rates of any depressive, anxiety, and substance abuse disorders among US-born and immigrant Asian Americans. We examined the bivariate associations among different immigration-related factors, including nativity, length of residency, age at arrival, generational status, and English language proficiency, to assess how they are associated with mental disorders. These analyses were made in coordination with Collaborative Psychiatric Epidemiology Studies (CPES), which provided the unprecedented opportunity to compare how immigration-related factors are associated with psychiatric disorders across 3 major racial/ethnic categories (Asian, Black, and Latino). For each factor considered in these analyses, we assessed whether immigrants had lower rates of different mental disorders than did their US-born counterparts.

## METHODS

The data for this study were taken from the NLAAS, which was part of the broader CPES effort.[19,20] CPES also included the National Comorbidity Survey Replication and the National Survey of American Life. The NLAAS core sampling procedure resulted in a nationally representative household sample of Latino and Asian Americans. The current study was conducted using data from the sample of Asian Americans in the NLAAS project.

### Sampling Design

The sampling procedure has been previously documented.[19,20] In brief, it included the following 3 stages:

1. Core sampling, in which primary sampling units, defined as metropolitan statistical areas or county units, and secondary sampling units, formed from contiguous groupings of census blocks, were selected according to probability proportionate to size, from which housing units and household members were sampled.
2. High-density supplemental sampling, which was used to oversample census block groups with greater than 5% density of target ancestry groups (Latino: Cuban, Mexican, Puerto Rican; Asian: Chinese, Filipino, Vietnamese). Individuals of Asian or Latino ancestry who did not belong to the target groups under which these geographic areas were classified were still eligible to participate. Thus, participants in high-density communities (i.e., with greater than 5% density of target groups) actually had 2 opportunities for NLAAS recruitment: first, through the core sampling strategy, and second, through the high-density sampling strategy.
3. Recruitment of secondary respondents, who were obtained from households in which 1 eligible member had already been interviewed.

Weighting corrections were developed to take into account the joint probabilities for selection under the 3 components of the NLAAS sampling design.

### Procedures

Participants were initially contacted with an introductory letter containing a study brochure. Interested participants were then screened, scheduled for an interview, and the interviewed. Interviews were conducted with computer-assisted interviewing software and were administered by trained bilingual interviewers with linguistic and cultural backgrounds similar to those of the target population. Face-to-face interviews were conducted with participants in the core and high-density samples, unless the respondent specifically requested a telephone interview or face-to-face interviewing was prohibitive. The median length of the interview was 2.4 hours. As a measure of quality control, a random sample of participants with completed interviews was recontacted to validate the data.

### Sample

For our sample, we targeted Asian American individuals who were 18 years or older and resided in any of the 50 states and Washington, DC. The 3 national origin groups we targeted for the Asian American sample were Chinese, Filipino, or Vietnamese, but individuals of "other" Asian ancestry also were included. A total of 2095 Asian American individuals (1611 primary respondents; 484 secondary respondents) were recruited between May 2002 and November 2003 as part of the larger NLAAS survey. Response rates were attained for Asian American primary and secondary respondents. Weighted response rates were 69.3% for primary respondents, 73.6% for secondary respondents, and 65.6% overall. Detailed sample characteristics were reported in other NLAAS studies.[19,20]

### Measures

The NLAAS instruments were available in English, Spanish, Mandarin, Cantonese, Tagalog, and Vietnamese and translated using standard translation and back-translation techniques. The interview was conducted in English with approximately 72% of all respondents. The frequency with which the interview was conducted in English varied among the ethnic groups: other Asian Americans (99%), Filipino (87%), Chinese (47%), and Vietnamese (22%).

*Lifetime and 12-month diagnosis.* The primary mental disorder diagnostic instrument was the World Health Organization Composite International Diagnostic Interview.[21] This diagnostic interview was used to assess lifetime (the occurrence of the problem in one's lifetime) and 12-month (the occurrence of the problem within 12 months of the interview) presence of psychiatric disorders with criteria from the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (*DSM-IV*).[22] Because of the highly skewed distribution of the number of mental disorders, the presence of any mental disorder was treated as a dichotomous variable (0=none; 1=any) rather than constructed as a total count of disorders. "Any" disorder was based on the diagnosis of at least 1 disorder in any of the following 3 categories: (1) depressive disorders (major depressive disorder or dysthymia), (2) anxiety

disorders (panic disorder, agoraphobia without panic, social phobia, generalized anxiety disorder, or posttraumatic stress disorder), and (3) substance use disorders (alcohol abuse, alcohol dependence, drug abuse, drug dependence).

*Ethnicity.* Individuals self-reported their membership in an Asian American group. Responses were categorized as Chinese (n=600), Filipino (n=508), Vietnamese (n=520), and other Asian (n=467). The "other Asian" category included individuals who identified as Japanese (n=107), Korean (n=81), Asian Indian (n=141), and other (n=138).

*Immigration-related variables.* Our analyses focused on nativity status, English-language proficiency, years in the United States, age at time of immigration, and generational status. The categories for all variables were uniform across the CPES collaborators to allow for maximum comparisons among Asian, Black, and Latino samples. Nativity status was a dichotomous measure (i.e., 0=US-born; 1=foreign-born). English-language proficiency was assessed with the following item: "How well do you speak English?" Responses were separated into 2 categories: "excellent/good" or "fair/poor." Years in the United States was measured as a continuous variable and then split into 4 categories: 0 to 5 years (n=302), 6 to 10 years (n=300), 11 to 20 years (n=532), and 21 years or older (n=504). Age at time of immigration was separated into 4 categories: 12 years and younger (n=237), between 13 and 17 years (n=130), between 18 and 34 years (n=886), and 35 years or older (n=385). Generational status was divided into 3 categories: first generation (i.e., immigrants; n=1639), second generation (i.e., born in the United States; n=272), and third generation or later (at minimum, both parents born in the United States; n=182).

## Analyses

We computed prevalence rates for the different disorders stratified by ethnicity and various immigration-related variables (i.e., nativity status, English-language proficiency, years in the United States, age at time of immigration, and generational status). Odds ratios (ORs) were derived from a series of weighted logistic regression analyses to examine the association between various immigration-related factors and mental disorders (i.e., lifetime and 12-month prevalence rates for any depressive disorder, any anxiety disorder, any substance abuse disorder, and any psychiatric disorder). We conducted all analyses separately by gender and controlled for age in each set of analyses. Weighted percentages, standard errors, and 95% confidence intervals (CIs) were reported. We also took into account sample design effects on our analyses by using the Stata software Version 9.2 "svy" (survey) commands (Stata Corp, College Station, Tex) that allow for estimation of standard errors in the presence of stratification and clustering.

## RESULTS

Table 1 shows the sample characteristics and the lifetime and 12-month prevalence

**TABLE 1—Sample Characteristics and Lifetime and 12-Month Prevalence of Any Disorders, by Ethnicity and Immigration-Related Factors: National Latino and Asian American Study, Asian Americans (N=2095), May 2002–November 2003**

| | Unweighted n | Weighted Percentage/ Mean | SE | Lifetime Prevalence of Any Disorder % | Lifetime Prevalence of Any Disorder SE | 12-Month Prevalence of Any Disorder % | 12-Month Prevalence of Any Disorder SE |
|---|---|---|---|---|---|---|---|
| Gender | | | | | | | |
| Men | 998 | 47.45 | 1.12% | 17.18 | 2.39% | 8.44 | 1.36% |
| Women | 1097 | 52.55 | 1.12% | 17.43 | 1.68% | 9.87 | 1.15% |
| Age | 2095 | 41.33 | 0.88 | | | | |
| Ethnic origins | | | | | | | |
| Chinese | 600 | 28.69 | 2.66% | 18.00 | 2.34% | 10.00 | 1.73% |
| Filipino | 508 | 21.59 | 2.32% | 16.74 | 1.40% | 8.99 | 1.26% |
| Vietnamese | 520 | 12.93 | 2.09% | 13.95 | 2.40% | 6.69 | 1.38% |
| Other Asians | 467 | 36.79 | 2.34% | 18.29 | 2.81% | 9.55 | 1.56% |
| Nativity status | | | | | | | |
| US-born | 454 | 23.06 | 3.20% | 24.62 | 3.22% | 13.22 | 1.96% |
| Foreign-born | 1639 | 76.94 | 3.20% | 15.16 | 1.55% | 8.00 | 0.79% |
| English-language proficiency | | | | | | | |
| Excellent/good | 1292 | 66.19 | 2.33% | 17.24 | 1.64% | 8.82 | 0.91% |
| Fair/poor | 797 | 33.81 | 2.33% | 17.47 | 2.14% | 9.85 | 1.04% |
| Years in the United States | | | | | | | |
| US-born | 454 | 23.07 | 3.21% | 24.62 | 3.22% | 13.22 | 1.96% |
| 0–5 | 302 | 14.17 | 1.98% | 12.59 | 3.02% | 5.90 | 1.50% |
| 6–10 | 300 | 12.06 | 1.06% | 15.69 | 2.89% | 9.30 | 2.74% |
| 11–20 | 532 | 26.46 | 1.70% | 14.97 | 1.55% | 9.12 | 1.09% |
| ≥21 | 504 | 24.25 | 1.24% | 16.62 | 2.17% | 7.38 | 1.37% |
| Age at time of immigration, y | | | | | | | |
| US-born | 454 | 23.07 | 3.21% | 24.62 | 3.22% | 13.22 | 1.96% |
| ≤12 | 237 | 12.72 | 1.43% | 25.32 | 4.43% | 15.03 | 3.31% |
| 13–17 | 130 | 5.08 | 0.56% | 15.87 | 3.89% | 9.30 | 2.95% |
| 18–34 | 886 | 41.64 | 2.31% | 12.76 | 1.66% | 6.16 | 1.00% |
| ≥35 | 385 | 17.49 | 1.84% | 13.29 | 2.68% | 6.90 | 1.55% |
| Generational status | | | | | | | |
| First | 1639 | 76.94 | 3.20% | 15.16 | 1.55% | 8.00 | 0.79% |
| Second | 272 | 13.68 | 1.85% | 23.97 | 4.18% | 13.92 | 2.64% |
| Third or later | 182 | 9.38 | 1.54% | 25.58 | 2.83% | 12.19 | 2.33% |
| Total | 2095 | | | 17.30 | 1.16% | 9.19 | 0.78% |

rates of any disorder. As evident in the table, approximately three fourths of the sample was composed of people born in another country. Most of the immigrants have been in the United States for 11 years or more. Most of the immigrants also arrived during their adult lives (18 years and older). A third of the respondents rated their English-speaking abilities as fair or poor, whereas the large majority of the respondents indicated that their English-speaking abilities were excellent or good.

The overall lifetime rate of any disorder was 17.30% (SE=1.16%), and the 12-month rate was 9.19% (SE=0.78%). The lifetime rates did not differ by gender, ethnicity, and English-language proficiency. US-born individuals had the highest lifetime and 12-month rates of any disorder when nativity status, years in the United States, age at time of immigration, and generational status were considered. With age at time of immigration, respondents who arrived when they were children (12 years and younger) had a lifetime rate of any disorder similar to that in US-born respondents. Second- and third-generation respondents had similar lifetime and 12-month rates of any psychiatric disorder, and they had higher rates of these disorders than did first-generation respondents.

Table 2 presents odds ratios derived from a series of weighted logistic regression analyses estimating the association between different immigration-related factors and any depressive disorder, any anxiety disorder, any substance abuse disorder, and any psychiatric disorder. Table 2 focuses on lifetime disorders, and comparison groups for all variables are identified within the table. Because gender is often a strong correlate of different types of disorders, we conducted separate analyses for men and women. We controlled

**TABLE 2—Odds Ratios (ORs) With 95% Confidence Intervals (CIs) for the Associations Between Immigration-Related Variables and Lifetime Disorders, by Gender: National Latino and Asian American Study, Asian Americans (N = 2095), May 2002–November 2003**

| | Lifetime Any Depressive Disorder | | Lifetime Any Anxiety Disorder | | Lifetime Any Substance Abuse Disorder | | Lifetime Any Psychiatric Disorder | |
|---|---|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women | Men | Women |
| Ethnic origins | | | | | | | | |
| Chinese | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| Filipino | 0.90 (0.40, 1.99) | 0.59 (0.34, 1.04) | 1.05 (0.50, 2.20) | 0.81 (0.48, 1.38) | 2.38* (1.05, 5.38) | 1.33 (0.53, 3.31) | 1.20 (0.73, 1.98) | 0.74 (0.50, 1.09) |
| Vietnamese | 1.62 (0.57, 4.55) | 0.47* (0.23, 0.97) | 0.76 (0.32, 1.83) | 0.66 (0.28, 1.55) | 0.61 (0.18, 2.03) | 0.64 (0.15, 2.76) | 1.07 (0.43, 2.67) | 0.54 (0.29, 1.01) |
| Other Asian | 1.52 (0.71, 3.27) | 0.78 (0.44, 1.36) | 0.88 (0.36, 2.18) | 0.90 (0.46, 1.77) | 2.15 (0.77, 6.06) | 0.62 (0.20, 1.95) | 1.21 (0.66, 2.22) | 0.81 (0.51, 1.30) |
| Nativity status | | | | | | | | |
| US-born | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| Foreign-born | 0.91 (0.48, 1.73) | 0.50** (0.33, 0.76) | 0.90 (0.46, 1.73) | 0.47* (0.26, 0.85) | 0.31* (0.12, 0.77) | 0.13*** (0.05, 0.32) | 0.61 (0.38, 1.06) | 0.53** (0.35, 0.82) |
| English-language proficiency | | | | | | | | |
| Excellent/good | 0.44* (0.20, 0.95) | 1.06 (0.61, 1.85) | 0.51* (0.30, 0.87) | 1.59 (0.90, 2.82) | 1.26 (0.59, 2.70) | Dropped | 0.52** (0.33, 0.81) | 1.42 (0.90, 2.23) |
| Fair/poor | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| Years in the United States | | | | | | | | |
| US-born | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| 0–5 | 0.21*** (0.09, 0.48) | 0.46 (0.15, 1.38) | 0.40 (0.11, 1.44) | 0.37* (0.15, 0.93) | 0.33 (0.08, 1.39) | Dropped | 0.38* (0.15, 0.96) | 0.46 (0.20, 1.07) |
| 6–10 | 2.10 (0.76, 5.78) | 0.43** (0.24, 0.75) | 1.02 (0.41, 2.58) | 0.45* (0.21, 0.95) | 0.24** (0.10, 0.61) | Dropped | 0.87 (0.42, 1.79) | 0.38** (0.22, 0.67) |
| 11–20 | 1.07 (0.42, 2.71) | 0.53* (0.31, 0.89) | 1.02 (0.49, 2.10) | 0.44 (0.17, 1.13) | 0.36 (0.10, 1.31) | 0.11 (0.01, 1.41) | 0.59 (0.29, 1.20) | 0.52* (0.29, 0.92) |
| ≥21 | 0.62 (0.26, 1.45) | 0.55 (0.22, 1.41) | 1.04 (0.49, 2.23) | 0.62 (0.31, 1.25) | 0.25** (0.11, 0.57) | 0.42 (0.13, 1.32) | 0.69 (0.36, 1.32) | 0.72 (0.41, 1.27) |
| Age at time of immigration, y | | | | | | | | |
| US-born | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| ≤12 | 1.36 (0.48, 3.87) | 1.05 (0.50, 2.20) | 0.74 (0.21, 2.59) | 0.91 (0.37, 2.22) | 0.33 (0.10, 1.09) | 0.42* (0.18, 0.96) | 0.69 (0.25, 1.89) | 1.36 (0.77, 2.40) |
| 13–17 | 1.48 (0.61, 3.61) | 0.55 (0.22, 1.36) | 1.64 (0.41, 6.49) | 0.35 (0.12, 1.05) | 0.56 (0.19, 1.67) | Dropped | 0.69 (0.26, 1.87) | 0.41 (0.15, 1.09) |
| 18–34 | 0.60 (0.24, 1.53) | 0.35*** (0.20, 0.61) | 0.86 (0.53, 1.41) | 0.39* (0.19, 0.80) | 0.20** (0.06, 0.60) | 0.06* (0.01, 0.81) | 0.55* (0.34, 0.90) | 0.38** (0.21, 0.67) |
| ≥35 | 1.04 (0.37, 2.89) | 0.38* (0.15, 0.96) | 0.81 (0.32, 2.09) | 0.40 (0.15, 1.08) | 0.59 (0.12, 2.83) | Dropped | 0.67 (0.28, 1.58) | 0.40* (0.19, 0.86) |
| Generational status (control for age and ethnic origins) | | | | | | | | |
| First | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| Second | 0.56 (0.21, 1.48) | 2.50** (1.35, 4.64) | 1.15 (0.49, 2.73) | 2.11 (1.03, 4.31) | 2.24 (0.60, 8.39) | 7.60*** (2.98, 19.36) | 1.31 (0.59, 2.88) | 2.07* (1.19, 3.60) |
| Third or later | 2.04 (0.89, 4.69) | 1.40 (0.87, 2.26) | 1.01 (0.32, 3.25) | 2.17 (0.98, 4.77) | 3.80* (1.35, 10.66) | 9.50*** (2.82, 32.04) | 2.13* (1.08, 4.19) | 1.61 (0.93, 2.79) |

*Note.* Age was controlled for in the regression (except for generational status). "Dropped" refers to rates not included because no positive case was found in this group.
*$P$<.05; **$P$<.01; ***$P$<.001.

for age in each set of analyses to compensate for the different age distribution that may be found between immigrants and US-born respondents.

Few ethnic differences were evident in lifetime disorders. Vietnamese women were less likely than Chinese women (OR=0.47; 95% CI=0.23, 0.97) to have any lifetime depressive disorder. Filipino men were more at risk for lifetime substance abuse disorder than were Chinese men (OR=2.38; 95% CI=1.05, 5.38). Among the immigration-related variables, nativity status was more often associated with disorders for women than for men. Women born in another country were less likely to have any lifetime depressive, anxiety, substance abuse, and psychiatric disorder than were US-born women. For men, nativity status was primarily associated with any lifetime substance abuse disorder. Immigrant men had lower odds of having a lifetime substance abuse disorder than did US-born men (OR=0.31; 95% CI=0.12, 0.77). However, English-language proficiency was strongly associated with lifetime psychiatric disorders for men. Men who spoke English well (excellent or good) were less likely to have any lifetime depressive, anxiety, or psychiatric disorder than were men who were less proficient in English. However, for Asian American women, English-language proficiency was not associated with psychiatric disorders.

Years in the United States did not show the predicted pattern for an increased risk for depressive disorder. Although some associations were evident, they were often in the opposite direction of the prediction that length of residency reduces the chance of psychiatric disorders. Age at time of immigration was associated with different disorders primarily for women. Although not entirely uniform, the pattern suggests that immigrant women who arrived in their adulthood were less likely than US-born women to have any lifetime depressive, anxiety, substance, or psychiatric disorder. Among men, age at time of immigration was primarily associated with any substance abuse disorder and any psychiatric disorder. Men who arrived between ages 18 and 34 years were less likely than US-born men to have a substance abuse disorder (OR=0.20; 95% CI=0.06, 0.60). The same effect was found for any lifetime psychiatric disorder.

Generational status was associated with any depressive and substance abuse disorders. The findings were most striking for any substance abuse disorders. Compared with first-generation women, the odds of substance abuse disorder increased precipitously in the second-generation women (OR=7.60; 95% CI=2.98, 19.36) and third-generation women (OR=9.50; 95% CI=2.82, 32.04). A similar, albeit weaker, trend was seen for men.

Table 3 includes analyses similar to those used in Table 2 with a focus on 12-month disorders. Similar to the findings for lifetime disorders, few ethnic differences were found in prevalence of psychiatric disorders. Vietnamese women were less likely than Chinese women to have any 12-month depressive, anxiety, or any psychiatric disorder. Although nativity was associated with all of the lifetime disorders considered among women, and with any lifetime substance abuse disorder among men, nativity was associated with only 12-month any anxiety disorder among women (OR=0.38; 95% CI=0.17, 0.84). The association between English-language proficiency and lifetime disorders was also replicated for 12-month disorders. Men who rated their English as excellent or good were less likely than men who rated their English as fair or poor to have any 12-month depressive, anxiety, and psychiatric disorder.

Years in the United States and age at time of immigration did not show uniform patterns across the different 12-month psychiatric disorders. Generational status, however, was associated with 12-month disorders but only for women. Second-generation women were more at risk than their first-generation counterparts for any 12-month depressive, anxiety, and any psychiatric disorder.

## DISCUSSION

Immigration-related factors are associated with mental disorders among Asian Americans, but the associations are complex and intriguing. Asian men and women differ in the association between immigration-related variables and mental disorders. Nativity is the most stable predictor of mental disorders for women. Women born in another country were less likely than US-born women to have a lifetime case of mental disorders. When 12-month disorders were considered among women, nativity was strongly associated with any anxiety disorder. Generation also had a fairly consistent association with mental disorders for women. Second-generation women were particularly at risk for lifetime and 12-month disorders.

Asian men showed a pattern different from that of women. English-language proficiency was a significant correlate of lifetime and 12-month disorders for men but not necessarily in the predicted direction. Asian men who spoke English proficiently compared with nonproficient speakers generally had lower rates of lifetime and 12-month disorders. These associations might have resulted because more proficient speakers of English may have a higher socioeconomic position in the United States. Although we did not investigate this hypothesis in our current study, it is an important next line of research. The other factors associated with immigration (e.g., years in the United States and age at time of immigration) considered in these analyses did not show a consistent pattern with mental disorders. Future studies should consider the interactive influences between immigration, gender, and ethnicity in the risk for mental disorders.

The associations found between different variables and mental disorders suggest that they measure different facets of the processes in which immigrants seek their place in society. For example, English-language proficiency and age at time of immigration provide different insights about the immigration process. English-language proficiency may serve as a marker for the ability of immigrants to move outside of their immediate social circles and expand their opportunities for employment and other types of social and economic resources. Age at time of immigration can be seen as a measure of the developmental context in which immigrants arrive in the United States. Immigrants arriving as children have an easier time learning English, and schools serve as the primary socialization institution outside of the family. By contrast, immigrants who arrive as older adults will have a more difficult time learning English and will have fewer opportunities to develop social relationships outside of their families.

**TABLE 3—Odds Ratios (ORs) With 95% Confidence Intervals (CIs) for the Associations Between Immigration-Related Variables and 12-Month Disorders: National Latino and Asian American Study, Asian Americans (N = 2095), May 2002–November 2003**

| | 12-Month Any Depressive Disorder | | 12-Month Any Anxiety Disorder | | 12-Month Any Substance Abuse Disorder | | 12-Month Any Psychiatric Disorder | |
|---|---|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women | Men | Women |
| Ethnic origins | | | | | | | | |
| Chinese | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| Filipino | 1.26 (0.43, 3.68) | 0.63 (0.28, 1.41) | 1.65 (0.52, 5.19) | 0.56 (0.27, 1.17) | 2.14 (0.46, 10.00) | 0.81 (0.12, 5.30) | 1.44 (0.68, 3.07) | 0.63 (0.36, 1.08) |
| Vietnamese | 1.57 (0.33, 7.48) | 0.37* (0.14, 0.96) | 1.74 (0.52, 5.80) | 0.32* (0.11, 0.92) | 0.15 (0.01, 1.93) | 0.69 (0.10, 4.88) | 1.37 (0.43, 4.31) | 0.34* (0.14, 0.83) |
| Other Asian | 1.57 (0.35, 6.98) | 0.85 (0.44, 1.64) | 1.41 (0.34, 5.93) | 0.75 (0.38, 1.49) | 1.33 (0.35, 5.03) | 0.81 (0.20, 3.29) | 1.21 (0.41, 3.60) | 0.71 (0.40, 1.26) |
| Nativity status | | | | | | | | |
| US-born | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| Foreign-born | 1.68 (0.76, 3.70) | 0.52 (0.25, 1.10) | 0.89 (0.48, 1.64) | 0.38* (0.17, 0.84) | 0.30 (0.05, 1.69) | 0.33 (0.11, 1.02) | 0.78 (0.45, 1.36) | 0.51 (0.26, 1.00) |
| English-language proficiency | | | | | | | | |
| Excellent/good | 0.29* (0.11, 0.74) | 0.73 (0.36, 1.51) | 0.45** (0.28, 0.73) | 1.69 (0.78, 3.64) | 2.14 (0.25, 18.23) | Dropped | 0.45** (0.25, 0.80) | 1.09 (0.57, 2.07) |
| Fair/poor | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| Years in the United States | | | | | | | | |
| US-born | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| 0–5 | 0.51 (0.19, 1.36) | 0.48 (0.09, 2.65) | 0.62 (0.17, 2.32) | 0.23* (0.07, 0.73) | Dropped | Dropped | 0.41 (0.16, 1.08) | 0.37 (0.10, 1.43) |
| 6–10 | 3.47 (0.76, 15.82) | 0.37 (0.13, 1.07) | 1.74 (0.62, 4.91) | 0.34* (0.13, 0.88) | Dropped | Dropped | 1.29 (0.50, 3.37) | 0.38* (0.18, 0.81) |
| 11–20 | 1.81 (0.66, 4.99) | 0.67 (0.30, 1.45) | 0.78 (0.27, 2.25) | 0.39 (0.13, 1.17) | 0.59 (0.08, 4.25) | 0.37 (0.03, 5.06) | 0.77 (0.32, 1.89) | 0.63 (0.31, 1.26) |
| ≥21 | 1.54 (0.58, 4.11) | 0.44 (0.16, 1.21) | 0.76 (0.38, 1.51) | 0.51 (0.21, 1.23) | 0.46 (0.03, 6.33) | 1.13 (0.26, 4.94) | 0.84 (0.38, 1.84) | 0.56 (0.25, 1.25) |
| Age at time of immigration | | | | | | | | |
| US-born | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| ≤12 | 2.43 (0.76, 7.78) | 0.68 (0.33, 1.38) | 0.35 (0.08, 1.60) | 0.98 (0.35, 2.77) | 0.65 (0.12, 3.38) | 0.81 (0.27, 2.44) | 0.94 (0.31, 2.91) | 1.13 (0.52, 2.46) |
| 13–17 | 2.48* (1.08, 5.66) | 0.20 (0.03, 1.20) | 2.22 (0.64, 7.72) | 0.26 (0.05, 1.35) | 0.17 (0.02, 1.65) | Dropped | 1.14 (0.40, 3.23) | 0.21* (0.05, 0.90) |
| 18–34 | 1.17 (0.33, 4.13) | 0.48 (0.17, 1.33) | 0.73 (0.40, 1.33) | 0.25* (0.08, 0.77) | 0.07** (0.01, 0.50) | 0.20 (0.01, 3.15) | 0.58 (0.30, 1.11) | 0.37* (0.16, 0.88) |
| ≥35 | 0.91 (0.26, 3.25) | 0.59 (0.11, 3.12) | 1.48 (0.67, 3.28) | 0.32 (0.09, 1.22) | Dropped | Dropped | 1.13 (0.55, 2.31) | 0.43 (0.13, 1.45) |
| Generational status (control for age and ethnic origins) | | | | | | | | |
| First | Referent | Referent | Referent | Referent | Referent | Referent | Referent | Referent |
| Second | 0.30 (0.07, 1.19) | 2.44* (1.11, 5.36) | 1.16 (0.55, 2.49) | 2.45* (1.05, 5.74) | 2.62 (0.40, 17.17) | 2.83 (0.80, 10.04) | 1.24 (0.58, 2.64) | 2.10* (1.03, 4.26) |
| Third or later | 1.09 (0.40, 2.93) | 1.21 (0.36, 4.11) | 1.08 (0.38, 3.07) | 2.88 (0.98, 8.41) | 3.22 (0.68, 15.17) | 3.80 (0.52, 17.77) | 1.34 (0.64, 2.80) | 1.73 (0.67, 4.47) |

*Note.* Age was controlled for in the regression (except for generational status). "Dropped" refers to rates not included because no positive case was found in this group.
*$P < .05$; **$P < .01$.

Our study had several limitations. Although this was the first national study of Asian Americans, we decided to include relatively large samples of certain Asian ethnic groups (e.g., Chinese, Vietnamese, and Filipino). Asian ethnic groups such as Korean, Cambodian, and Indian were included in the "other Asian" category. This sampling strategy provided a practical means for establishing a national estimate of psychiatric disorders for Asian Americans, but we were unable to do more detailed analyses with the "other Asian" ethnic category.

Second, we focused primarily on Western expressions of psychiatric disorders as defined by *DSM-IV*. Although this strategy allowed us to compare mental disorders with the same measure, we may have underestimated rates of the problem, especially if immigrants expressed their problems in unique ways that were not identified by *DSM-IV*. Reliance on *DSM-IV* also constrained our analyses in that we could not examine the possible effects of immigration on more culturally nuanced or culturally specific disorders that may be manifested in Asian American populations (e.g., neurasthenia).[23]

Third, the data used in these analyses were from a cross-sectional survey, and we were unable to determine the processes by which immigration-related factors reduced or enhanced the risk for different mental disorders. Fourth, because this was the first in a series of analyses of the NLAAS data, we did not examine in detail how the circumstances under which Asian Americans come to the United States may be linked to mental disorder. For example, given their circumstances, refugees may be more at risk for mental disorders than are immigrants. However, we did not include analyses of the differences between refugees and immigrants. Finally, our analyses were limited to bivariate analyses between immigration-related factors and mental disorders. Multivariate analyses were not used to tease out the

possible confounding relations among the range of immigration-related variables considered in our analyses.

This study and similar analyses in the CPES provide a first step in understanding the similarities and differences in immigration and mental health across racial and ethnic groups in the United States. Despite the limitations outlined here, these analyses complement findings from the CPES on Black and Latino immigrants that begin to provide a more comprehensive understanding of how immigration affects mental health. ■

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## Contributors

D.T. Takeuchi originated the study, led the writing, and supervised all aspects of implementation. N. Zane provided input on interpreting findings and reviewed the article. S. Hong conducted the computer analyses, assisted in drafting the article, and reviewed the article. D.H. Chae, G.C. Gee, and E. Walton assisted in the data analysis, writing parts of the methods and analysis section, and reviewing the final article. F. Gong helped with the measurement in the study and reviewed the article. M. Alegria was principal investigator, along with D.T. Takeuchi, of the National Latino and Asian American Study and was a key member in the design, measurement, and implementation of the entire survey.

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## Human Participant Protection

We received human subjects approval from the University of Washington, Cambridge Health Alliance, Harvard University, and the University of Michigan.

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