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Neighborhood Characteristics and Differential Risk for Depressive and Anxiety Disorders Across Racial/Ethnic Groups in the United States

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Abstract

Background—Evidence consistently suggests that prevalence of psychiatric disorders varies depending on the person’s neighborhood context, their racial/ethnic group, and the specific diagnoses being examined. Yet, less is known about specific neighborhood features that represent differential risk for depressive and anxiety disorders (DAD) across racial/ethnic groups in the U.S. This study examines whether neighborhood etiologic factors are associated with DAD, above and beyond individual-level characteristics; and whether these associations are moderated by race/ethnicity.

Methods—We utilized nationally representative data (N= 13, 837) from the Collaborative Psychiatric Epidemiology Studies (CPES-Geocode file). Separate weighted multilevel logistic regression models were fitted for any past-year depressive and/or anxiety disorder, any depressive disorder only, and any anxiety disorder only.

Results—After adjusting for individual-level characteristics, African Americans living in a neighborhood with greater affluence and Black Caribbeans residing in more residentially unstable neighborhoods were at increased risk for any past-year depressive disorder as compared to their non-Latino white counterparts. Further, Latinos residing in neighborhoods with greater levels of Latino/immigrant concentration were at an increased risk of any past-year anxiety disorder. Lastly, Asians living in neighborhoods with higher levels of economic disadvantage were at a decreased risk of any past-year depressive and/or anxiety disorders compared to non-Latino whites, independent of individual-level factors.

Conclusions—Results suggest neighborhood characteristics operate differently on risk for DAD across racial/ethnic groups. Our findings have important implications for designing and targeting interventions to address mental health risk among racial/ethnic minorities.

Keywords

neighborhood context; depression; anxiety; racial/ethnic minorities; nativity

INTRODUCTION

Depressive and anxiety disorders (DAD) are the most common psychiatric illnesses among adults in the United States [1] and significantly contribute to disease burden. [2; 3] Racial and ethnic minorities experience differential exposure to risk factors for DAD based on place of residence, [4; 5] evidence that fundamental determinants of mental health status lie not in individual-level risk factors but in the wider environment.[6; 7] Numerous studies have demonstrated that neighborhood context may be instrumental to the etiology of DAD as it represents a constellation of factors related to a person's relative social position and taps into aspects of the immediate physical (e.g. exposure to violence), economic (e.g., opportunities for work) and social context (e.g. receptivity to ethnic/racial diversity) that either protects against or contributes to the development of psychiatric disorders. The prevalence of mental disorders varies according to neighborhood context, racial/ethnic group(s) studied and the specific diagnoses being examined.[8] Understanding how these indicators relate to mental illness among diverse groups is critical to enhancing the design and targeting of disparities interventions. Presently, it is not known which neighborhood features confer differential risk for DAD across racial/ethnic groups, the focus of this study.

Neighborhood Context and Mental Health

Socioeconomic disadvantage [9–12] and residential instability [11–14] have been linked to poor mental health outcomes. Vega et al.[5] found that among Latinos, depression was higher in socioeconomically deprived neighborhoods. Social disorganization theory [15] maintains concentrated disadvantage increases likelihood of crime and neighborhood disorder, resulting in increased stress, anxiety and despair among its residents. [15; 16]

Similarly, neighborhood residential instability has been found to prospectively predict increased depressive symptomatology.[14] Social capital theory [17] suggests residential mobility may exert a negative influence on social relations, as individuals who move are generally forced to uproot long-term social relationships.[18]

Moreover, affluence may be a more telling indicator of health than concentrated poverty given its association with health-enhancing resources such as material and social benefits. [19] Prior work has found that living in more affluent neighborhoods is protective against worsening depression symptomatology [20] and associated with decreased risk of DAD.[21]

Studies measuring the relationship between racial/ethnic and/or immigrant neighborhood composition [5; 22–24] and affluence [20; 21] suggest an inverse association with mental health, with a few exceptions.[13; 25; 26] According to the ethnic density hypothesis, [27] ethnic enclaves may confer mental health benefits by enhancing resident collective identity and reducing discrimination exposure. These effects seem to mitigate some of the socioeconomic disadvantages that typically characterize racially-segregated neighborhoods

[28; 29] and facilitate psychosocial adjustment. [5] This evidence underscores the importance of attending to neighborhood features and examining the extent to which they operate similarly across racial/ethnic groups with respect to psychiatric disorders.

Racial/Ethnic Differences and Neighborhood Context

Racial/ethnic minorities generally do not live in neighborhoods similar to their non-Latino white counterparts. [30; 31] Racial/ethnic minorities have higher rates of residential mobility [32] and disproportionately reside in disadvantaged neighborhoods. [33; 34] They also appear to make different attributions about their neighborhood. [35; 36]

A paucity of research exists examining the relationship between neighborhood context and mental health across racial/ethnic groups. Most studies have focused on one racial/ethnic group; [5; 22; 24; 37; 38] few have employed a comparative approach. [23; 26; 39] Among studies that have, Mair et al. [26] found that while neighborhoods with high Black racial composition were associated with increased depressive symptoms among Black men, the same was not true for Latinos or Asians living in neighborhoods with co-ethnics. Henderson and colleagues [39] showed that for both African American and non-Latino whites, the percentage of white people in the neighborhood was negatively associated with depressive symptomatology. Thus, conclusions regarding neighborhood context, racial/ethnic group differences and mental health status remain tentative.

Heterogeneity in Mental Health Outcomes

Neighborhood effects on mental health vary by outcome. Yet, most studies have focused only on depressive symptomatology. [3] A handful of recent studies have employed diagnostic criteria, with most examining depression or psychiatric disorders in the aggregate. [9; 11; 12; 21; 37] Silver and colleagues [12] found that neighborhood disadvantage was associated with increased risk for major depression and substance use disorder, whereas Matheson et al. [11] found both greater residential instability and disadvantage associated with increased depression risk. Still others [9] report disadvantaged neighborhoods are associated with greater odds of any past-year psychiatric disorder.

The complex mechanisms by which neighborhood context may explain differences in health has not been sorted out. Conflicting results noted to date are due, in part, to methodological limitations including discrepancies in measurement, sample definition, construction of “neighborhoods,” covariates for adjustment, and differences in methodological/analytic approaches. [40–43] Given differing approaches to conceptualizing, operationalizing and measuring neighborhood effects, research findings provide an inconsistent picture of the effects of neighborhood-level characteristics on mental health, particularly among discrete racial/ethnic groups.

Present Study

The present study addresses gaps in the literature by examining whether neighborhood etiologic factors are associated with DAD, above and beyond individual-level characteristics, among a U.S.-based nationally representative sample. We examine associations in the aggregate and separately. We make the following hypotheses: (a) living in disadvantaged and

residentially unstable neighborhoods will be associated with increased risk for DAD; (b) residing in Latino/immigrant dense neighborhoods or neighborhoods characterized by greater affluence will be associated with decreased risk of DAD and; (c) the relationship between neighborhood context and DAD may be moderated by race/ethnicity. While limited research prevents us from rendering concrete hypotheses for effect modification by race/ethnicity, it suggests differential risk of psychiatric disorders among racial/ethnic minorities.

METHODS

Sample and Procedures

Our sample draws on data from the Collaborative Psychiatric Epidemiology Studies (CPES-Geocode file), which consists of three cross-sectional, nationally-representative household surveys, with a multiple-frame sampling approach and design-based analysis weights that allow for comparative analyses. The sample design of the three surveys are described in detail elsewhere, [[44; 45; 46; 47; 48; 49] though briefly noted here. The NCS-R is a nationally representative sample of English-speaking adults residing in the coterminous U.S. We include the 4,180 non-Latino white respondents of the NCS-R (n = 5,692). The final weighted response rate was 70.9%. [44] The NLAAS is a nationally stratified area probability sample of non-institutionalized Latino (n= 2,554) and Asian (n= 2,095) persons in the U.S. The overall weighted response rate for the NLAAS was 73.2%. [45] Lastly, the NSAL is a nationally representative sample of English-speaking black Americans of African and/or Caribbean descent. The NSAL sample included 3,570 African Americans and 1,621 respondents of Caribbean descent. The overall response rate for the total NSAL sample was 71.5%. [46] The non-Latino Black Caribbean sample who self-reported being of Latino ethnicity (n= 183) were excluded, leaving a total sample size of 13,837. List-wise deletion was used in all analyses, as missing data constituted less than the 5% recommended for imputation. [50]

Data were collected between 2001 and 2003, primarily in-person at the respondent's home using computer-assisted interviewing. Only the NLAAS survey was available in languages other than English (e.g., Spanish, Tagalog; see Alegría et al., [51]). The institutional review boards of participating institutions approved all study procedures. [49]

Measures

Psychiatric Disorders—DAD were assessed using the World Mental Health Composite International Diagnostic Interview (WHM-CIDI), [52] a fully-structured psychiatric diagnostic instrument used cross-culturally, and based on the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV). [53] CIDI responses are used to classify individuals meeting DSM-IV criteria for past-year psychiatric disorder. We used the following composite diagnostic categories: any depressive (dysthymia, major depressive disorder) and/or anxiety disorders (agoraphobia, social phobia, generalized anxiety disorder, posttraumatic stress disorder, and panic disorder), any depressive disorder only and any anxiety disorder only.

Individual-Level Variables—Variables include race/ethnicity (African American, Asian, Black Caribbean, Latino, and non-Latino white), age, gender, marital status, education, work status, and nativity (U.S.-born or immigrant). We also included a poverty index, a continuous measure referring to the income-to-needs ratio (total household income divided by the federal poverty threshold, adjusted for family size and number of children younger than 18).

Neighborhood-Level Variables—Neighborhood characteristics were assessed using census tract-level data, designed to represent homogeneous properties in terms of population characteristics, economic status, and living conditions [54] and theorized to closely approximate neighborhoods. [55] Data were extracted from the 2000 U.S. Decennial Census Summary File 3 and linked to individual respondents in the CPES-Geocode data set file via unique identifiers. We selected and factor analyzed fifteen variables that tap into different neighborhood characteristics (see Molina et al., [23]). Three factors were retained for analyses: concentrated disadvantage, Latino/immigrant concentration, and affluence: The *concentrated disadvantage* factor ($\alpha = .74$) included percentages of: owner-occupied housing units (reverse coded); non-Latino black population; civilians unemployed (16 years); households with public assistance; female-headed households with own children under age 18; and population living below the poverty level (for whom poverty status is determined). The *Latino/immigrant concentration* factor ($\alpha = .82$) included: percent Latino population and percent of foreign-born population. The *affluence* factor ($\alpha = .94$) included percent: who completed at least a high school degree (25 years); who completed an undergraduate degree or higher (25 years); of civilians holding management/professional/and related professions (for employed civilian population 16 years); and of families with an annual income above \$75,000. *Residential instability* was measured by percent living in different house in 1995 and was considered a single-item, neighborhood-level predictor.

Analytic Approach

Cross-tabulations were conducted to obtain the distribution of sociodemographic characteristics for the total sample and by racial/ethnic groups.

We employed multilevel analysis for binary outcomes.[56] Multilevel logistic regression estimated the association between individual-and neighborhood-level characteristics with risk of meeting criteria for DSM-IV 12-month any depressive and/or anxiety disorder, any depressive disorder only, and any anxiety disorder only; separate successive logistic regression models were fitted for each past-year diagnosis. We first estimated a basic model (Model 1) of the association between individual-level characteristics and each past-year diagnosis. Model 2 fitted multilevel logistic regression models that only included neighborhood characteristics as explanatory variables of these outcomes. Another set of multilevel logistic regression models (Model 3) included neighborhood characteristics, adjusting for individual-level factors. The full model (Model 4) added interaction terms per racial/ethnic group by neighborhood characteristics, while controlling for individual-level factors. We formally tested for differences in slopes through the regression coefficients associated with the cross-product terms, and applied the Holm test adjustment to control for the probability of a Type I error. [57] Multivariable logistic regression models were

estimated within a multilevel framework using the Generalized Linear Latent and Mixed Models (GLLMM) commands, incorporating survey weights, within Stata version 10.0 (see Molina et al.[23]). We used GLLMM because the maximum-likelihood estimation algorithm has been shown to be superior to conventional multilevel programs. [58]

RESULTS

Descriptive Statistics

Table 1 presents descriptive statistics of selected sample characteristics for the total sample and across racial/ethnic groups. Significant differences exist across racial/ethnic groups on all selected sociodemographic characteristics, including gender, age, educational attainment, employment status, household income, and nativity distributions.

Any Past-Year Depressive and/or Anxiety Disorder

Table 2 presents results for any past-year depressive and/or anxiety disorder. Model 1 shows that except for Black Caribbean respondents, racial/ethnic minorities as compared to non-Latino whites experienced a decreased risk for any past-year depressive and/or anxiety disorder. According to Model 2 (neighborhood factors only) and Model 3 (neighborhood- and individual-level factors), respondents who live in neighborhoods with greater a concentration of Latino/immigrants are at a decreased risk of past-year disorder. Finally, Model 4 (interaction terms) shows that Asians living in neighborhoods with greater economic disadvantage are at a decreased risk of any past-year depressive and/or anxiety disorder (OR= .89; 95% CI= .80, .97) compared to non-Latino whites (OR= 1.07; 95% CI= .99, 1.16), independent of individual-level factors. After adjustment of individual-level factors, Latinos residing in neighborhoods with greater levels of Latino/immigrant concentration were at an increased risk of any past-year depressive and/or anxiety disorder (OR= 1.04; 95% CI= 1.01, 1.09) compared to their non-Latino white counterparts (OR= .96; 95% CI= .94, .99).

Any Past-Year Depressive Disorder Only

Table 3 presents results for any past-year depressive disorder only. Results for Model 1 show that African Americans had a significantly reduced risk of meeting criteria for any past-year depressive disorder compared to non-Latino whites. In Model 2, individuals residing in Latino/immigrant dense and residentially unstable neighborhoods are at a decreased risk for any past-year depressive disorder only. Results for Model 3 remained the same as those for Model 2, even after adjusting for individual-level factors. Lastly, Model 4 shows that after adjusting for individual-level characteristics, being an African American respondent living in a neighborhood with greater affluence is associated with an increased risk for any past-year depressive disorder (OR= 1.19; 95% CI= 1.05, 1.34) compared to non-Latino whites residing in neighborhoods with greater affluence (OR= .94; 95% CI= .84, 1.06). Black Caribbean respondents residing in more residentially unstable neighborhoods were at an increased risk of meeting criteria for any past-year depressive disorder only (OR= 1.26; 95% CI= 1.05, 1.50) compared to their non-Latino white counterparts (OR= .94; 95% CI= .88, .99), independent of individual-level factors.

Any Past-Year Anxiety Disorder Only

Results from Model 1 for any past-year anxiety disorder only (data not shown) parallel findings found for the model with any past-year depressive and/or anxiety disorder as the outcome: racial/ethnic minority groups (except Black Caribbeans) have a decreased risk of meeting criteria for any past-year anxiety disorder only as compared to non-Latino whites. According to Model 2 and Model 3, no neighborhood characteristics were associated with risk of any past-year anxiety disorder only. Lastly, Model 4 shows that, after adjusting for individual-level characteristics, non-Latino white respondents residing in neighborhoods with higher levels of concentrated disadvantage are at an increased risk for any past-year anxiety disorder only (OR= 1.10; 95% CI= 1.03, 1.18), and were significantly different from Asians (OR= .85; 95% CI= .77, .94). Latinos residing in neighborhoods with higher levels of Latino/immigrant concentration were at an increased risk of any-past year anxiety disorder only (OR= 1.08; 95% CI= 1.03, 1.13) as contrasted to non-Latino whites (OR= .97; 95% CI= .95, 1.00), independent of individual-level factors. Lastly, compared to non-Latino whites living in more residentially unstable neighborhoods (OR= 1.01; 95% CI= .97, 1.05), African Americans living in more residentially unstable neighborhoods were at an increased risk of past-year anxiety disorder only (OR= 1.07; 95% CI= 1.01, 1.13, respectively), but not after applying the Holm test correction.

Supplementary Analyses

We examined the potential moderating role of nativity on risk of any-past year DSM-IV DAD, given that the association between neighborhood context and mental health outcomes depends on nativity (Vega et al., 2010). After an omnibus test of interaction terms and adjustment of individual-level variables, we found significant interactions between nativity and two neighborhood context measures (data not shown). Being an immigrant living in neighborhoods with greater Latino/immigrant concentration was associated with a higher risk of any past-year anxiety disorder only (OR= 1.07; 95% CI= 1.00, 1.14) compared to U.S.-born respondents (OR= .97; 95% CI= .94, 1.00) living in Latino/immigrant dense neighborhoods. Second, immigrants (compared to US-born respondents) living in more residentially unstable neighborhoods were at a decreased risk for any past-year anxiety disorder only (OR= .93; 95% CI= .87, .99 and OR= 1.02; 95% CI= .98, 1.05, respectively).

DISCUSSION

Some limitations should be noted. Most notably is our cross-sectional design, limiting our ability to account for social selection processes, including whether individuals choose to reside in specific types of neighborhoods, or if individuals change characteristics of neighborhoods and vice-versa.[59] Similarly, we are unable to capture changes both for neighborhood characteristics and the sociopolitical context. Prospective studies are needed to infer causation, confirm potential bidirectional associations, and examine the stability of risk of psychiatric disorders across time and different social-ecologic contexts. Second, our measures did not include indicators of discrimination at the neighborhood level or perceptions of neighborhood conditions, which have been shown to be associated with health outcomes [60; 61]. Nor could we account for psychosocial mechanisms. Research in this area warrants disentangling the effects of an individual's subjective experience and

structural properties of a neighborhood and elucidating mechanistic factors underlying contextual effects for outcomes and across groups. Lastly, neighborhood characteristics are heterogeneous; analytic approaches such as latent class analysis may be better suited to construct neighborhood typologies and examine their effects.

Limitations notwithstanding, strengths of this study include: use of a nationally representative sample with diverse racial/ethnic groups, diagnostic criteria to assess mental health status, and a multilevel analysis design to demonstrate the contextual nature of the mental health effects of living in certain types of neighborhoods.

We found a decreased risk of any past-year DAD for Asians living in more disadvantaged neighborhoods as compared to non-Latino whites, paralleling findings for substance use disorder risk. [23] It appears neighborhood disadvantage may be protective for Asians for DAD but deleterious for non-Latino whites. This may be explained by the significant heterogeneity across minorities' capacity to convert income into neighborhood quality.[62] Among Asians, disadvantaged neighborhoods may provide a quality of life that affords greater access to economical living quarters, low-cost food, and inexpensive entertainment not available in more affluent neighborhoods. Further, the attribution of residing in disadvantaged neighborhood might be better for Asians, relative alternative scenarios, which might not be identical for non-Latino whites.

Analogous to findings of Lee, [25] our results demonstrate that Latinos residing in neighborhoods with greater Latino-immigrant concentration were at an increased risk of any past-year DAD as compared to non-Latino whites. Perhaps Latino immigrants living in immigrant-dense communities experience a greater sense of vulnerability related to community policing and fear of deportation and criminal victimization, [63] contributing to heightened levels of anxiety and other negative emotional states. [63; 64] For example, a national survey of Latinos [65] found that 67% of foreign-born and 32% of US-born respondents reported they worry "a lot" or "some" that they, a family member or a close friend could be deported. Further, these data were collected in 2001–2003, after passage of the USA PATRIOT Act in 2001. [66] It is possible that efforts aimed at regulating immigration had indirect psychological effects on Latino immigrants, particular those living in Latino/immigrant dense neighborhoods. [64; 66]

African Americans living in more affluent neighborhoods had increased risk for any past-year depressive disorder as compared to non-Latino whites. Framed within the social stress perspective, our findings may be attributed to race-related stress. [67] Dailey et al. [68] report that living in neighborhoods with higher SES was related to increased reports of discrimination among African Americans. For African Americans, group differences in neighborhood characteristics may not be explained fully by personal resources;[69] a race-based distinction that differentiates between those who belong and those who do not in social stratification seems to differentially matter. African Americans living in more affluent neighborhoods with relatively low numbers of other African Americans, may experience increased social stress that exerts a psychological toll,[67] by greater exposure to discrimination and social exclusion.

Our findings for Black Caribbeans and increased risk of any past-year depressive disorder are consistent with previous research. [11] Social disorganization theory [15] argues that poorer mental health in residentially unstable neighborhoods can be partly attributed to lower levels of social cohesiveness. Further, the population growth rate of Black Caribbeans grew at least 40% from 1990 to 2000. [70] In this context, perhaps as new immigrants began to settle in communities with other co-ethnics, [70] Black Caribbean respondents (67.2% whom were immigrants) residing in these neighborhoods may have wanted to move out but perhaps could not due to lack of upward social mobility, and consequently have greater risk for depressive disorders. This speculation is consistent with theories of segmented assimilation [71] and place stratification, which posit that race plays a significant role in shaping the residential patterns of black populations and their attributions in those neighborhoods. [72] For Black Caribbeans, who generally have advantaged socioeconomic profiles, [73] living in neighborhoods with greater levels of residential mobility possibly generates feelings of relative deprivation and in turn, increased risk for depression.

In contrast with other results, our findings suggested that other immigrants living in more residentially unstable neighborhoods were at a decreased risk for any past-year anxiety disorder. Ethnographic research shows that undocumented immigrants have increased rates of residential mobility and household impermanence. [74] Perhaps undocumented immigrants, who are more likely to report anxiety symptoms, [63] have moved out of these census tracts, decreasing the risk of past-year anxiety disorder for those who remain. Further, previous work finds that in neighborhoods with immigrants, residential mobility is associated with lower violent crimes, [75] and that between 1990 and 2000, the increase in immigration was partially responsible for the crime drop in urban areas.[76] Perhaps immigrants living in residentially mobile neighborhoods experience less stress or trauma related to decreased levels of violent crime, possibly resulting in lower risk for anxiety disorders. [15]

CONCLUSION

Our findings support evidence suggesting that individual risk for DAD varies by race/ethnicity. We have extended prior work in this area by highlighting that different neighborhood features have differential risk of DAD based on a person's race/ethnicity. Future ethnographic work should examine the mechanisms by which neighborhood characteristics differentially impact mental health.

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Table 1
Distribution of Selected Sociodemographic Characteristics in CPES Pooled Sample and by Race/Ethnicity (Weighted)

	All		Non-Latino White		Latino		Asian		African American		Black Caribbean		<i>P</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
	n = 13,837		n = 4,180		n = 2,554		n = 2,095		n = 3,570		n = 1,438		
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	
Gender													***
Male	47.5%	0.01	47.5%	0.01	51.5%	0.01	47.5%	0.01	44.0%	0.01	50.5%	0.03	
Female	52.5%	0.01	52.5%	0.01	48.5%	0.01	52.5%	0.01	56.0%	0.01	49.5%	0.03	
Age, years													***
18–34	31.7%	0.01	27.6%	0.01	49.0%	0.02	39.5%	0.02	35.7%	0.01	39.7%	0.02	
35–49	30.9%	0.01	30.4%	0.01	30.1%	0.01	32.2%	0.02	34.1%	0.01	32.4%	0.01	
50–64	21.0%	0.01	22.9%	0.01	13.4%	0.01	18.0%	0.01	18.6%	0.01	17.0%	0.01	
65 and over	16.4%	0.01	19.1%	0.01	7.5%	0.01	10.3%	0.02	11.6%	0.01	10.9%	0.03	
Education, years													***
11 or less	18.2%	0.01	13.0%	0.01	44.5%	0.02	15.1%	0.01	24.2%	0.01	20.7%	0.02	
12	30.9%	0.01	31.5%	0.02	24.5%	0.01	17.7%	0.01	37.9%	0.01	30.5%	0.02	
13–15	27.3%	0.01	29.1%	0.01	20.8%	0.01	25.3%	0.01	23.8%	0.01	27.1%	0.04	
16 or more	23.7%	0.01	26.4%	0.01	10.2%	0.01	42.0%	0.02	14.1%	0.01	21.7%	0.01	
Work Status													***
Employed	65.3%	0.01	65.3%	0.01	63.5%	0.02	63.9%	0.01	66.8%	0.01	76.2%	0.01	
Unemployed	6.0%	0.00	5.0%	0.01	7.4%	0.01	6.4%	0.01	10.1%	0.01	8.2%	0.01	
Out of labor force	28.7%	0.01	29.7%	0.01	29.1%	0.02	29.8%	0.02	23.1%	0.01	15.5%	0.02	
Household Income													***
\$0–14,999	16.2%	0.01	12.8%	0.01	27.5%	0.02	18.3%	0.01	24.7%	0.01	13.7%	0.03	
\$15,000–34,999	22.4%	0.01	19.9%	0.01	28.7%	0.01	13.2%	0.01	33.9%	0.01	33.3%	0.03	
\$35,000–74,999	34.2%	0.01	36.1%	0.01	27.7%	0.02	28.5%	0.02	31.3%	0.01	37.0%	0.03	
\$75,000 or more	27.1%	0.01	31.2%	0.02	16.1%	0.01	40.0%	0.02	10.1%	0.01	15.9%	0.02	
Nativity													***
US-born	86.8%	0.01	96.7%	0.01	41.5%	0.02	23.1%	0.03	97.7%	0.00	32.8%	0.03	
Immigrant	13.2%	0.01	3.3%	0.01	58.5%	0.02	76.9%	0.03	2.3%	0.00	67.2%	0.03	

Note. W/D/S= Widowed/Divorced/Separated. P-values are from Rao-Scott statistic for the Pearson chi-square test for contingency tables.

.100' < d

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Table 2
Multilevel Logistic Regression Models of Any 12-Month Depressive or Anxiety Disorder (Weighted)

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Individual Characteristics								
Race/Ethnicity								
Non-Latino White (ref)	1.00		1.00		1.00		1.00	
Latino	0.73	** (0.60 – 0.88)	0.75	** (0.62 – 0.91)	0.78	* (0.64 – 0.95)		
Asian	0.54	*** (0.42 – 0.70)	0.52	*** (0.37 – 0.74)	0.57	** (0.40 – 0.81)		
African American	0.55	*** (0.47 – 0.64)	0.52	*** (0.39 – 0.71)	0.53	*** (0.41 – 0.69)		
Black Caribbean	0.91	(0.59 – 1.41)	0.73	(0.47 – 1.14)	0.74	(0.48 – 1.17)		
Age, years								
18–34 (ref)	1.00		1.00		1.00		1.00	
35–49	0.73	** (0.60 – 0.88)	1.06	(0.80 – 1.40)	1.05	(0.79 – 1.40)		
50–64	0.54	*** (0.42 – 0.70)	0.54	*** (0.43 – 0.68)	0.54	*** (0.43 – 0.69)		
65+	0.55	*** (0.47 – 0.64)	0.10	*** (0.06 – 0.16)	0.10	*** (0.06 – 0.15)		
Gender								
Male (ref)	1.00		1.00		1.00		1.00	
Female	1.65	*** (1.43 – 1.90)	1.83	*** (1.39 – 2.40)	1.82	*** (1.39 – 2.39)		
Marital Status								
Married/cohabitating (ref)	1.00		1.00		1.00		1.00	
D/S/W	2.32	*** (2.00 – 2.69)	3.01	*** (2.26 – 4.01)	3.01	*** (2.25 – 4.03)		
Never married	1.34	*** (1.17 – 1.54)	1.08	(0.82 – 1.42)	1.09	(0.83 – 1.42)		
Education, years								
11 years or less (ref)	1.00		1.00		1.00		1.00	
12 years	0.74	*** (0.62 – 0.88)	0.63	** (0.45 – 0.88)	0.62	** (0.45 – 0.87)		
13–15 years	0.75	** (0.62 – 0.91)	0.76	(0.50 – 1.14)	0.75	(0.50 – 1.12)		
16 years or more	0.73	*** (0.61 – 0.87)	0.80	(0.57 – 1.13)	0.79	(0.57 – 1.09)		
Poverty	1.21	* (1.02 – 1.44)	1.07	(0.86 – 1.33)	1.08	(0.86 – 1.35)		
Work Status								
Employed (ref)	1.00		1.00		1.00		1.00	

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Unemployment	1.20	(0.94 – 1.53)			0.99	(0.68 – 1.43)	0.97	(0.67 – 1.41)
Out of Labor Force	1.59	*** (1.34 – 1.89)			1.57	* (1.03 – 2.37)	1.57	* (1.04 – 2.37)
Nativity								
US-born (ref)	1.00				1.00		1.00	
Immigrant	0.65	*** (0.53 – 0.81)			0.52	*** (0.36 – 0.74)	0.51	*** (0.35 – 0.73)
Neighborhood Characteristics								
Disadvantage			1.03	(0.97 – 1.10)	1.04	† (1.00 – 1.08)		
Latino/Immigrant Concentration			0.97	* (0.94 – 1.00)	0.97	** (0.95 – 0.99)		
Affluence			1.00	(0.92 – 1.08)	1.02	(0.95 – 1.10)		
Residential Instability			0.97	(0.93 – 1.02)	0.97	(0.93 – 1.01)		
Neighborhood Characteristics × Race/Ethnicity^d								
Disadvantage (Non-Latino White)								
Latino ^b							1.07	† (0.99 – 1.16)
Asian ^b							0.95	(0.87 – 1.02)
African American ^b							0.89	* (0.80 – 0.97)
Black Caribbean ^b							0.96	(0.88 – 1.05)
							0.93	(0.78 – 1.12)
Latino/Immigrant Concentration (Non-Latino White)								
Latino ^b							0.96	** (0.94 – 0.99)
Asian ^b							1.04	* (1.00 – 1.09)
African American ^b							0.91	(0.77 – 1.06)
Black Caribbean ^b							0.97	(0.92 – 1.02)
							1.03	(0.96 – 1.10)
Affluence (Non-Latino White)								
Latino ^b							1.02	(0.94 – 1.10)
Asian ^b							0.99	(0.86 – 1.14)
							0.99	(0.89 – 1.09)

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
African American ^b							1.06	(0.98 – 1.16)
Black Caribbean ^b							0.94	(0.76 – 1.17)
Residential Instability (Non-Latino White)								
Latino ^b							0.96	(0.88 – 1.06)
Asian ^b							1.04	(0.96 – 1.14)
African American ^b							1.02	(0.96 – 1.08)
Black Caribbean ^b							1.15	[‡] (0.99 – 1.33)
Constant	0.19	*** (0.16 – 0.24)	0.20	*** (0.18 – 0.23)	0.22	*** (0.15 – 0.32)	0.22	*** (0.15 – 0.32)
Observations	13626		13636		13592		13592	

Note.

^a Bold values represent estimates that remained statistically significant after Holm test correction.

^b Reference group is non-Latino whites.

D/S/W= Divorced/separated/widowed.

[‡] p < .10;

* p < .05;

** p < .01;

*** p < .001

Table 3
Multilevel Logistic Regression Models of Any 12-Month Depressive Disorder Only (Weighted)

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Individual Characteristics								
Race/Ethnicity								
Non-Latino White (ref)	1.00		1.00		1.00		1.00	
Latino	1.19	(0.85 – 1.66)	1.58	** (1.18 – 2.12)	1.55	** (1.19 – 2.01)	1.55	** (1.19 – 2.01)
Asian	0.67	(0.41 – 1.10)	0.84		0.87	(0.47 – 1.50)	0.87	(0.50 – 1.52)
African American	0.63	*** (0.48 – 0.82)	0.53	*** (0.37 – 0.77)	0.56	*** (0.41 – 0.77)	0.56	*** (0.41 – 0.77)
Black Caribbean	1.33	(0.56 – 3.14)	1.33		1.46	(0.61 – 2.89)	1.46	(0.68 – 3.11)
Age, years								
18–34 (ref)	1.00		1.00		1.00		1.00	
35–49	0.80	† (0.62 – 1.03)	0.65		0.66	(0.35 – 1.23)	0.66	(0.36 – 1.22)
50–64	0.55	** (0.39 – 0.79)	0.34	** (0.16 – 0.69)	0.34	** (0.17 – 0.69)	0.34	** (0.17 – 0.69)
65+	0.20	*** (0.11 – 0.36)	0.18	*** (0.09 – 0.36)	0.19	*** (0.09 – 0.40)	0.19	*** (0.09 – 0.40)
Gender								
Male (ref)	1.00		1.00		1.00		1.00	
Female	1.68	*** (1.36 – 2.06)	1.65	*** (1.30 – 2.11)	1.62	*** (1.27 – 2.07)	1.62	*** (1.27 – 2.07)
Marital Status								
Married/cohabitating (ref)	1.00		1.00		1.00		1.00	
D/S/W	1.94	*** (1.45 – 2.60)	2.07	** (1.34 – 3.22)	2.02	** (1.29 – 3.15)	2.02	** (1.29 – 3.15)
Never married	1.34	* (1.02 – 1.76)	0.83		0.76	(0.48 – 1.42)	0.76	(0.42 – 1.41)
Education, years								
11 years or less (ref)	1.00		1.00		1.00		1.00	
12 years	0.94	(0.66 – 1.34)	0.81		0.85	(0.47 – 1.37)	0.85	(0.52 – 1.41)
13–15 years	0.90	(0.65 – 1.25)	1.30		1.37	(0.55 – 3.06)	1.37	(0.62 – 3.01)
16 years or more	0.96	(0.64 – 1.43)	1.08		1.17	(0.43 – 2.69)	1.17	(0.53 – 2.57)
Poverty	1.25	(0.94 – 1.67)	... ^a		1.45		1.45	(0.88 – 2.37)
Work Status								
Employed (ref)	1.00		1.00		1.00		1.00	

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Unemployment	1.23	(0.81 – 1.87)			1.03	(0.50 – 2.14)	0.94	(0.44 – 2.01)
Out of Labor Force	1.34	‡ (0.98 – 1.82)			1.19	(0.75 – 1.89)	1.11	(0.67 – 1.86)
Nativity								
US-born (ref)	1.00				1.00		1.00	
Immigrant	0.72	(0.48 – 1.08)			0.57	* (0.36 – 0.88)	0.52	** (0.33 – 0.83)
Neighborhood Characteristics								
Disadvantage			1.03	(0.98 – 1.08)	1.02	(0.99 – 1.06)		
Latino/Immigrant Concentration			0.94	* (0.88 – 1.00)	0.93	* (0.87 – 1.00)		
Affluence			0.93	(0.83 – 1.04)	0.94	(0.86 – 1.04)		
Residential Instability			0.94	* (0.89 – 1.00)	0.93	* (0.88 – 0.99)		
Neighborhood Characteristics × Race/Ethnicity^b								
Disadvantage (Non-Latino White)								
Latino ^c					1.02	(0.93 – 1.12)		
Latino ^c					1.01	(0.92 – 1.09)		
Asian ^c					0.95	(0.85 – 1.05)		
African American ^c					0.99	(0.89 – 1.11)		
Black Caribbean ^c					0.72	(0.46 – 1.13)		
Latino/Immigrant Concentration (Non-Latino White)								
Latino ^c					0.94	‡ (0.87 – 1.01)		
Latino ^c					0.98	(0.90 – 1.06)		
Asian ^c					0.86	‡ (0.73 – 1.02)		
African American ^c					0.89	‡ (0.79 – 1.00)		
Black Caribbean ^c					1.03	(0.92 – 1.16)		
Affluence (Non-Latino White)								
Latino ^c					0.94	(0.84 – 1.06)		
Latino ^c					0.91	(0.77 – 1.07)		
Asian ^c					1.08	(0.95 – 1.24)		

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
African American ^c							1.19	** (1.05 – 1.34)
Black Caribbean ^c							0.93	(0.76 – 1.14)
Residential Instability (Non-Latino White)								
Latino ^c							0.94	* (0.88 – 0.99)
Asian ^c							1.00	(0.86 – 1.15)
African American ^c							1.09	(0.97 – 1.23)
African American ^c							0.96	(0.86 – 1.06)
Black Caribbean ^c							1.26	* (1.05 – 1.50)
Constant	0.04	*** (0.02 – 0.05)	0.04	*** (0.03 – 0.05)	0.04	*** (0.01 – 0.14)	0.04	*** (0.01 – 0.12)
Observations	13626		13636		13592		13592	

Note

^a Poverty index had to be removed from this model because the model would not converge with this variable in it.

^b Bold values represent estimates that remained statistically significant after Holm test correction..

^c Reference group is non-Latino whites.

D/S/W = Divorced/separated/widowed.

^f p < .10;

* p < .05;

** p < .01;

*** p < .001