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Prevalence of mental illness in immigrant and non-immigrant U.S. Latino groups

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Abstract

Objective—Although widely reported among Latinos, contradictory evidence exists regarding the generalizability of the immigrant paradox; that foreign nativity is protective against psychiatric disorders. We examine whether this paradox applies to all Latino groups by contrasting estimates of lifetime psychiatric disorders among Latino immigrants, Latino U.S.-born, and non-Latino whites.

Method—Data from the National Latino and Asian American Study and the National Comorbidity Survey Replication represent some of the largest nationally-representative samples with psychiatric information.

Results—In aggregate, Latinos are at lower risk of most psychiatric disorders compared to non-Latinos whites and, consistent with the immigrant paradox, U.S.-born Latinos report higher rates for most psychiatric disorders than Latino immigrants. However, rates vary when data are stratified by nativity and disorder and adjusted by demographic and socioeconomic differences across groups. Among Mexicans, the immigrant paradox consistently holds across mood, anxiety and substance disorders while it is only evident among Cubans and Other Latinos for substance disorders. No differences were found in lifetime prevalence rates between migrant and U.S.-born Puerto Ricans.

Conclusions—Caution should be exercised in generalizing the immigrant paradox to all Latinos and for all psychiatric disorders. Aggregating Latinos into a single group masks great variability in lifetime risk for psychiatric disorders, with some subgroups, like Puerto Ricans, suffering from psychiatric disorders at rates comparable to non-Latino whites. Our findings thus suggest that the protective context in which immigrants lived in their country of origin possibly inoculated them against risk for substance disorders, particularly if they immigrated as adults.

INTRODUCTION

Studies (1–3) show that Latino immigrants report lower rates of anxiety and substance use disorders than U.S.-born Latinos and non-Latino whites. This is consistent with the “immigrant paradox,” where foreign nativity seems protective against psychiatric disorders (4), despite the stressful experiences and poverty often associated with immigration. The immigrant paradox remains an enigma; explaining it might shed light on factors leading to resiliency in psychiatric disorders.

In 2005, the National Comorbidity Survey-Replication (NCS-R) reported that Latinos, as compared to non-Latino whites, had significantly lower risk of lifetime anxiety and mood disorders, but similar risk of substance use disorders (5). However, NCS-R data on Latinos was limited to English speakers and was not disaggregated by subethnic group, obscuring variation by immigration status and national origin.

When Alegría et al (6) disaggregated Latino groups using data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC); they found differences in rates of disorders, with Puerto Ricans exhibiting higher rates of many disorders than groups such as Mexican-Americans. Disaggregating by subethnicity may provide clues to explain differences in nativity effects.

In this investigation, we address the common problem of inadequate sample size to investigate subethnic differences by combining two major national surveys using complementary sampling and assessments; the NCS-R and the National Latino and Asian American Study (NLAAS). We test whether the immigrant paradox applies to all Latino groups by contrasting national lifetime prevalence of DSM-IV psychiatric disorders among Latino immigrants, U.S.-born Latinos, and non-Latino whites.

METHODS

Sample

The NCS-R was administered from February 2001 through April 2003, with a 70.9% response rate (5). Respondents were English-speaking, non-institutionalized adults ages 18+ living in civilian housing in the coterminous United States. The NCS-R alone has too few Latinos to make comparisons disaggregated by Latino subethnicity. Since Spanish-speaking Latinos were not represented in the NCS-R, we use only the non-Latino whites from NCS-R.

The NLAAS data were collected between May 2002 and November 2003, with a 75.5% response rate for the Latino sample. The sample is nationally-representative of English- and Spanish-speaking residents (ages 18+) in the non-institutionalized population of the coterminous United States (7). 2,554 Latinos, divided into four subethnic groups (Mexican, Puerto Rican, Cuban and Other Latinos (mainly from the Dominican Republic, Colombia, El Salvador, Ecuador, Guatemala, Honduras, Peru, Nicaragua)) comprised the final Latino sample. The sample is designed to be nationally representative of the total Latino population and to allow for comparisons stratified by sub-ethnic groups. The NLAAS weighted sample is similar to the 2000 Census in sex, age, education, marital status, and geographical distribution (data not shown), but different in nativity and household income, with more immigrant and lower-income respondents in the NLAAS sample, potentially due to Census undercounting of immigrants (8,9) and non-inclusion of undocumented workers (10). As a result of these findings, in later analyses we use U.S. Census sample weights for age, gender, and education adjustments, but NLAAS sample weights for household income adjustments.

The NLAAS and NCS-R focus on collecting epidemiological information on risk factors for mental health disorders among the general population (11). Both samples were developed using an integrated methodology as part of the NIMH Collaborative Psychiatric Epidemiology Surveys (CPES), allowing the pooling of data sets. The University of Michigan's Survey Research Center (SRC) developed sample weights for the pooled NLAAS/NCS-R sample. Using an adaptation of a multiple-frame approach to estimation and inference for population characteristics (12,13), the CPES allows integration of design-based analysis weights and variance estimation codes to permit analysis of the combined datasets as though they were a single, nationally-representative study. Design and methodological information regarding the combined NLAAS/NCS-R dataset can be found at the CPES website (14).

Data Collection

NCS-R data was collected by 342 certified English interviewers (15). NLAAS Latino sample interviews were administered by 275 certified bilingual Latino interviewers (15). Approximately half of the NLAAS participants were monolingual Spanish speakers, or had limited English proficiency and requested the interview in Spanish. The majority of both samples were interviewed face-to-face by trained interviewers from the University of Michigan's Institute for Social Research (ISR); the remaining few were interviewed via phone. Written informed consent was obtained. The Internal Review Board Committees of Cambridge Health Alliance, the University of Washington, Harvard Medical School, and the University of Michigan approved all recruitment, consent, and interviewing procedures (16).

Measures

In both studies, presence of psychiatric disorders is evaluated with the WHO World Mental Health Survey Initiative Version of the Composite International Diagnostic Interview (WMH-CIDI) (17). This interview generates lifetime and 12-month diagnoses with organic exclusion rules according to DSM-IV and ICD-10 diagnostic systems for: major depression, dysthymia, panic, general anxiety, agoraphobia, social phobia, intermittent explosive disorder, post-traumatic stress disorder, and substance use disorders (abuse and/or dependence). Each diagnostic section includes new questions to assess lifetime persistence of the focal disorder, intensity and duration of distress, and disorder-associated impairment. Table 2 lists all disorders included in this study and four composite diagnostic categories: any depressive disorder (dysthymia, major depressive episode); any anxiety disorder (agoraphobia, social phobia, generalized anxiety, post-traumatic stress, panic); any substance disorder (drug abuse, drug dependence, alcohol abuse, alcohol dependence); and any disorder. Similar to findings with the general population (18), the instrument shows good concordance between DSM-IV diagnoses based on the WMH-CIDI and the SCID for major depressive disorder ($\kappa=0.46$) and substance disorders ($\kappa=0.49$), but not for most anxiety disorders (19).

Statistical Analysis

Standard weighted estimates were used to describe sociodemographic characteristics and immigration measures (e.g., Latino subethnic group, nativity) in Table 1 (7). Significance tests for differences in Table 1 were conducted using a Rao–Scott statistic for the Pearson chi-squared test for contingency tables (20,21). Models were adjusted for sampling design through a first-order Taylor series approximation, and significance tests were performed using design-adjusted Wald tests (21–23).

In Table 1, socio-demographic distributions were computed using age- and gender-adjusted weights. By applying the adjusted weights, age and gender distributions match those of the U.S. Census in all tables. The *All Latino* group is weighted to closely reflect the relative proportion of each Latino sub-group in the US population in 2003 (60% Mexican, 10% Puerto Rican, 6% Cuban and 24% Other Latino). When comparing prevalence rates of Latinos to non-

Latinos, and when comparing Latino subethnic groups to each other, we used Bayesian estimates that adjusted for age and gender distribution in Table 2, and later additionally adjust for socioeconomic status (education and household income) in Table 3. Bayesian estimates address the problem of small sample sizes, compounded by large survey weights in some age-gender subgroups. Inferences on the differences between estimates were made using the Bayesian counterpart of standard significance tests (i.e., using posterior mean and variance in place of weighted mean and variance). Note that it is possible to have a significant p-value for testing difference between groups while the confidence intervals overlap because significance testing by examining overlap of confidence intervals is more conservative (24). More details, including modeling strategies and fitting algorithms, are documented elsewhere (25). This same estimation method was used when carrying out further contrasts among immigrant and non-immigrant groups. Table 2 compares prevalence rates between non-Latino whites and the aggregated Latino group, and also among all four Latino subgroups. Table 3 compares prevalence rates across nativity.

RESULTS

Sociodemographic and Immigration Characteristics with Tests of Differences

Table 1 examines sociodemographic and immigration characteristics among non-Latino whites and Latinos, as well as for four Latino subethnic groups, using age- and gender-adjusted weights. After adjustments, we still find differences between Latinos and non-Latino whites. Most striking, Latinos report lower levels of education and household income ($p < .001$), and are more likely to be foreign-born and have no parents born in the U.S. ($p < .001$).

Disaggregating Latinos by subethnic group, we find significant subgroup variability for all sociodemographic characteristics. Puerto Ricans are more likely than other subgroups to be born and to spend more than 70% of their life on the U.S. mainland and to live in the Northeast. Mexicans are more likely to be in the lowest income group (\$0-\$14,999) and live in the West. Cubans report higher household incomes, more years of education, and are more likely to spend 30% or less of their life in the U.S. Other Latinos resemble Mexicans in age distribution, nativity status, and percentage of life spent in the U.S.

Age- and Gender-adjusted Lifetime Prevalence Estimates with Tests of Differences

Table 2 presents age- and gender-adjusted lifetime prevalence rates of psychiatric disorders for all Latino subgroups and non-Latino whites. Significant differences in prevalence rates exist between non-Latino whites and Latinos in aggregate for all disorders except agoraphobia without panic, with Latinos reporting lower rates for all other disorders. Most striking, 43.2% of non-Latino whites reported any lifetime disorder, compared to 29.7% of Latinos. Similarly, 25.7% of non-Latino whites reported any anxiety disorder compared to 15.7% of Latinos. For any substance disorder, lifetime prevalence rates were 17.7% for non-Latino whites and 11.2% for Latinos. All tests of difference for these aggregate disorders were significant at $p < 0.001$.

Although these results suggest that Latinos are at uniformly lower risk than non-Latino whites for almost all disorders, the findings are far less homogeneous when Latinos are disaggregated by subethnic group. For any lifetime disorder, the rate among Puerto Ricans was 37.4%, followed by Mexicans (29.5%), Cubans (28.2%) and Other Latinos (27.0%), and this difference across groups was significant ($p = 0.012$). Rates for any depressive disorder were not found to be significantly different between subethnic groups. Lifetime prevalence rates of any anxiety disorder ranged from 21.7% for Puerto Ricans to 14.1% for Other Latinos, with test of differences significant at $p = 0.030$. For substance disorders, prevalence estimates for Puerto Ricans (13.8%) are almost double those of Cubans (6.6%; $p = 0.002$).

Comparisons of Prevalence Rates by Sub-ethnicity and Nativity Status for Latinos and Non-Latino Whites

Table 3 presents age-, gender-, and SES-adjusted lifetime prevalence estimates for non-Latino whites, all Latinos, and the four Latino subgroups stratified by nativity. Looking at the aggregated Latino category, we find evidence in support of the immigrant paradox; U.S.-born Latinos are at significantly higher risk than immigrant Latinos for major depressive episode (18.6% vs. 13.4%, $p=0.001$), any depressive disorder (19.8% vs. 14.8%, $p=0.003$), social phobia (8.5% vs. 6.0%, $p=0.037$), post-traumatic stress disorder (5.9% vs. 4.0%, $p=0.048$), any anxiety disorder (18.9% vs. 15.2%, $p=0.033$), alcohol dependence (6.9% vs. 2.8%, $p<.001$), alcohol abuse (9.3% vs. 3.5%, $p<.001$), drug dependence (5.1% vs. 1.7%, $p<.001$), drug abuse (6.1% vs. 2.2%, $p<.001$), and any disorder (37.1% vs. 24.9%, $p<.001$). Results are most striking for any substance disorder, with 20.4% of U.S.-born Latinos reporting lifetime prevalence, compared to 7.0% of immigrants ($p<.001$). Similarly, U.S.-born non-Latino whites report significantly higher rates of major depressive episode, social phobia, any anxiety disorder, alcohol dependence and abuse, any substance disorder, and any disorder compared to non-Latino white immigrants. Overall, U.S.-born non-Latino whites also report higher rates of disorders compared to U.S.-born Latinos such as major depressive episode, dysthymia, any depressive disorder, generalized anxiety disorder, social phobia, post-traumatic stress disorder, any anxiety disorder, alcohol dependence, any substance disorder, and any disorder (data not shown).

When examined in aggregate, a clear immigrant effect emerges for all Latinos; yet this finding is not uniform when Latinos are disaggregated by subethnic group. The immigrant paradox is only consistently observed for Mexicans, with Mexican immigrants reporting significantly lower prevalence of major depressive episode, any depressive disorder, social phobia, any anxiety disorder, alcohol dependence and abuse, drug dependence and abuse, any substance disorder, and any disorder than U.S.-born Mexicans (Table 3). Among Cubans and Other Latinos, a protective effect of foreign nativity was found only for substance disorders. Other Latino immigrants also report a significantly lower prevalence of any disorder than their U.S.-born counterparts. No significant differences were found in risk of any lifetime disorder between migrant or U.S.-born Puerto Ricans.

To illustrate the most substantial differences in lifetime prevalence when we disaggregate Latinos, we plot disorder rates by nativity and ethnicity for any disorder (Figure 1) and any substance disorder (Figure 2). These prevalence rates correspond to the Bayesian estimates (Table 3), while asterisks denote the level of significance for the test contrasting U.S.-born and immigrants within sub-ethnic groups.

DISCUSSION

When lifetime prevalence estimates of psychiatric disorders are examined for Latinos in aggregate, our findings are consistent with existing literature. First, Latinos are at lower risk of all lifetime psychiatric disorders compared to non-Latino whites, except for agoraphobia without panic. Second, consistent with the immigrant paradox, U.S.-born Latinos report higher lifetime rates for most disorders than Latino immigrants. These higher rates are not surprising, given that most psychiatric disorders are more prevalent in the U.S. than in many other parts of the world (26); contexts and lifestyles unique to the U.S. appear to result in higher rates of psychiatric disorders.

However, when our sample is disaggregated by sub-ethnic group and nativity, a more complicated picture of Latino mental health emerges, exhibiting a more limited application of the immigrant paradox. Overall, the immigrant paradox is only reliably observed for Mexicans. In particular, the paradox is only evident for depressive and anxiety disorders among Mexicans.

However, the paradox is consistently observed among Mexicans, Cubans, and Other Latinos for substance disorders. No evidence for the immigrant paradox was found for Puerto Ricans. These findings have significant implications for the assessment and treatment of psychiatric disorders within the U.S. Latino population. Our findings emphasize the importance of not over-generalizing the protective effect of nativity for all Latinos, and the differential effect of nativity depending on the type of disorder.

The immigrant paradox is most strongly apparent for substance disorders. The protective impact of foreign nativity on lifetime substance disorders for most immigrants, particularly Latinos, could be related to strong social controls in their countries of origin against alcohol and drug use (27). International comparisons of prevalence rates of substance use disorders across different cultures indicate that cultural and social assimilation, or longer stays in cultures with high rates of drug use accelerate the rates of substance use disorders for immigrant groups from nations with lower rates (27). Puerto Ricans are U.S. citizens, making their migratory patterns and exposure to U.S. culture different than those of other Latino groups. Our findings thus suggest that the protective context in which immigrants lived in their country of origin possibly inoculated them against risk for substance disorders, particularly if they immigrated as adults. Recent findings also support that the context where Latinos reside in the U.S. is an important influence in risk of substance disorders (28). For example, perceived level of neighborhood safety is associated with lower risk for substance use disorders even after controlling for individual-level socioeconomic status (28).

The question that remains to be answered is what factors in U.S. society place the U.S.-born population and those who migrate early in childhood at greater risk for substance abuse. The high availability of drugs in the U.S. may be a contributing factor. However, greater availability of drugs in the U.S. alone cannot explain these results, since countries like Mexico with extensive drug production and trafficking consistently show low rates of substance use disorders (6,29). One hypothesis may be the U.S. societal convention to self-medicate as a way to cope with hardship (30). U.S. cultural norms, such as pressure to be productive at work and over-prescription of medication, are thought to fuel recent increases in self-medication in the U.S. (31). In other countries, different coping mechanisms may be socially prescribed. In one study, Mexican citizens were found more likely than non-Hispanic whites to use positive reframing, denial and religion and less likely to use substances (30).

In Table 3, evidence for the immigrant paradox for depressive and anxiety disorders is only present for Mexicans. Several mechanisms could explain the immigrant paradox for depressive and anxiety disorders in Mexicans. Mexican immigrants in their country of origin experience relative deprivation and inequality as common to the majority of the population (32). These beliefs may decrease the likelihood of demoralization among Mexican immigrants in the new environment (1,4), with greater resignation for negative outcomes resulting in lower risk of depression and anxiety. Traditional family values of affiliation as well as fatalism may serve as protective factors against psychiatric morbidity for Mexicans (1,4,33). However, the buffering effect of these factors does not translate to other Latino sub-ethnic groups (6). In these groups, confronting social injustice, low opportunities for social mobility and hardship may be internalized as personal failure (34); thereby leading to depression and anxiety. An alternative explanation is that Mexican families, because of their proximity to Mexico, have less intergenerational conflict between themselves and their family members (35) than other Latino subgroups, allowing for a sustained sense of belonging that can buffer adversity. A third explanation is that Mexican immigrants, because of their high numbers in the U.S. and because they tend to arrive at an older age, may be less likely to intermingle with non-Latinos in multiple settings; decreasing exposure to cultures different from their own, which may reduce the likelihood of incidents of discrimination (36). This decreased exposure to perceived discrimination may relate to lower rates of depression and anxiety as compared to other Latino

groups, as Puerto Ricans, who come earlier and tend to live in ethnically-diverse neighborhoods.

In addition to providing valuable data on the presence of the immigrant paradox, our findings also give insight into the great subgroup variability within the Latino population. The data presented in Tables 1 and 2 show significant variation by subethnic group for sociodemographic characteristics and for lifetime risk of psychiatric disorders, with Puerto Ricans a particularly vulnerable group. In contrast to the other Latino groups, Puerto Ricans have lived with more than a century of U.S. influence, are more likely to be bilingual and to have adopted many lifestyle patterns of U.S. society (37). This high degree of integration with U.S. culture may explain the similarity in rates of disorder between Puerto Ricans and non-Latino whites. Furthermore, although U.S. citizens, the first Puerto Rican migrants came into the United States stigmatized by the public perception that they migrated because of massive unemployment on the Island and the desire to be supported by welfare (6), perhaps subjecting them to more discrimination and stereotyping than other Latino sub-ethnic groups (6), and resulting in higher rates of psychiatric disorders. Our findings provide further evidence that the common practice of aggregating Latinos into a single group masks great variability in the prevalence and risk of psychiatric disorders.

This study has certain limitations. Our results are based on cross-sectional comparisons of Latino and non-Latino white subgroups, which could mask cross-generational differences that explain some sub-ethnic group differences. Our lifetime prevalence rates could be even higher if Latinos with severe mental illness were overrepresented in the non-response group; severe disorders such as bipolar disorder and schizophrenia were not included in this study. However, we did not measure the prevalence for schizophrenia or bipolar disorders, as lay-administered diagnostic instruments substantially overestimate the prevalence of schizophrenia (38) and meaningful estimates for bipolar disorders were considered to be difficult due to low prevalence in community samples (39). Another potential limitation is that the diagnostic interview seems to require substantial education to comprehend some of the more elaborate probes. If Latinos with low education and literacy did not understand the questions, they might report not having the symptom, making these prevalence rates conservative estimates of psychiatric disorders in the Latino population. However, this seems unlikely since we find the same differences after adjusting for education. Finally, as with many studies of this sort, where many specific comparisons are made, one must be mindful of the issue of multiple comparisons and be careful not to overly focus on a particular finding as the probability that the finding is due to statistical chance is non-negligible.

In the field of mental health research, it is commonly believed that Latinos are at lower risk of psychiatric disorders than foreign-born non-Latino whites. As a result, Latinos, and Latino immigrants in particular, have been largely ignored in mental health research and the development of treatment interventions (40). However, our results demonstrate that within the Latino population, some subgroups suffer from psychiatric disorders at rates comparable to non-Latino whites. Therefore, we urge the exercise of caution in generalizing the immigrant paradox to all Latinos, since the protective effect of nativity varies by type of psychiatric disorder and sub-ethnicity. Studies that fail to disaggregate by Latino subgroup may be inaccurately reporting the immigrant paradox as a universal phenomenon, thereby overlooking the risk experienced by some immigrant groups. In order to guide effective and culturally-appropriate prevention and treatment efforts, it is critical to identify and understand specific components of various cultures that are protective against psychopathology, as well as those factors that increase risk of psychiatric morbidity.

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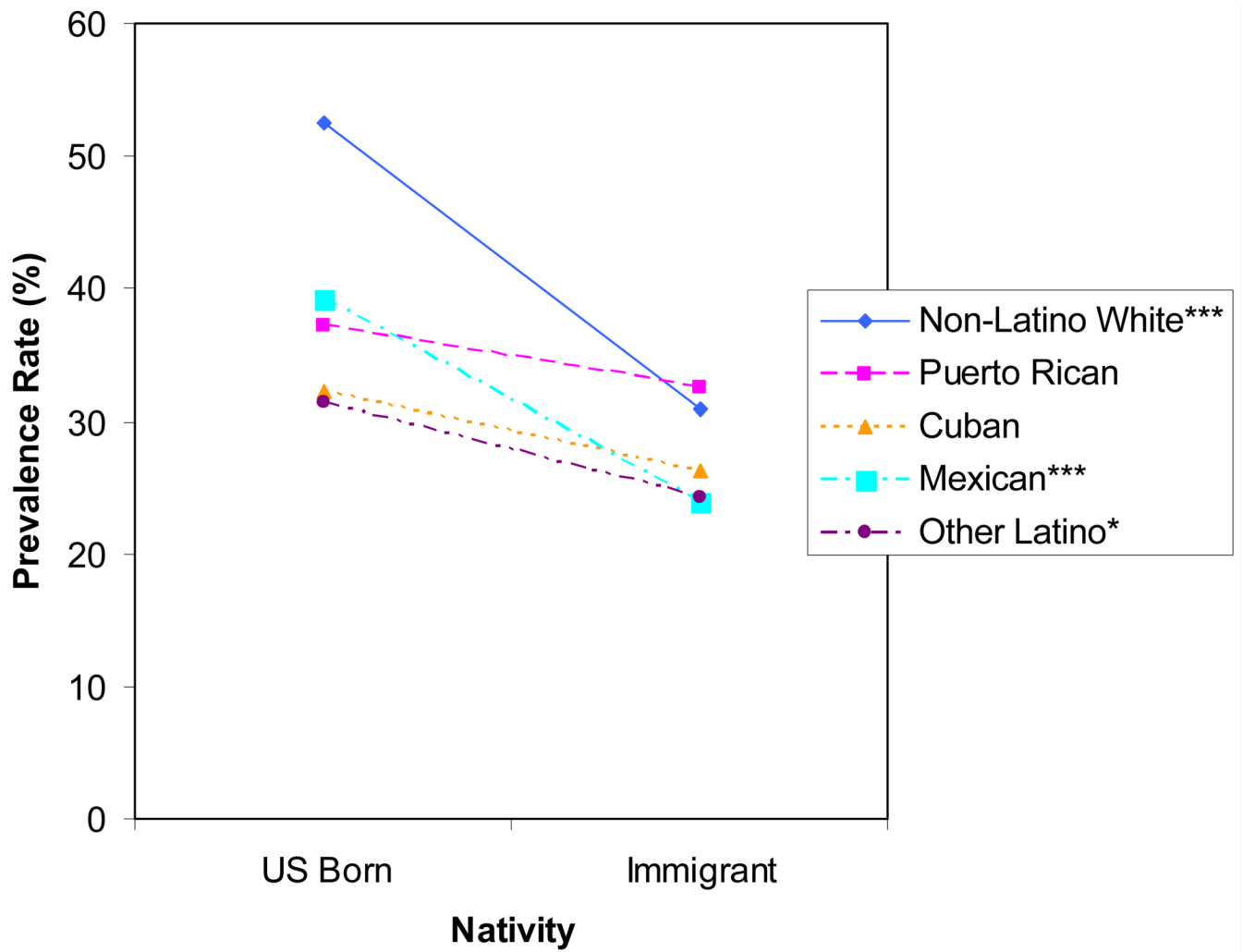


Figure 1.
Rates of any lifetime disorder by nativity and ethnicity/race subgroups
*= $p < .05$, **= $p < .01$, ***= $p < .001$

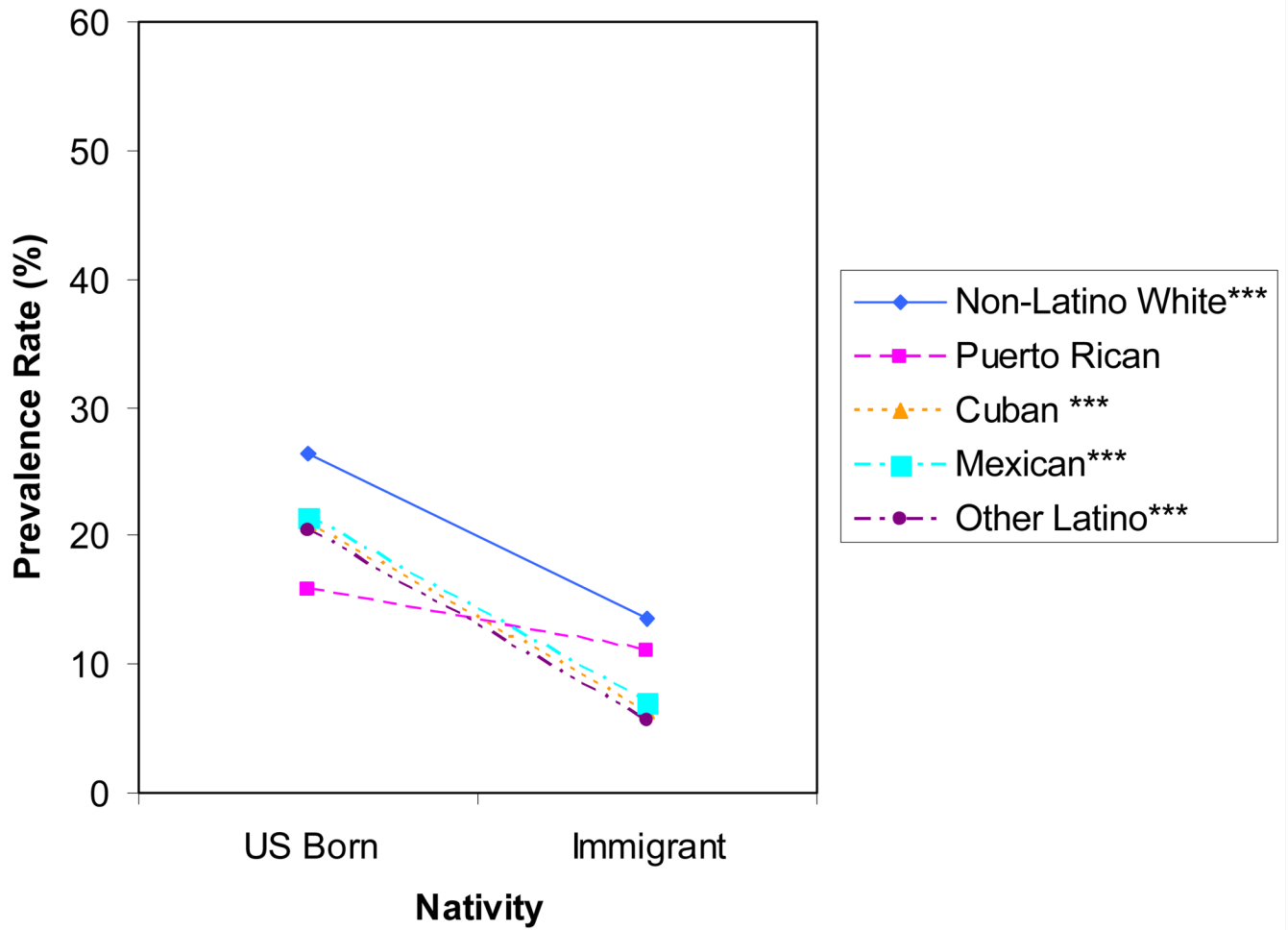


Figure 2.
Rates of any lifetime substance disorder by nativity and ethnicity/race subgroups
*= $p < .05$, **= $p < .01$, ***= $p < .001$

TABLE 1
Age and Gender Adjusted Sociodemographic Characteristics for NCS-R Non-Latino Whites and NLAAS Latinos by Subethnicity (weighted estimates)

Age Category	NLAAS Latinos by ethnic subgroups [†]					
	Non-Latino White (NCS-R) [†] N = 4222 % (SE) [‡]	Latinos (NLAAS) [†] N = 2554 % (SE) [‡]	Puerto Ricans N = 495 % (SE) [‡]	Cuban N = 577 % (SE) [‡]	Mexicans N = 868 % (SE) [‡]	Other Latinos N = 614 % (SE) [‡]
18–34 years	49.0(1.7)	49.0(1.6)	49.0(3.8)	49.5(3.3)	49.0(2.3)	49.0(2.5)
35–49 years	29.3(1.3)	29.7(1.1)	29.7(2.5)	29.5(2.2)	29.5(1.7)	30.1(1.9)
50–64 years	14.2(0.9)	13.8(0.8)	13.7(2.0)	14.4(1.8)	13.9(1.0)	13.4(1.6)
65 years or more	7.5(0.5)	7.5(1.2)	7.5(3.4)	6.6(1.0)	7.5(1.8)	7.5(1.8)
Sex						
Male	51.5(1.1)	51.5(1.3)	51.5(2.7)	51.6(2.1)	51.5(1.8)	51.5(1.9)
Female	48.5(1.1)	48.5(1.3)	48.5(2.7)	48.4(2.1)	48.5(1.8)	48.5(1.9)
Education						
11 years or less	11.6(0.8)	44.2(2.0)	32.4(2.3)	20.1(2.2)	52.9(2.3)	33.4(2.1)
12 years	30.4(1.6)	24.5(1.0)	28.3(1.8)	28.6(2.2)	23.7(1.3)	24.1(1.9)
13–16 years	47.0(1.6)	26.6(1.3)	34.8(2.8)	38.7(2.6)	20.1(1.6)	36.2(2.1)
17 years or more	11.0(1.0)	4.7(0.7)	4.5(0.8)	12.6(2.3)	3.3(1.0)	6.3(1.0)
		P < 0.001 §				P < 0.001 §
Household Income						
\$0–\$14,999	12.4(1.0)	28.3(2.5)	28.2(2.6)	23.2(3.9)	30.6(3.8)	23.9(2.1)
\$15,000–\$34,999	18.7(1.4)	28.5(1.3)	22.6(2.6)	24.6(3.0)	30.7(2.2)	26.4(3.1)
\$35,000–\$74,999	38.0(1.2)	27.4(1.9)	29.9(2.3)	27.3(3.1)	25.5(2.5)	31.2(3.2)
\$75,000+	30.9(1.9)	15.7(1.2)	19.2(2.4)	24.9(4.9)	13.1(1.3)	18.5(2.5)
		P < 0.001 §				P = 0.036 §
Marital Status						
Married	48.9(1.7)	52.0(2.0)	35.1(2.9)	52.7(3.3)	57.6(3.0)	45.0(2.4)
Divorced/separated/widowed	33.0(2.1)	29.6(1.6)	39.8(3.2)	27.1(2.9)	26.7(2.2)	32.9(2.6)
Never married	18.1(0.9)	18.5(1.2)	25.1(3.5)	20.2(2.0)	15.7(1.4)	22.1(1.8)
		P = 0.312 §				P < 0.001 §

	NLAAS Latinos by ethnic subgroups [†]					
	Non-Latino White (NCS-R) [‡] N = 4222 % (SE) [*]	Latinos (NLAAS) [‡] N = 2554 % (SE) [*]	Puerto Ricans N = 495 % (SE) [*]	Cuban N = 577 % (SE) [*]	Mexicans N = 868 % (SE) [*]	Other Latinos N = 614 % (SE) [*]
Nativity						
Born in US	96.6(0.5)	41.6(2.6)	55.5(4.4)	13.0(2.4)	43.3(3.9)	37.8(3.6)
Born in foreign country	3.4(0.5)	58.4(2.6)	44.5(4.4)	87.0(2.4)	56.7(3.9)	62.2(3.6)
		P < 0.0001 §				P < 0.0001 §
Regions						
Northeast	20.1(3.8)	17.3(1.7)	58.5(5.9)	4.7(2.1)	2.2(0.4)	40.0(4.5)
Midwest	27.5(2.5)	8.7(1.8)	13.5(4.7)	0.0(0.0)	9.7(2.7)	6.1(1.5)
South	32.8(2.8)	32.1(4.9)	21.2(2.8)	93.4(2.4)	31.7(8.6)	23.8(3.9)
West	19.5(3.0)	41.8(4.4)	6.8(1.4)	1.8(1.2)	56.4(7.7)	30.1(4.9)
		P < 0.0001 §				P < 0.0001 §
Primary residence[‡]						
US	.	84.7(1.3)	90.5(1.4)	92.7(2)	81.7(2.0)	88.0(1.8)
Country of origin	.	15.3(1.3)	9.5(1.4)	7.3(2)	18.3(2.0)	12.0(1.8)
		P < 0.0001 §				P < 0.0001 §
# of Parents born in US						
0	4.5(0.6)	68.9(1.7)	62.9(3.5)	95.9(1.5)	66.4(2.4)	71.3(3.0)
1	4.8(0.5)	10.0(0.6)	13.2(2.1)	2.6(1.1)	11.3(0.9)	7.1(1.1)
2	90.7(0.9)	21.1(1.7)	23.9(3.2)	1.5(0.8)	22.3(2.3)	21.6(3.1)
		P < 0.0001 §				P < 0.0001 §
Language at home as child[‡]						
English	.	18.3(1.7)	22.2(2.5)	5.0(1.2)	18.5(2.6)	19.2(2.0)
Other Language	.	81.7(1.7)	77.8(2.5)	95.0(1.2)	81.5(2.6)	80.8(2.0)
		P < 0.0001 §				P = 0.028 §
Ratio of life lived in US[‡]						
Ratio ≤ 0.3	.	19.2(1.7)	9.4(2.8)	41.1(5.9)	17.3(2.2)	22.9(2.5)
0.3 < Ratio ≤ 0.7	.	28.0(1.3)	17.1(3.1)	24.1(3.0)	29.7(2.0)	29.5(2.3)
Ratio > 0.7	.	52.8(2.4)	73.5(3.7)	34.8(4.5)	53.0(3.6)	47.6(3.1)

NLAAS Latinos by ethnic subgroups[†]

	Non-Latino White (NCS- R) [‡] N = 4222 % (SE) [*]	Latinos (NLAAS) [‡] N = 2554 % (SE) [*]	Puerto Ricans N = 495 % (SE) [*]	Cuban N = 577 % (SE) [*]	Mexicans N = 868 % (SE) [*]	Other Latinos N = 614 % (SE) [*]
Language proficiency in English [‡]						P < 0.001 §
Poor/Fair	.	48.4(2.8)	29.8(2.7)	48.1(4.9)	54.0(3.7)	42.7(3.2)
Good/Excellent	.	51.6(2.8)	70.2(2.7)	51.9(4.9)	46.0(3.7)	57.3(3.2)
US citizenship [‡]						P < 0.001 §
Born US Citizen	.	46.0(2.8)	97.2(0.9)	13.1(2.5)	43.2(4.0)	38.4(3.7)
Naturalized US Citizen	.	15.7(1.1)	2.8(0.9)	33.8(3.6)	13.6(1.4)	22.2(2.7)
Not US Citizen	.	38.3(2.3)	0.0(0.0)	53.2(5.4)	43.2(3.3)	39.4(3.0)

* SE, Standard Error

[‡] Rates are age and gender adjusted to match the U.S. Census

[‡] Not asked of NCS-R respondents

§ Significance tests for differences were conducted using a Rao-Scott statistic for the Pearson chi-squared test for contingency tables

TABLE 2
 Bayesian Lifetime Prevalence of Psychiatric Disorders for NCS-R Non-Latino Whites and NLAAS Latinos adjusted by age and gender

Disorder	Non-Latino White (NCSR) [†] N=4222 % (95% CI)	Latino (NLAAS) N=2554 % (95% CI)	Significance test of Non-Latino White vs. Total Latino sample	NLAAS Latinos by ethnic subgroup					Significance test of All Latino subgroups
				Puerto Rican N=495 % (95% CI)	Cuban N=577 % (95% CI)	Mexican N=868 % (95% CI)	Other N=614 % (95% CI)		
Major Depressive Episode	22.1 (20.5–24.0)	15.2 (13.5–16.8)	<0.001	19.4 (15.7–23.6)	18.6 (14.2–23.1)	14.7 (12.3–17.2)	13.7 (10.6–16.8)	0.065	
Dysthymia	4.3 (3.5–5.1)	2.6 (1.9–3.4)	0.003	4.2 (2.5–6.2)	4.0 (2.3–5.7)	2.4 (1.4–3.5)	2.0 (0.9–3.3)	NS	
Any Depressive Disorder	22.3 (20.5–24.0)	15.4 (13.8–17.1)	<0.001	19.6 (15.8–23.4)	19.2 (14.7–23.7)	14.7 (12.2–17.2)	14.4 (11.5–17.4)	0.066	
Agoraphobia without panic	2.5 (1.9–3.1)	3.2 (2.4–4.0)	NS	6.0 (3.6–8.3)	2.5 (1.4–4.0)	3.2 (2.0–4.5)	2.1 (1.1–3.2)	0.034	
Panic Disorder	5.2 (4.3–6.1)	2.8 (2.0–3.6)	<0.001	4.9 (3.0–7.1)	2.5 (1.3–3.9)	2.7 (1.6–3.9)	2.2 (1.0–3.3)	NS	
CAD	8.6 (7.5–9.8)	4.1 (3.2–5.1)	<0.001	7.3 (4.6–10.1)	5.4 (3.6–7.6)	3.7 (2.5–5.2)	3.5 (2.0–5.0)	0.059	
Social Phobia	14.3 (12.8–15.8)	7.5 (6.2–8.8)	<0.001	10.3 (7.0–13.5)	7.2 (4.5–10.2)	7.3 (5.6–9.2)	6.7 (4.6–8.9)	NS	
PTSD	7.3 (6.3–8.4)	4.4 (3.5–5.3)	<0.001	6.8 (4.3–9.2)	4.1 (2.3–6.0)	4.3 (3.0–5.8)	3.5 (2.1–5)	NS	
Any Anxiety Disorder	25.7 (23.8–27.6)	15.7 (14.0–17.5)	<0.001	21.7 (17.5–26.0)	14.4 (10.8–18.4)	15.5 (12.8–18.1)	14.1 (11.1–17.1)	0.030	
Alcohol Dependence	7.0 (5.8–8.1)	4.3 (3.3–5.3)	<0.001	5.5 (3.4–7.9)	2.4 (1.1–3.6)	4.7 (3.2–6.1)	3.1 (1.6–4.6)	0.025	
Alcohol Abuse	9.0 (7.7–10.3)	5.9 (4.7–7.0)	<0.001	7.1 (4.8–9.5)	3.1 (1.3–5.1)	6.0 (4.3–7.6)	5.7 (3.6–7.8)	0.056	
Drug Dependence	4.0 (3.2–4.9)	2.0 (1.4–2.7)	<0.001	3.7 (2.0–5.6)	1.5 (0.6–2.8)	2.1 (1.1–3.0)	1.1 (0.2–2.2)	0.096	
Drug Abuse	6.6 (5.5–7.7)	3.6 (2.7–4.5)	<0.001	3.8 (2.0–5.6)	1.0 (0.2–2.1)	3.7 (2.4–5.1)	3.8 (2.1–5.8)	0.002	
Any Substance Disorder	17.7 (16.0–19.4)	11.2 (9.7–12.7)	<0.001	13.8 (10.6–17.4)	6.6 (4.3–9.1)	11.8 (9.6–13.9)	9.8 (7.2–12.4)	0.002	
Any Disorder	43.2 (41.1–45.3)	29.7 (27.4–31.9)	<0.001	37.4 (32.4–42.7)	28.2 (23.4–33.5)	29.5 (26.4–32.8)	27.0 (23.2–31.0)	0.012	

[†] Lifetime rates of disorder for NCS-R whites differ from previously published NCS-R rates as this analysis is limited to non-Latino whites and excludes racial/ethnic minorities (Kessler, June 2005). Additionally, NLAAS composite diagnostic categories are restricted to the following disorders: any depressive disorder (dysthymia, major depressive episode); any anxiety disorder (agoraphobia, social phobia, generalized anxiety, post traumatic stress, panic); any substance disorder (drug abuse, alcohol abuse, alcohol dependence); any disorder (any depressive, any anxiety, and any substance).
 NS, Non-significant

TABLE 3
 Bayesian Lifetime Prevalence of Psychiatric Disorders for Latinos by Immigrant Status adjusted by Age, Gender, Education, and Income

Disorder		NLAAS Latinos by ethnic subgroup					
		Non-Latino White (NCSR) [†]	Latino (NLAAS)	Puerto Rican	Cuban	Mexican	Other
		N=4222	N=2554	N=495	N=577	N=868	N=614
		US Born n = 4088	US Born n = 924	US Born n = 278	US Born n = 76	US Born n = 380	US Born n = 190
		Immigrant n = 134	Immigrant n = 1630	Immigrant n = 217	Immigrant n = 501	Immigrant n = 488	Immigrant n = 424
		% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Major Depressive Episode	US Born	26.9 (24.2–29.8)	18.6 (16.1–21.1)	20.2 (16.3–24.2)	17.9 (11.9–25.1)	19.2 (15.7–22.7)	16.2 (12.2–20.1)
	Immigrant	17.5 (11.3–23.9)	13.4 (11.6–15.4)	17.6 (14.1–21.6)	18.5 (14.5–22.8)	11.8 (9.1–14.5)	14.1 (10.9–17.4)
	Wald Test	0.008	0.001	NS	NS	0.001	NS
Dysthymia	US Born	6.2 (4.7–7.8)	3.4 (2.2–4.5)	4.0 (1.8–6.2)	4.2 (1.4–7.6)	3.3 (1.8–4.8)	3.3 (1.2–5.8)
	Immigrant	5.4 (2.5–8.9)	3.1 (2.1–4.1)	5.5 (3.0–8.1)	4.0 (2.2–5.9)	2.8 (1.3–4.5)	2.7 (1.4–4.4)
	Wald Test	NS	NS	NS	NS	NS	NS
Any Depressive Disorder	US Born	27.6 (25.1–30.5)	19.8 (17.3–22.5)	21.0 (16.8–25.5)	20.3 (13.7–27.2)	20.4 (16.6–24.1)	17.3 (13.4–21.7)
	Immigrant	21.4 (15.2–28.2)	14.8 (12.6–17.0)	19.9 (16.1–23.7)	19.7 (15.3–24.1)	12.9 (9.9–16.0)	15.8 (12.2–19.2)
	Wald Test	0.0885	0.003	NS	NS	NS	NS
Agoraphobia without panic	US Born	4.0 (2.8–5.4)	3.7 (2.5–5.1)	4.0 (1.9–6.1)	5.1 (1.9–8.7)	4.0 (2.2–6.2)	2.5 (0.8–4.3)
	Immigrant	4.1 (1.2–8.0)	3.7 (2.7–4.8)	6.9 (4.1–9.9)	3.7 (1.7–6.3)	3.4 (1.9–5.0)	3.4 (1.8–5.2)
	Wald Test	NS	NS	NS	NS	NS	NS
Panic Disorder	US Born	6.0 (4.7–7.4)	4.5 (3.1–6.0)	4.8 (2.8–7.0)	4.5 (1.4–8.2)	4.8 (2.8–6.8)	3.7 (1.5–5.9)
	Immigrant	6.0 (2.5–10.3)	3.5 (2.2–4.6)	5.3 (2.7–8.0)	3.3 (1.5–5.9)	3.4 (1.6–5.1)	3.2 (1.6–4.9)
	Wald Test	NS	NS	NS	NS	NS	NS
GAD	US Born	10 (8.3–11.8)	4.4 (3.1–5.6)	6.9 (4.5–9.4)	5.2 (1.9–9.0)	3.8 (2.2–5.5)	4.2 (1.4–7.2)
	Immigrant	8.1 (4.7–11.7)	4.7 (3.6–5.8)	7.7 (4.9–10.7)	5.1 (3.3–7.0)	4.8 (3.2–6.5)	3.5 (1.9–5.3)
	Wald Test	NS	NS	NS	NS	NS	NS
Social Phobia	US Born	16.9 (14.7–19)	8.5 (6.5–10.2)	8.1 (5.5–10.9)	6.1 (2.9–9.9)	10.0 (7.2–12.8)	4.5 (2.1–7.1)
	Immigrant	8.8 (4.6–13.7)	6.0 (4.6–7.2)	10.0 (6.8–13.4)	6.6 (4.3–9.2)	4.7 (2.9–6.6)	7.3 (4.8–10.0)

Disorder	NLAAS Latinos by ethnic subgroup						
	Non-Latino White (NCSR) [†]	Latino (NLAAS)	Puerto Rican	Cuban	Mexican	Other	
	N=4222 US Born n = 4088 Immigrant n = 134	N=2554 US Born n = 924 Immigrant n = 1630	N=495 US Born n = 278 Immigrant n = 217	N=577 US Born n = 76 Immigrant n = 501	N=868 US Born n = 380 Immigrant n = 488	N=614 US Born n = 190 Immigrant n = 424	
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	
PTSD	Wald Test US Born Immigrant Wald Test	0.0022 9.5 (7.9–11.3) 7.0 (3.8–10.9) NS	NS 6.5 (4.0–9.1) 7.2 (4.2–9.9) NS	NS 7.0 (3.3–11.0) 5.0 (2.3–8.2) NS	0.003 5.9 (3.8–8.3) 3.5 (2.1–5.0) 0.076	NS 5.4 (2.5–8.7) 3.8 (1.9–5.7) NS	
Any Anxiety Disorder	US Born Immigrant	18.9 (16.2–21.5) 15.2 (13.2–17.3)	21.6 (17.9–25.7) 21.8 (16.9–26.7)	16.7 (10.7–22.6) 14.1 (10.8–17.5)	20.0 (16.2–23.8) 14.2 (11.3–17.1)	14.1 (10.3–18.8) 16.0 (12.5–19.5)	
Alcohol Dependence	Wald Test US Born Immigrant	0.0225 10.1 (8.2–12.0) 4.0 (0.9–7.5)	0.033 6.9 (5.2–8.6) 2.8 (1.9–3.8)	NS 5.6 (3.1–8.3) 5.3 (2.5–8.4)	NS 8.2 (3.8–12.8) 2.2 (0.4–4.2)	NS 5.3 (2.2–8.4) 2.2 (0.9–3.5)	
Alcohol Abuse	Wald Test US Born Immigrant	0.0032 12.1 (9.6–14.4) 5.9 (2.7–9.8)	<0.001 9.3 (7.4–11.2) 3.5 (2.3–4.8)	NS 7.7 (5.2–10.4) 4.6 (2.5–7.1)	0.018 6.5 (3.1–10.4) 3.4 (1.4–5.5)	0.081 10.4 (7.0–13.7) 3.2 (1.4–5.0)	
Drug Dependence	Wald Test US Born Immigrant	0.007 6.4 (4.7–8.0) 3.5 (1.0–6.7)	<0.001 5.1 (3.6–6.8) 1.7 (0.9–2.6)	0.092 4.3 (2.6–6.4) 3.6 (1.3–6.3)	NS 5.7 (2.6–9.3) 1.9 (0.3–3.8)	<0.001 5.2 (1.9–8.7) 1.0 (0.1–2.1)	
Drug Abuse	Wald Test US Born Immigrant	0.0998 7.7 (6.0–9.5) 4.1 (1.0–7.3)	<0.001 6.1 (4.5–7.8) 2.2 (1.4–3.1)	NS 4.6 (2.2–7.0) 4.3 (1.8–7.0)	0.062 3.6 (0.7–6.8) 2.2 (0.4–4.8)	0.025 8.4 (5–11.8) 2.1 (0.8–3.5)	
Any Substance Disorder	Wald Test US Born Immigrant	0.0586 26.4 (23.6–29) 13.6 (7.0–20.6)	<0.001 20.4 (18.0–22.9) 7.0 (5.4–8.5)	NS 15.9 (12.4–19.5) 11.1 (7.5–14.9)	NS 20.9 (13.5–28.1) 6.4 (3.4–9.5)	<0.001 20.4 (15.6–25.3) 5.7 (3.3–8.0)	
	Wald Test	<0.001	<0.001	0.070	<0.001	<0.001	

Disorder	NLAAS Latinos by ethnic subgroup					
	Non-Latino White (NCSR) [†]	Latino (NLAAS)	Puerto Rican	Cuban	Mexican	Other
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	Immigrant n = 134	Immigrant n = 1630	Immigrant n = 217	Immigrant n = 501	Immigrant n = 488	Immigrant n = 424
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Any Disorder	52.5 (49.5 –55.3)	37.1 (33.9 –40.0)	37.2 (32.5 –42.2)	32.2 (24.5 –39.8)	39.2 (34.7 –43.6)	31.4 (25.7 –36.5)
Immigrant	30.9 (23.8 –38.0)	24.9 (22.5 –27.2)	32.6 (27.0 –38.5)	26.2 (21.1 –31.1)	23.9 (20.6 –27.2)	24.2 (19.9 –28.2)
Wald Test	<0.001	<0.001	NS	NS	<0.001	0.0421

[†] Lifetime rates of disorder for NCS-R whites differ from previously published NCS-R rates as this analysis is limited to non-Latino whites and excludes racial/ethnic minorities (Kessler, June 2005). Additionally, NLAAS composite diagnostic categories are restricted to the following disorders: any depressive disorder (dysthymia, major depressive episode); any anxiety disorder (agoraphobia, social phobia, generalized anxiety, post traumatic stress, panic); any substance disorder (drug abuse, alcohol abuse, alcohol dependence); any disorder (any depressive, any anxiety, and any substance).

NS, Non-significant