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The Associations between Socioeconomic Status and Major Depressive Disorder Among Blacks, Latinos, Asians, and Non-Hispanic Whites: Findings from The Collaborative Psychiatric Epidemiology Studies

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Abstract

Background—This study examined whether there were associations between individual measures of socioeconomic status (SES) and the 12-month prevalence of major depressive disorder (MDD) in representative samples of Blacks, Latinos, Asians, and Whites in the United States.

Method—The data used were from the Collaborative Psychiatric Epidemiology Studies.

Results—There was an association between household income and MDD among Whites. However, the association was not statistically significant. Statistically significant associations were present between educational attainment and MDD among Whites. Among both Whites and Latinos, being out of the labor force was significantly associated with MDD. In analyses by nativity, being out of the labor force was significantly associated with MDD among US-born and foreign-born Latinos.

Conclusions—Significant associations between various measures of SES and MDD were consistently observed among White and in some cases, among Latino populations. Future studies should continue to examine sociopsychological factors related to SES that increase the risk of MDD among people from racial-ethnic communities.

Keywords

Major depression; racial-ethnic status; socio-economic status

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Declaration of Interest
None.

Introduction

Despite the long established association between low socioeconomic status (SES) and health (Anderson & Armstead, 1995; Adler *et al.*, 1994), low SES has not consistently been shown to be associated with increased risk of major depressive disorder (MDD) (Holzer *et al.* 1986; Weissman *et al.* 1991; Reiger *et al.* 1993; Alegria *et al.* 2000; Blazer *et al.* 1985; Leaf *et al.* 1986; Bruce *et al.* 1991; Kessler *et al.* 1997; Kessler *et al.* 2003). A meta-analysis by Lorant and colleagues (2003) based on studies of the prevalence, incidence, and persistence of major depression revealed that low SES individuals had a higher risk of major depression compared to high SES individuals. Despite this finding, there is ample evidence that the prevalence of MDD is lower among racial-ethnic groups (Takeuchi *et al.* 2007; Alegria *et al.* 2007a; Williams *et al.* 2007a; Breslau *et al.* 2006; Breslau *et al.* 2005; Kessler *et al.* 1994). The lower prevalence appears to be counter-intuitive because in general Blacks, Latinos, and Asians historically have lower levels of education, household income, and higher unemployment rates compared to Whites (U.S. Census, 2007).

To explain the lower than expected prevalence of MDD among racial-ethnic groups, the *diminishing returns hypothesis* posits that the association between racial-ethnic group status and risk of MDD varies according to SES level. The theory suggests that racial-ethnic groups do not experience the same economic returns associated with higher SES achievement as Whites (Farmer & Ferraro, 2005). It follows that with higher levels of SES, racial-ethnic groups may become more aware of the social and economic inequalities they face despite their economic achievements. This social awareness of constrained opportunities could be internalized and manifest itself in poor health and mental health outcomes (Farmer & Ferraro, 2005). Based on the theory, we expect to see a decreased risk of MDD among low SES individuals and an increased risk of MDD among high SES individuals.

To our knowledge, one study examined whether high SES was associated with higher risk of *DSM-IV* mood disorders among racial-ethnic groups. Breslau and colleagues (2006) assessed whether risk of psychiatric disorders among Blacks, Hispanics, and non-Hispanic Whites varied according to level of educational attainment. They found a significant higher lifetime risk of *DSM-IV* mood disorders among Blacks with more than a high school education compared to their White counterparts.

In the present study, we investigate the following: (1) is high SES, as measured by high household income, high level of educational attainment, and being employed, associated with an increased risk of MDD; (2) is there support for the *diminishing returns hypothesis*, such that, an increased risk of MDD is observed among high SES compared to low SES individuals.

Methods

Sampling Design

We utilized data from the Collaborative Psychiatric Epidemiology Studies (CPES). A detailed description of the CPES protocol and sampling design has been previously documented (Heeringa *et al.* 2004). Briefly, three national surveys of Americans' mental health comprise the CPES: the NCS-R (Kessler *et al.* 2004a), the National Study of American Life (NSAL) (Jackson *et al.* 2004), and the National Latino and Asian American Study of Mental Health (NLAAS) (Alegria *et al.* 2004a). Data collection was conducted by the Survey Research Center of the Institute for Social Research at the University of Michigan. Participants were recruited using two sampling methods: (1) core sampling based on multistage stratified area probability designs, resulting in nationally representative household samples; and (2) high-density supplemental sampling to over-sample Census block groups for target ancestry groups (Afro-Caribbean, Chinese, Filipino, Vietnamese, and Puerto Rican). Weighting corrections were

constructed to take into account joint probabilities of selection under the different components of the sampling design (Heeringa *et al.* 2004).

Procedures

The NCS-R, NSAL and NLAAS interviews were conducted in English and administered face-to-face using a computer-assisted instrument and by telephone (Williams *et al.* 2007; Takeuchi *et al.* 2007; Alegria *et al.* 2007). When requested, NLAAS interviews were conducted in the respondents' native language (Spanish, Chinese, Tagalog, or Vietnamese) (Takeuchi *et al.* 2007; Alegria *et al.* 2007). CPES surveys were conducted between February, 2001 and December, 2003. Written informed consent was obtained for all participants in their preferred languages and study procedures and protocols were approved by the Internal Review Boards of Cambridge Health Alliance, the University of Washington, the University of Michigan, and Harvard Medical School (Williams *et al.* 2007a; Takeuchi *et al.* 2007; Alegria *et al.* 2007a; Kessler *et al.* 2004a).

Sample

The full CPES sample included data from 20,013 adults ages 18 and older who resided in any of the 50 contiguous states and Washington, DC. The NCS-R sample consisted of 6,696 non-Hispanic Whites, 1,230 Blacks, 883 Latinos, and 189 Asians. The NSAL sample consisted of 3,570 African Americans, 1,621 Blacks of Caribbean ancestry, and 891 non-Hispanic Whites (Williams *et al.* 2007a). The NLAAS Latino sample consisted of 868 Mexicans, 495 Puerto Ricans, 577 Cubans, and 614 "other" Latinos (Alegria *et al.* 2007a). The NLAAS Asian sample was comprised of 2,095 individuals including: Chinese (n = 600), Filipino (n = 508), Vietnamese (n = 520), and "other" Asian (n = 467) (Takeuchi *et al.* 2007). The final response rates for the surveys were as follows: 70.9% (NCS-R); 72.3% (NSAL); and 73.2% (NLAAS).

The NCS-R was administered in two parts. Part I included all respondents (n = 9,282). In order to reduce respondent burden, Part II, which included assessments of risk factors, consequences, correlates, and additional disorders, was administered to 5,692 of the 9,282 respondents, over-sampling those with clinically significant disorders (Kessler *et al.* 2004a). This paper included Part II respondents only. In the present study, the final sample included 16,032 respondents (with complete information on all variables in the analyses) who self-identified as non-Hispanic White (n = 5,044), Black (n = 5,552), Latino (n = 3,258), and Asian (n = 2,178).

Measures

The outcome of interest in our study was meeting 12-month (the occurrence of the depressive event within 12 months of the interview) criteria for MDD measured by the diagnostic interview of the World Mental Health Initiative version of the Composite International Diagnostic Interview (WMH-CIDI) (Kessler & Ustun, 2004), a fully structured diagnostic instrument based on criteria of the DSM-IV (APA, 1994). Previous studies have shown there are consistent similarities in the core features of MDD across racial-ethnic groups (Ballenger *et al*., 2001; Simon *et al*., 1999). To date, clinical reappraisal interviews have been carried out in conjunction with the NCS-R and the NSAL. The Structured Clinical Interview of DSM-IV (SCID), (First *et al.*, 1997) a diagnostic interview that requires clinical expertise to administer, was used in the reappraisal studies. Since the SCID does not contain a diagnosis for mania, it cannot be used to generate diagnoses for MDD. However, it can be used to diagnose major depressive episode (MDE). For example, in the NSAL, a comparison of the CIDI and the SCID for 12-month prevalence of MDE revealed fair concordance for African Americans and lower concordance for Caribbean Blacks (Williams *et al.* 2007b). The clinical reappraisal study for the NCS-R also indicated fair concordance for 12-month MDE (Kessler *et al* 2003a).

Socioeconomic status—Indicators of SES used in the present study were: (1) annual household income (assessed in the year prior to the survey), (2) educational attainment, and, (3) employment status. Household income categories (divided approximately into quartiles) were obtained from self-report data and included the following: < $17,000; $17,000–$49,999; $45,000–79,999; and ≥ $80,000. Education was treated as a categorical variable based on self-reported number of years of education (< 12 years; 12 years; 13–15 years; ≥ 16 years). Categories were created based on a priori hypotheses about significant markers of educational attainment and the distribution of years of education in the sample. Employment status was measured as a categorical variable (unemployed; out of labor force; employed). Participants who reported currently receiving pay for work and who identified as being employed, self-employed, or on leave were classified as being "employed." Individuals who reported being unemployed and not receiving pay for work, but who reported being students, retired, or disabled were classified as "being out of the labor force." All other participants who reported being unemployed and not receiving pay for work were classified as "unemployed."

Demographic measures—Household size, age, and marital status were included as demographic measures. Household size was measured as a continuous variable from self-reported data regarding the number of related/non-related individuals living in respondents' households. Age (measured in years) was also assessed as a continuous variable based on the date of the interview and self-reported date of birth. Marital status was analyzed as a categorical variable (widowed/separated/divorced; never married; married). Nativity was assessed as a dichotomous variable (U.S.-born v. foreign-born). Data on nativity in the CPES was available for NSAL and NLAAS respondents only. Thus, White respondents from the NCS-R were excluded from analyses that included nativity.

Statistical Analyses

All analyses used SAS-callable Survey Data Analysis (SUDAAN) software (Version 9.0.3, Research Triangle Institute, NC), which provides estimates that account for the incorporation of complex survey sampling methods, including multistage and cluster study designs. Weighted cross-tabulations were used to describe characteristics of the CPES data. Prior to conducting the multivariate analysis stratified by race we tested for racial differences in the association between SES and MDD. Interaction terms between race and SES variables were created and included race and income, race and education, race and dummy variables for employment status. Next, a series of logistic regression analyses were conducted to assess the association between the SES and MDD. Our analytical strategy assessed the association between SES and MDD stratified by race and gender, adjusted for household size, age, and marital status. Second, we assessed the independent association between SES and MDD stratified by race and nativity status, adjusted for demographic covariates. Chi-square tests were conducted to determine whether there were statistically significant differences in the association between SES and MDD within each racial-ethnic group. All significance tests were evaluated at the 0.05 level with two-sided tests. The decision to stratify analyses by gender was based on the finding that women compared to men have two times or more the risk of MDD (Kessler *et al.*, 2003a; Kessler 2003b). Also, low SES, measured in a variety of ways, has been shown to be associated with higher risk of depressive disorders among women (Eaton *et al.*, 2001; Reading & Reynolds, 2001; Coiro, 2001; O'Campo *et al.*, 2004). Additionally, the decision to stratify analyses by nativity was based on evidence that nativity may provide a stress buffer between low SES and poor mental health outcomes (Alegria *et al.*, 2007b).

Results

Table 1 shows the sociodemographic characteristics of the sample and the prevalence of MDD stratified by race and gender. As expected, women, across all racial categories, reported a higher

prevalence of MDD than men. Among women, the prevalence of MDD was highest among Whites (12.7%), followed by Latinas (9.9%), Blacks (7.6%), then Asians (5.0%). A similar pattern was found among men.

Racial and gender differences were also found on the measures of SES. Black women and Latinas were equally likely to report household incomes < $17,000 (35.6% and 35.8%, respectively). Asian men (41.1%) and Asian women (35.6%) reported household incomes in the highest strata. Most of those reporting < 12 years of education were Latinos and most of those reporting 12 years of education were Blacks. Those reporting the highest levels of education (≥ 16 years) were Asian men. Latino men reported the highest rate of employment (74.5%), followed by Asian men (73.7%), White men (72.9%), and then Black men (70.9%). Over 75% of Asians and nearly 60% of Latinos were born in a country other than the US.

In the analysis with the interaction terms, there were no significant differences between race and household income ($X^2_{(3)} = 4.57$; $p < 0.21$). However, significant differences were observed between Asians and Whites in the association between education and MDD ($X^2_{(3)} = 8.175$; $p = 0.042$) and being employed and MDD ($X^2_{(2)} = 18.555$; $p < 0.0001$).

Household Income

In Table 2, we estimated the association between measures of SES and MDD stratified by race and gender. For Whites, compared to those reporting household incomes of ≥ $80,000, those with incomes < $17,000 had the highest odds of MDD, and the risk decreased in a stepwise manner as household income increased. Significant variation across household income categories was not observed among White men ($X^2_{(1)} = 0.01 – 0.129$; $p = 0.917$-0.256) and White women ($X^2_{(1)} = 0.02 – 2.24$; $p = 0.895$ - 0.134). Despite these associations among Whites, high compared to low household income was not significantly associated with a decreased risk of MDD among Blacks, Latinos, and Asians.

In Table 3 analyses were stratified by race and nativity. Among foreign-born Latinos and U.S.-born and foreign-born Asians, there was an elevated risk for MDD among those reporting household income levels less than $80,000. However the association between household income and MDD among these groups was not statistically significant.

Educational Attainment

Although not entirely uniform, an association between educational attainment and MDD was observed among White men (Table 2). Specifically, White men who reported < 12 years of education compared to White men with ≥ 16 years of education had higher odds of MDD (OR = 2.04; 95% CI: 1.04, 4.00). A similar elevated risk existed for White men with 13–15 years of education (OR = 1.89; 95% CI: 1.10, 3.24). In each of these cases, White men with < 12 years ($X^2_{(1)} = 5.33$; $p = 0.020$) and those with 13–15 years ($X^2_{(1)} = 4.32$; $p = 0.037$) had a significantly higher risk for MDD. Among Black, Latino or Asian men, we found high compared to low levels of education were not significantly associated with a decreased risk of MDD.

The results for women revealed that low educational attainment was associated with decreased risk of MDD among White women (Table 2). White women with 12 years of education (OR = 0.65; 95% CI: 0.47, 0.89) and those with 13–15 years (OR = 0.71; 95% CI: 0.52, 0.98) had a lower risk of MDD compared to those with ≥ 16 years. Significant differences were present for White women with 12 years ($X^2_{(1)} = 7.42$; $p = 0.006$) and with 13–15 years ($X^2_{(1)} = 4.51$; $p = 0.033$). Among Black, Latina, and Asian women, low compared to high levels of education were not significantly associated with an elevated risk of MDD.

In Table 3, there was a significant association between educational attainment and MDD among foreign-born Blacks, where an increased risk of MDD was observed among those with less than 16 years of education ($X^2_{(1)} = 5.93$; $p = 0.014$). For other racial-ethnic groups, there was a decreased risk of MDD as educational attainment increased. None of these associations were statistically significant.

Employment Status

Unlike income and education, being unemployed or out of the labor force were consistently associated with a higher risk of MDD, with three exceptions, unemployed White women, unemployed Latinas, and Asian women who were out of the labor force (Table 2). Significant differences were present among White men ($X^2_{(1)} = 4.32$; $p = 0.036$), White women ($X^2_{(1)} = 6.01$; $p = 0.014$), and Latino men ($X^2_{(1)} = 8.76$; $p = 0.003$) who reported being out of the labor force.

Among all groups, those who were unemployed reported higher odds for MDD compared to those who were employed (Table 3). Being out of the labor force was also associated with higher odds for MDD among most groups except U.S.- and foreign-born Asians. Significant differences were present only among U.S.-born Latinos ($X^2_{(1)} = 7.92$; $p = 0.004$) and foreign-born Latinos ($X^2_{(1)} = 6.97$; $p = 0.008$) not in the labor force.

Discussion

In this study, we examined two research questions: (1) is high SES, as measured by high household income, high level of educational attainment, and being employed, associated with an increased risk of MDD; (2) is there support for the *diminishing returns hypothesis*, such that, an increased risk of MDD is observed among high SES compared to low SES individuals.

Regarding the first research question, we found no statistical evidence that high household income was associated with lower risk of MDD among any racial-ethnic group. The non-significant effect of household income on MDD suggests that income alone is not responsible for the increased risk of MDD (Williams *et al.*, 2007b; Blazer *et al.*, 1994; Weissman *et al.*, 1991). Epidemiologic data have demonstrated that although there are differences in the expression of depression symptoms across racial-ethnic groups, there are consistent similarities in the core features of MDD across racial-ethnic groups (Ballenger *et al.*, 2001; Simon *et al.*, 1999). Thus, a possible explanation for this finding may include the fact that the course and the consequential effects of MDD may be similar for those who suffer from MDD - irrespective of income level.

The non-significant effect of household income must be interpreted in light of a study design limitation. Our analysis reflects the cross-sectional association between household income and MDD. Longitudinal data analysis has shown that social causation, rather than social selection, may in part explain why low income individuals may be at increased risk for MDD (Ritsher *et al.*, 2001). However, studies have shown that causation and selection are not mutually exclusive processes and may both be influential over the life span (Nestadt *et al.*, 1998; Kessler *et al.*, 2003a). Unfortunately, the cross-sectional nature of our data precludes us from examining this causal pathway. This could, in part, explain our non-significant results.

For educational attainment and MDD, we found significant associations between a high level of education attainment and lower risk of MDD among White men. Among White women, there was a significantly reduced risk of MDD among those with less than 16 years of education. Despite these findings among Whites, similar patterns were not observed among the other racial-ethnic groups. A potential explanation for these findings may be that years of education, a traditional measure of social stratification, may effectively model the association between

SES and MDD among Whites (Lynch & Kaplan, 2000). Conversely, education may not translate to economic opportunity for racial-ethnic groups (Farmer & Ferraro, 2005). This suggests that education as a measure of SES in this study, fails to capture the context in which SES may influence MDD. This finding further suggests the need to adopt modeling approaches that more accurately capture the context in which SES may influence MDD among different groups. One potential approach may be the inclusion of SES measures during both distal and proximal periods of the life-course, since early-life and contemporary SES have an influence on MDD (Mutaner et al., 2008). Based on the cross-sectional nature of our data, it is not possible to determine whether assessment of SES at different time points during the life-course may be a modeling approach better suited to assess the association between SES and MDD among racial-ethnic groups. Future studies are needed to determine whether this modeling approach improves our understanding of the SES-MDD association among racial-ethnic groups.

Another potential modeling approach may be the inclusion of alternative measures of social stratification. Research suggests that the inclusion of "neomaterial" determinants (proximal physical or biological risk or protective factors) and "psychosocial" determinants (i.e. perceived social status) may be more instrumental in explaining the association between SES and MDD (de Castro *et al.*, under review). These determinants may be relevant in the association between SES and MDD because depression is clearly affected by sociopsychological risk factors that cluster among individuals of low SES (i.e. stressful life events) (Mutaner *et al.*, 2004). Additional studies are needed to determine whether these assessments of stratification are relevant to understanding the role of SES in MDD among racial-ethnic groups.

Our results also revealed an association between being out of the labor force and an increased risk of MDD among Whites and Latino men. In analyses by nativity, significant differences were present among both U.S.-born and foreign-born Latinos who reported being out of the labor force. These findings are consistent with earlier studies reporting that being out of the labor force was associated with 12-month MDD (Alegria *et al.* 2007b; Kessler *et al.*, 2003a). Our findings suggest that being out of the labor force may adversely affect individual mental health due to the effects of economic hardship. In addition, environmental features of work postulated to promote psychological well-being (e.g., interpersonal contact, skill use, physical security, and valued social position) may also explain why being out of the labor force may increase the risk of MDD (Warr 1987).

With regard to our second research question, we found no evidence to support the *diminishing returns hypothesis*. Consistent with previous epidemiologic studies, we found a lower prevalence of 12-month MDD among Blacks, Latinos, and Asians compared to non-Hispanic Whites (Takeuchi *et al.* 2007; Alegria *et al.* 2007a; Williams *et al.* 2007a; Breslau *et al.* 2006; Breslau *et al.* 2005; Kessler *et al.* 1994). Our findings suggest that an increased risk of MDD was not observed among high compared to low SES individuals. Thus, despite the low prevalence of MDD among racial-ethnic groups, there is no empirical evidence to support that the association between racial-ethnic status and MDD varied by SES level. Previous research offers possible explanations for the protective factors (e.g., ethnic identification, social support) that likely result in the lower prevalence of MDD (Herd & Grube, 1996; Mossakowski, 2003) (Wallace & Forman, 1998; Varon & Riley, 1999; Ellison *et al.* 2001; Lee & Newberg, 2005; Williams & Neighbors, 2006). Future studies should continue to explore the social context of racial-ethnic groups in order to understand why these groups experience a lower prevalence of MDD despite their economic disadvantage.

The findings from this study should be interpreted in light of several limitations. First, the survey was not translated into "other" Asian languages, which may have excluded from the study non-English speaking Asians who did not belong to target ancestry groups. Also,

Caribbean immigrants included in the sample had to self-identify as Black as well as speak English. These restrictions may have excluded non-English speaking Caribbean Blacks. Consequently, findings are most generalizable to target Asian ancestry groups and English-speaking Black Caribbeans. Second, our analyses relied upon the WMH-CIDI instrument to document psychiatric disorders. Although this diagnostic instrument allowed us to compare MDD among racial-ethnic groups, the prevalence of the disorder among immigrant groups may have been underestimated, especially if immigrants expressed their problems in unique ways that were not identified by *DSM-IV*. This may be a particular issue as culture can affect both the clinical presentation of specific psychiatric disorders and the ability to recall or report symptoms (Williams *et al.*, 2007b; Alegria *et al.*, 2004).

Despite these limitations, the findings suggest that the association between indicators of SES and 12-month MDD is complex as associations differed by racial-ethnic status, gender, and nativity. Future studies must continue to explore how socio-cultural statuses across the life-course influence how race-ethnic groups experience MDD, as well as other forms of psychiatric ill-health.

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Table 1

Descriptive statistics for all variables in the analyses by race and gender

	White				Black				Latino				Asian			
	Male (*n*=2163)		Female (*n*=2881)		Male (*n*=2024)		Female (*n*=3528)		Male (*n*=1420)		Female (*n*=1838)		Male (*n*=1035)		Female (*n*=1143)	
Variables	*%*	*(SE)*	*%*	*(SE)*	*%*	*(SE)*	*%*	*(SE)*	*%*	*(SE)*	*%*	*(SE)*	*%*	*(SE)*	*%*	*(SE)*
12-Month Major Depressive Disorder	7.9%	(0.01)	12.7%	(0.01)	4.0%	(0.01)	7.6%	(0.00)	5.8%	(0.01)	9.9%	(0.01)	4.1%	(0.01)	5.0%	(0.01)
Household Income																
< $17,000	10.9%	(0.01)	19.7%	(0.02)	23.5%	(0.02)	35.6%	(0.01)	25.5%	(0.02)	35.8%	(0.03)	15.8%	(0.01)	22.6%	(0.02)
$17,000 – $44,999	28.4%	(0.02)	30.2%	(0.01)	40.7%	(0.01)	38.7%	(0.01)	34.1%	(0.02)	32.5%	(0.02)	18.7%	(0.01)	23.1%	(0.02)
$45,000 – $79,999	28.5%	(0.01)	25.4%	(0.01)	21.0%	(0.01)	16.2%	(0.01)	23.1%	(0.02)	18.5%	(0.01)	24.4%	(0.02)	18.7%	(0.01)
≥ $80,000	31.0%	(0.02)	23.7%	(0.01)	12.9%	(0.01)	8.1%	(0.01)	17.2%	(0.01)	12.6%	(0.01)	41.1%	(0.02)	35.6%	(0.02)
Education																
< 12 years	14.7%	(0.01)	12.2%	(0.01)	23.3%	(0.01)	24.2%	(0.01)	41.9%	(0.02)	42.1%	(0.02)	13.0%	(0.02)	17.3%	(0.02)
12 years	31.6%	(0.02)	31.2%	(0.02)	37.9%	(0.01)	36.3%	(0.01)	28.5%	(0.02)	27.3%	(0.01)	181.1%	(0.02)	16.6%	(0.01)
13–15 years	27.5%	(0.01)	29.9%	(0.01)	23.5%	(0.01)	25.5%	(0.01)	19.3%	(0.02)	20.8%	(0.01)	23.0%	(0.02)	28.2%	(0.02)
≥ 16 years	26.3%	(0.02)	26.8%	(0.01)	15.3%	(0.01)	14.0%	(0.01)	10.3%	(0.01)	9.8%	(0.01)	45.9%	(0.02)	37.9%	(0.02)
Employment Status																
Employed	72.9%	(0.01)	63.3%	(0.01)	70.9%	(0.01)	63.2%	(0.01)	74.5%	(0.02)	52.5%	(0.02)	73.7%	(0.02)	57.1%	(0.02)
Unemployed	2.5%	(0.00)	6.1%	(0.01)	7.6%	(0.01)	10.3%	(0.01)	6.4%	(0.01)	9.5%	(0.01)	5.0%	(0.01)	6.9%	(0.01)
Out of labor force	24.7%	(0.01)	30.6%	(0.01)	21.5%	(0.01)	26.5%	(0.01)	19.1%	(0.02)	38.0%	(0.02)	21.2%	(0.02)	36.1%	(0.02)
Household Size (number of persons)	2.29	(0.03)	2.27	(0.03)	2.70	(0.05)	2.87	(0.04)	2.98	(0.07)	3.12	(0.06)	2.83	(0.07)	2.90	(0.07)
Age (years)	43.93	(0.59)	45.43	(0.49)	41.65	(0.58)	41.94	(0.49)	37.01	(0.58)	38.95	(0.51)	40.85	(0.90)	42.00	(0.76)
Marital Status																
Married	61.2%	(0.02)	55.8%	(0.01)	50.4%	(0.01)	34.6%	(0.01)	65.1%	(0.02)	57.9%	(0.01)	69.1%	(0.02)	68.5%	(0.02)
Separated/Widowed/Divorced	13.6%	(0.01)	26.0%	(0.01)	18.6%	(0.01)	31.4%	(0.01)	9.0%	(0.01)	21.2%	(0.01)	5.5%	(0.01)	12.0%	(0.01)
Never married	25.2%	(0.01)	18.2%	(0.01)	31.0%	(0.01)	34.1%	(0.01)	26.0%	(0.01)	21.0%	(0.01)	25.5%	(0.02)	19.5%	(0.01)
					(*n*=1741)		(*n*=3031)		(*n*=1200)		(*n*=1515)		(*n*=996)		(*n*=1096)	
[a]Nativity																
US Born					92.0%	(0.01)	94.0%	(0.00)	42.0%	(0.03)	41.0%	(0.03)	25.0%	(0.03)	22.0%	(0.04)
Foreign Born					8.0%	(0.01)	6.0%	(0.00)	58.0%	(0.03)	59.0%	(0.03)	75.0%	(0.03)	78.0%	(0.04)

[a]*Note:* Whites were not included in these analyses because of large numbers of missing values on the nativity variable.

Table 2

Multivariate logistic regression of SEP indicators on 12-month Major Depressive Disorder: by race and gender (*N*=16,032)

	White		Black		Latino		Asian	
	Male (*n*=2163)	**Female (*n*=2881)**	**Male (*n*=2024)**	**Female (*n*=3528)**	**Male (*n*=1420)**	**Female (*n*=1838)**	**Male (*n*=1035)**	**Female (*n*=1143)**
Variables	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***
Intercept	0.13 (0.05–0.32)	0.44 (0.20–0.95)	0.05 (0.01–0.24)	0.29 (0.13–0.69)	0.24 (0.05–1.17)	0.22 (0.09–0.51)	0.09 (0.01–0.62)	0.08 (0.01–0.42)
Household Income								
< $17,000	1.37 (0.79–2.37)	1.41 (0.90–2.23)	0.55 (0.24–1.28)	0.84 (0.41–1.70)	0.57 (0.29–1.13)	0.79 (0.39–1.59)	1.95 (0.65–5.82)	1.59 (0.59–4.30)
$17,000 – $44,999	1.19 (0.77–1.83)	1.32 (0.90–1.94)	0.81 (0.38–1.71)	0.65 (0.33–1.26)	0.68 (0.32–1.44)	0.91 (0.53–1.56)	1.13 (0.34–3.78)	1.57 (0.48–5.19)
$45,000 – $79,999	0.97 (0.54–1.73)	1.03 (0.70–1.50)	0.51 (0.15–1.72)	0.72 (0.32–1.63)	0.97 (0.44–2.10)	0.81 (0.40–1.65)	1.72 (0.58–5.15)	2.35 (1.11–4.99)
≥ $80,000 (ref)								
Education								
< 12 years	2.04 (1.04–4.00)	0.87 (0.59–1.28)	1.12 (0.40–3.17)	0.83 (0.49–1.39)	0.64 (0.29–1.42)	1.32 (0.66–2.61)	0.40 (0.10–1.65)	0.64 (0.14–2.99)
12 years	1.51 (0.84–2.74)	0.65 (0.47–0.89)	0.88 (0.41–1.86)	0.74 (0.42–1.33)	0.73 (0.32–1.66)	0.80 (0.41–1.57)	2.39 (1.02–5.57)	0.88 (0.31–2.53)
13–15 years	1.89 (1.10–3.24)	0.71 (0.52–0.98)	0.75 (0.29–1.92)	0.78 (0.43–1.40)	0.65 (0.28–1.53)	1.28 (0.72–2.25)	0.81 (0.28–2.32)	0.81 (0.40–4.65)
≥ 16 years (ref)								
Employment Status								
Employed (ref)								
Unemployed	1.26 (0.45–3.56)	0.81 (0.45–1.44)	1.45 (0.48–4.38)	1.37 (0.84–2.23)	2.10 (0.73–6.06)	0.77 (0.43–1.38)	2.10 (0.48–9.09)	2.20 (0.86–5.60)
Out of labor force	1.72 (1.03–2.87)	1.49 (1.08–2.05)	1.57 (0.70–3.50)	1.35 (0.98–1.84)	2.52 (1.36–4.68)	1.47 (0.95–2.29)	1.33 (0.53–3.35)	0.48 (0.20–1.14)
Household Size	0.91 (0.77–1.08)	0.98 (0.87–1.10)	1.00 (0.82–1.22)	1.00 (0.86–1.15)	0.84 (0.71–1.00)	0.88 (0.78–0.99)	0.76 (0.55–1.05)	0.91 (0.75–1.11)
Age	0.98 (0.96–0.99)	0.97 (0.96–0.98)	0.99 (0.97–1.02)	0.97 (0.96–0.99)	0.98 (0.95–1.00)	0.98 (0.97–1.00)	0.97 (0.93–1.02)	0.98 (0.94–1.02)
Marital Status								
Married (ref)								
Separated/Widowed/Divorced	1.94 (1.15–3.27)	1.64 (1.24–2.17)	1.51 (0.73–3.13)	1.89 (1.16–3.08)	3.28 (1.71–6.29)	2.21 (1.30–3.78)	2.81 (0.65–12.17)	2.42 (0.87–6.75)
Never married	0.90 (0.50–1.62)	0.93 (0.61–1.40)	2.34 (1.17–4.69)	1.25 (0.81–1.94)	1.56 (0.68–3.59)	1.44 (0.90–2.32)	2.38 (0.62–9.10)	3.05 (1.67–5.57)

Table 3

Multivariate logistic regression of SEP indicators on 12-month Major Depressive Disorder: by race and nativity (*N*=9,579)

	Black *		Latino †		Asian §	
	US Born (*n*=3707)	**Foreign Born (*n*=1065)**	**US Born (*n*=989)**	**Foreign Born (*n*=1726)**	**US Born (*n*=454)**	**Foreign Born (*n*=1638)**
Variables	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***	***OR (95% CI)***
Intercept	0.07 (0.02–0.18)	0.03 (0.00–0.14)	0.57 (0.15–2.19)	0.04 (0.01–0.19)	0.18 (0.02–1.71)	0.05 (0.01–0.45)
Household Income						
< $17,000	0.98 (0.55–1.73)	1.44 (0.19–11.14)	0.44 (0.19–1.03)	1.23 (0.47–3.20)	1.55 (0.42–5.73)	1.40 (0.56–3.46)
$17,000 – $44,999	1.02 (0.58–1.81)	0.64 (0.10–4.17)	0.61 (0.33–1.14)	1.00 (0.45– 2.23)	1.41 (0.35–5.65)	1.01 (0.38–2.74)
$45,000 – $79,999	0.91 (0.40–2.07)	0.62 (0.08–4.88)	0.50 (0.22–1.12)	1.59 (0.62–4.08)	2.57 (0.90–7.31)	1.33 (0.44–3.99)
≥ $80,000 (ref)						
Education						
< 12 years	0.97 (0.57–1.65)	3.18 (0.96–10.55)	1.07 (0.57–2.02)	1.00 (0.44–2.27)	0.41 (0.03–5.72)	0.75 (0.21–2.65)
12 years	0.66 (0.36–1.23)	5.60 (1.39–22.58)	0.60 (0.26–1.41)	0.82 (0.35–1.94)	0.93 (0.30–2.83)	2.02 (0.85–4.82)
13–15 years	0.64 (0.34–1.21)	1.97 (0.55–7.08)	0.50 (0.26–0.94)	0.93 (0.40–2.17)	0.32 (0.12–0.85)	0.92 (0.41–2.04)
≥ 16 years (ref)						
Employment Status						
Employed (ref)						
Unemployed	1.32 (0.77–2.25)	2.92 (0.91–9.35)	1.49 (0.58–3.82)	1.04 (0.49–2.20)	1.99 (0.51–7.82)	2.27 (0.89–5.78)
Out of labor force	1.35 (0.92–1.97)	1.01 (0.24–4.29)	2.25 (1.27–3.97)	2.02 (1.20–3.41)	0.51 (0.17–1.53)	0.75 (0.31–1.83)
Female	1.77 (1.25–2.51)	1.96 (0.70–5.53)	1.30 (0.92–1.82)	1.79 (0.95–3.38)	3.65 (1.31–10.19)	1.12 (0.55–2.29)
Household Size	1.04 (0.92–1.18)	1.00 (0.78–1.28)	0.79 (0.65–0.96)	0.98 (0.89–1.08)	0.59 (0.36–0.98)	0.94 (0.79–1.13)
Age	0.98 (0.96–1.00)	0.98 (0.96–1.01)	0.96 (0.94–0.98)	0.99 (0.98–1.00)	0.96 (0.93–1.00)	0.98 (0.93–1.03)
Marital Status						
Married (ref)						
Separated/Widowed/Divorced	2.00 (1.13–3.51)	2.12 (0.59–7.60)	3.41 (1.79–6.48)	2.11 (1.04–4.30)	1.55 (0.46–5.20)	3.13 (1.03–9.49)
Never married	1.59 (1.02–2.50)	3.65 (1.17–11.40)	1.08 (0.48–2.46)	1.96 (1.07–3.58)	1.54 (0.32–7.38)	3.30 (1.24–8.74)

Note: Whites were not included in these analyses because of large numbers of missing values on the nativity variable.

* Adjusted for African American and Afro-Caribbean ethnicity

† Adjusted for Mexican, Puerto Rican, Cuban, and other Latino ethnicity

§ Adjusted for Chinese, Filipino, Vietnamese, and other Asian ethnicity