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Depression and Antidepressant Use among Asian and Hispanic Adults: Association with Immigrant Generation and Language Use

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Abstract

This research investigates the psychological well-being and usage of medical treatments by Asian and Hispanic immigrant descendants. Using data from all four waves of Add Health study, this paper focuses on two outcomes: (1) depression and (2) levels of antidepressant use by race/ethnicity, immigrant generation, and linguistic acculturation levels during *adulthood*. Findings reveal that depression is prevalent among Mexican Americans, other Hispanics, and Asian Americans. Furthermore, Mexican Americans and Asian Americans have reported a lower level of antidepressant use than whites, with Asian Americans attaining the lowest level when immigrant generation, language acculturation levels, and other socioeconomic factors are held constant. We also find that those who are linguistically less acculturated have much lower levels of antidepressant use than their monolingual English-speaking counterparts.

Keywords

Antidepressant use; Depression; Asian and Hispanics; Immigrant generation; Language acculturation

Introduction

Children from Asian and Hispanic immigrant families (both first and second generation) have been the fastest growing child population in the United States over the last four decades [1, 2]. While a large number of these children remain in school, many have already entered adulthood, begun their own families, and become quite visible in the labor market and at the

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ballot box [1, 3]. They face various stresses, difficulties, and challenges when they strive to assimilate into the mainstream during adulthood. All of these factors may become triggers for depression [4]. While these adults are experiencing a stressful assimilation period, more needs to be learnt about their psychological well-being and treatment status.

Our paper focuses on two understudied outcomes: (1) depression and (2) levels of antidepressant drug use in this population. Toward this goal, we make four contributions. First, our study uses a national representative sample from *The National Longitudinal Study of Adolescent to Adult Health* (Add Health) and particularly focuses on immigrant offspring who grew up in Asian and Hispanic immigrant families. This differs from previous regional and national surveys that only have data to examine immigrant parents. Arguably, the assimilation processes of parents and their immigrant descendants follow distinct paths. Obviously, assimilation processes of their parents and immigrant descendants are different. Consequently, it is necessary to examine the mental health and treatment status of the immigrant descendants as a separate group.

Second, this paper expands upon the current understanding of immigrant descendants' psychological well-being during *mid-adulthood*. This is unlike previous studies that examine earlier life stages, including childhood, adolescence or transition to adulthood [5, 6]. Adulthood in late 20s and early 30s is a critical life stage when individuals become truly financially and socially independent, break ties from their original families, take on responsibilities of providing financial support for themselves and their family, enter parenthood, and aspire for career development and socioeconomic attainment. Patterns of the mental health and treatment status of immigrant descendants in late 20s and early 30s may look different from earlier life stages because they are challenged by distinct stressors during the assimilation into the mainstream.

Third, the findings of this paper provide new information about depression and, especially, antidepressant use among two fast growing yet under investigated ethnic groups: Asian/Pacific Islanders and Hispanics. Some studies found lower levels of antidepressant use among Mexican Americans and general Hispanic population than whites [7–9]. However, little evidence about antidepressant use of Asian Americans is available due to the insufficient sample size of this ethnic group in medication data [7, 8]. To further enhance the generalizability of measured associations describing this group, the current analysis utilizes a nationally representative sample with rich medication data.

Fourth, acculturation measures are incorporated into this research, including immigrant generation and language use, in order to contribute new evidence regarding the associations between acculturation levels and depression and antidepressant use. A few recent studies have started to take immigrant status into account. Results remain mixed. Some found lower levels of depression among foreign-born adolescents than their native-born counterparts [5]; while others found no immigrant generational differences in depression during adolescence or transition to adulthood [10]. Consequently, in order to improve upon currently available research, this study focuses on how depression varies by immigrant status and language acculturation levels.

Furthermore, we examine the relationship between these acculturation measures and antidepressant use among the children of immigrants. Immigrant generational status serves as an indication of acculturation progression. We expect that the increased socialization of subsequent generations of Asian and Hispanic immigrant families will improve their understanding of the mental health services available in the U.S. and their adoption of the U.S. American view of such treatment options.

In addition, language is another important factor that may affect medication use. Language is found to be an enormous barrier for racial/ethnic minorities who seek mental health treatment [11, 12]. Individuals with frequent foreign language use and limited English skills have tremendous difficulties communicating their health problems to English-speaking monolingual clinicians and lack the language repertoire for medical terms to express their symptoms. Those with frequent foreign language use may also have stronger attachment than English speakers to their parents' cultural values and beliefs that view mental health problems as personal issues that should be solved by self-effort instead of seeing them as illness that need medical treatment [13]. Thus, we incorporate foreign language use with family to predict that those who speak a foreign language at home are less likely to receive antidepressant treatment for their depressive symptoms than their monolingual English-speaking counterparts.

Data and Methods

Study Design and Sample

This analysis uses four waves of contractual data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative probability sample of U.S. adolescents in grades 7 through 12 in the 1994–95 school year. Add Health is a longitudinal study that follows the cohort from adolescence (Wave I in 1994–1995 ages 11 to 21) to adulthood (Wave IV in 2007–2008 ages 24 to 34) and was designed to understand individual health outcomes in multiple contexts. The study used a school-based design to sample high schools and their feeder middle or junior high schools. A random sample of over 20,000 adolescents was drawn from the school sample (with students who had completed an in-school questionnaire or who were listed on their school enrollment roster). The study oversampled several ethnic groups, including Puerto Rican, Cuban and Chinese, and collected information about nativity status of both the respondent and parents.

The data source provides rich measures of race and ethnicity that when combined with nativity indicators permitted exploring how race/ethnicity and immigrant generation influence medication use. Specifically, the Wave IV in-home interview collected data on respondent use of prescription and select over-the-counter (aspirin-containing and non-steroidal anti-inflammatory) medications. The medication file contains therapeutic classes for 10,711 medications assigned either based on the look-up list from an updated version of the Multum Lexicon™ (Lexicon Plus™, Lexi-Comp®, Inc.; Hudson, OH) or by a general internist and cardiovascular epidemiologist based on two online coding databases.

The final analytic sample used for this study is a subset of the original Wave IV Add Health sample of 15,071 individuals. This sample consists of a total 9,630 respondents who possess

non-missing data for the two outcome variables (i.e., depression and anti-depressant use,) and the various covariates used in the analysis, as listed in Tables 1, 2, and 3. This subsample is limited to the following racial/ethnic groups: Mexican Americans, “other” Hispanics, and non-Hispanic Asian Americans, whites, and blacks. The primary focus of this study is Asian and Hispanic populations, while third+ immigrant generation non-Hispanic whites and blacks are included for the purpose of comparison. This analysis also uses another subsample of 4,422 respondents in Table 4 and Figure 1, which is limited to individuals with either current depression at Wave IV or a history of depression at Waves I, II, or III, in order to address our primary concern of whether young adults suffering from depression are being treated with antidepressants. As a result, a total of 5,208 respondents without depression either currently or previously are excluded from the analysis presented by Table 4 and Figure 1.

The special racial/ethnic samples, large sample size, national representativeness, availability of nativity status of the respondent and parents, and medication data make Add Health an ideal data source for investigating the research question driving this study. A more complete description of the Add Health study design and sample, and medication data are available elsewhere [14, 15].

Dependent Measures

Depression—*Depression* is assessed by a dichotomous measure. It is based on the frequency of experiencing nine depressive symptoms in the past week (available across all four waves), a modified version of the Center for Epidemiologic Studies Depression Scale (CES-D) following the method of Khan et al [16]. Nine items include: (1) bothered by things that usually don’t bother you; (2) could not shake off the blues, even with help from your family and your friends; (3) felt not as good as other people; (4) had trouble keeping your mind on what you were doing; (5) felt depressed during the past seven days; (6) felt too tired to do things during the past seven days; (7) did enjoy life (reversely coded); (8) sad; (9) felt that people disliked you. Responses are scored (0=never or rarely; 1=sometimes; 2=a lot of the time; and 3=most of the time or all of the time) and summed (range: 0 to 27). Based on the definition used by Shriner and colleagues [17, 18], values are categorized as <10 (coded as 0) and ≥10 (coded as 1 meaning suffering major depressive symptoms) for each wave.

The *outcome variable of depression* originates from Wave IV. *Depression history*, used as covariate in multivariate analyses, and has two categories: those *without* depression history referring to individuals who were *not* depressed at Wave I, II and III, and those with a history of depression, referring to those who reported experiencing depression at Wave I, II, or III. The CES-D questions were administered in English by English-speaking interviewers during their in-home visit. First immigrant generation individuals in this study migrated to the US with their parent/s either during childhood or adolescence (age of arrival with a range from 0 to 18 years and a mean of 8 years) and were attending US English-speaking schools at the time of Wave I survey. Therefore, it is assumed that their level of proficiency in English enabled them to reasonably understand the CES-D battery of questions, even though some of them spoke another language with their parents or relatives outside school.

Antidepressant use—*Antidepressant use* is a dichotomous variable comprised of two categories: those who did not take any antidepressant medication, and those who had taken at least one type of the following antidepressant medications in the last four weeks: (1) SSRI antidepressants; (2) tricyclic antidepressants; (3) phenylpiperazine antidepressants; (4) tetracyclic antidepressants; (5) SSNRI antidepressants; (6) psychotherapeutic combinations, multi-ingredient formulations that include an anti-psychotic and a tricyclic or SSRI antidepressant; (6) miscellaneous antidepressants.

Independent Measures

Demographic variables—*Age* refers to respondents' age at Wave IV which is calculated by subtracting respondents' birth date from their interview date at Wave IV. *Gender* was self-reported with males coded as 0 and female coded as 1. *Race/ethnicity* is measured with five categories: non-Hispanic white, non-Hispanic black, Asian American, Mexican American, and other Hispanics. Self-reports collected at Wave I provides the basis for constructing this demographic measure. This study focuses on Asian American, Mexican American, and other Hispanics. We only include whites and blacks as comparison groups.

Acculturation Levels—*Immigrant generation* is based on the birthplace of respondents and their parents. It consists of three constructed categories from Wave I data: (1) first generation (foreign born to at least one foreign-born parent); (2) second generation (U.S. born to at least one foreign born parent); (3) third or subsequent generation (U.S. born to U.S. born parents). This study concentrates on adult descendants of immigrants (both first and second generations) who grew up in the U.S. since childhood or adolescence and whose acculturation experiences differed from their immigrant parents. We only include the fastest growing immigrant offspring populations in the US, i.e., the Asian and Hispanic immigrant generations. *Language use* provides a measure of linguistic acculturation levels. Its construction relies on responses to a question at Wave IV that asked, "what language do you use most with your family and close relatives?" These responses serve to distinguish two types of respondents: (1) those who only used English (coded as 0); and (2) those who used a foreign language with family and close relatives (coded as 1). Those who preferred a foreign language with their family and relatives have a lower acculturation level than those who only spoke English.

Socioeconomic and Current Relationship Status and Health Insurance Coverage

Our study also considers education, employment status, insurance status, and relationship status as mediating factors. All these measures were collected at Wave IV. *Educational achievement* is measured by the highest level achieved to date. It consists of four categories: (1) less than high school; (2) high school graduates; (3) some college or vocational training; (4) college degree or higher. *Currently working status* is a dichotomous variable with 1 indicating those respondents *not* working for at least 10 hours a week when interviewed. *Current health insurance status* is also a categorical variable that capture three statuses: no health insurance, private insurance (which serves as the reference group), and Medicaid. *Current relationship status* is classified as four categories: (1) currently married; (2) currently cohabiting; (3) current dating or currently pregnant and engaged in a romantic relationship; (4) not involved in any type of relationship currently.

Statistical Analysis

This paper primarily seeks to examine disparities in depression and antidepressant use by race/ethnicity, immigrant generation, and language acculturation levels. Bivariate cross-tabulations are generated to describe sample characteristics, while three logistic regression models are estimated to conduct a multivariate analysis. Model 1 examines the association between race/ethnicity (third+ generation white as the referent) and the two outcome variables, adjusting for age and gender. Model 2 adds immigrant generation and language use to understand their attenuating effects. Model 3 includes controls for socioeconomic status, current relationship status, health insurance status, and depression history to examine whether the relationship between the two outcome variables and race/ethnicity, immigrant generation, and language acculturation levels could be mediated by the added covariates. Both our descriptive and multivariate analysis uses grand sample weights and analytical methods of complex survey data in Stata and takes into account Add Health's particular survey design features, specifically, its school clustering, stratification by region, and unequal probability of sample selection [19].

In addition, we use results from Model 3 and margins command in Stata to calculate the average predicted probability of antidepressant use for each subgroup classified by the combination of race/ethnicity and the two language acculturation levels (i.e. speaking English with family versus speaking another language with family). We then conduct adjusted Wald test to examine if the predicted probability of each group is statistically different from non-Hispanic white monolingual English speakers. Within each racial/ethnic group, we also test if the predicted probability is statistically different between individuals who speak English with their families and those who do not speak English with their families.

All the analyses take the subpopulation approach, since we use a subset of the original Add Health Wave IV sample. This approach is able to identify the study's subsamples without deleting cases that do not belong to the subsets and uses all the primary sampling units to correctly calculate standard errors of the estimates [19–21].

Results

Descriptive Results

Table 1 presents weighted descriptive statistics on all predictors for the total analysis sample and by depression and antidepressant use separately. Consistent with previous demographic information [22], Mexican Americans (7%) and other Hispanics (6%) outnumber Asian Americans (3%) by about two to one. Over one third of the population (38%) has depression previously. Fifteen percent are currently depressed but only seven percent are taking antidepressants, an indication of under-treatment among the population of ages 24 to 34.

Asian Americans (16%), Mexican Americans (13%) and other Hispanics (17%) are similarly depressed to non-Hispanic whites (14%). Yet their levels of antidepressant use are much lower than whites, with the lowest levels of treatment belonging to the Asian American (2%), which has the same low level as the undertreated non-Hispanic black (2%) population. Individuals of first and second immigrant generation and those with foreign language use at

home are as likely to suffer from depression as respondents who are third or subsequent generation and are English speakers natively. However, this population has a lower likelihood of receiving antidepressant treatment.

Table 2 describes the bivariate relationship between race/ethnicity and immigrant generation, language acculturation levels, and a series of control factors including socioeconomic and relationship status, insurance coverage, and depression history. Almost half (48%) of the Asian American are first generation, which is much higher than Mexican Americans (19%) and the “other” Hispanic group (27%). The distribution of second generation status appears similar among these three groups. Mexican Americans comprises the highest percentage (40%) of the third-generation sample, followed by the “other” Hispanic group (32%) and, then, Asian Americans (15%). This indicates that a much higher percentage of Asian Americans grew up in immigrant families than either of the Hispanic groups. Regarding language acculturation levels, however, over one third of Mexican Americans (32%) and other Hispanics (31%) did not speak English with family/relatives while one-quarter of Asian Americans (25%) are bilingual, speaking both English and another language at home.

Consistent with previous findings [1], Asian Americans have the highest level of college graduation while African Americans and Mexican Americans have the lowest level of education. Other Hispanics had higher educational attainment than black and Mexican Americans but lower educational attainment than whites. Asian Americans, Mexican Americans, and other Hispanics all tend to work more than whites and blacks. Next to non-Hispanic blacks, Mexican Americans have a higher level of no medical insurance coverage or Medicaid use than Asian Americans. Mexican Americans, though socioeconomically disadvantaged, appear similar to whites in having the highest rates of marriage, followed by Asians, other Hispanics, and blacks. All the racial/ethnic minorities are less likely to have a history of depression than whites.

Multivariate Analyses

Depression—Table 3 shows results from the multivariate analysis of depression. In Model 1 odd ratios are adjusted for the basic demographic characteristics of age, sex, and race/ethnicity. In addition to these demographic controls, Model 2 estimates odds ratios for immigrant generation status and language use. Model 3 is adjusted for additional covariates, including education, work status, current relationship status, insurance status, and depression history.

Two major findings emerge from the multivariate analysis. First, consistent with bivariate results, we find that Asian and Mexican Americans, and other Hispanics are all suffering from similar levels of depression as non-Hispanic whites even when other demographic, socioeconomic, and acculturation factors are held constant in Model 3. Second, when previous studies found no immigrant generational differences in depression during adolescence [10, 23, 24], our research extends the non-generational effect to adulthood among Asian and Hispanic immigrant descendants. Language acculturation levels, unexpectedly, do not help explain this variation in depression.

Antidepressant Use—Table 4 shows results of the multivariate analysis of antidepressant drug use among individuals who have a history of depression or are depressed currently. Several major findings can be summarized. First, consistent with bivariate results, we discover that every racial/ethnic minority group possesses a lower level of antidepressant use than whites in Model 1, with Asian American having the lowest odds (0.13) of antidepressant use. Second, when immigrant generation and language acculturation variables are added in Model 2, the immigrant generation effect is no longer significant, which is different from the significant bivariate result in Table 2.

Third, multivariate results show that the language acculturation level varies with antidepressant use. In Model 3, those who speak a language other than English with family or relatives exhibits 81% lower odds of antidepressant use than monolingual English speakers when socioeconomic and other control variables are held constant in Model 3. The difference between the “other” Hispanic group and non-Hispanic whites is no longer significant in Model 2. This suggests that the addition of language and immigrant generation may help explain away the disparity in antidepressant use between the “other” Hispanic group and non-Hispanic whites.

Fourth, the odds of antidepressant use is significant among Mexican Americans in Model 1 and 2. The result in Model 2 indicates that they have 58% lower odds than non-Hispanic whites of taking antidepressants. This difference between Mexicans and whites disappears upon the addition of several socioeconomic variables and marital status to Model 4. The considerable gap in antidepressant use between Asian Americans and whites remains almost the same even when language acculturation level, immigrant generation, socioeconomic factors are controlled for in Model 4. This indicates that foreign language use with family, along with other SES factors, may not help explain the gap between Asian Americans and whites in antidepressant use. Both Model 3 and 4 show that Asian Americans have a 90% lower odds of antidepressant use than their white counterparts.

Figure 1 displays the predicted probability of antidepressant use for each combination of race/ethnicity and language acculturation levels. Not surprisingly, each race/ethnicity and language subgroup has significantly lower probability of antidepressant use than the reference group of non-Hispanic monolingual English speaking whites. The adjusted Wald tests indicate that both slow and fast linguistically acculturated Asian Americans have the lowest probability of antidepressant use (0.01 for those not speaking English with family versus 0.02 for those speaking English). The language acculturation level has a positive effect on increasing the probability of antidepressant use among Mexican Americans and “other” Hispanics. Within these two groups, those who only speak English with family have significantly higher level (0.08 for Mexican Americans versus 0.07 for other Hispanics) than their bilingual counterparts, who have the second lowest probability of receiving treatment through antidepressant use for depression (0.02).

Discussion and Practice Implications

As the two fastest growing racial/ethnic groups in the United States [22], the public health importance of Asian and Hispanic Americans will continue to grow. A substantial fraction of

these individuals will be first or second generation immigrant descendants. Consequently, documenting the depression level of today's Asian and Hispanic immigrant offspring and understanding their access to medical treatment and its relationship with acculturation levels are essential when developing strategies to improve the psychological well-being of all U.S. residents in the twenty-first century.

With new evidence from this national study, we find that the depression levels identified for Asian Americans, regardless of their immigrant status and language acculturation level, are comparable to non-Hispanic whites during adulthood. This result disagrees with one finding that shows that Asian Americans psychologically healthier than other US populations [25]. Our findings have implications for the targeted screening of Asian immigrant descendants. Clinicians and others should be aware that the depression level of Asian Americans is equivalent to third and subsequent generation non-Hispanic whites. They should receive the same clinical attention as other minority groups, like Hispanics and African Americans.

Despite Asian Americans suffering similar level of depression as whites, they are the least likely to use antidepressants, as compared to whites and Hispanics. Socioeconomic factors were assumed to increase access to healthcare, however, they do not play a role in this process for Asian Americans, who are more educated and have higher insurance coverage than other racial/ethnic groups. This finding is consistent with previous study results [26]. Furthermore, language acculturation does not help increase their level of antidepressant use. These results conform to previous research that reveals a consistent pattern, over several decades, of Asian Americans' underutilization of mental health services [13, 27], and, consequently, these findings have implications for prevention and intervention efforts targeting Asian immigrant descendants.

Mexican Americans and the "other" Hispanics group have a slightly higher level of antidepressant use than Asian Americans, but their level is much lower than non-Hispanic whites. The finding of their lower level of antidepressant use is consistent with previous research [7, 8, 28–30]. Our study indicates that the language barrier is an explanatory factor for underuse among Mexican and other Hispanics. Similarly, previous research reported that individuals with limited English proficiency are unable to access mental services due to language barriers [32, 33]. As suggested by prior studies, linguistic matching between patients and providers increases client trust, facilitates communication with providers, and improves the ability of the client to understand and follow proposed treatment plans in terms of general mental health services [11, 33–37].

Using nationally available prevalence data, this research documented how depression and especially antidepressant use among adult Asian and Hispanic American immigrant offspring varied by immigrant generation and language acculturation levels. Our findings should be interpreted within the context of their limitations. First, this study is cross-sectional, since several of the key explanatory variables, including education, work status, relationship status, and insurance coverage, come from the Wave IV data, as do the outcome variables of depression and antidepressant use. Second, because of the limitation of the sample size, disaggregating Asian Americans and other Hispanics into ethnic subgroups is not feasible. This may be necessary for properly specifying and ultimately targeting policies

and efforts aimed at reducing subgroup disparities in mental health care. Third, the definition of depression relies on self-reported information without the use of clinician-based assessment.

This study has several implications for future research and practice. First, future studies should turn to the investigations of cultural and health behavior factors, such as mental health knowledge, treatment beliefs and preferences, and help-seeking behaviors, which may underlie the differentials of antidepressant use among the Asian and Hispanic Americans documented here. Previous studies have shown that alternative approaches other than antidepressant, can help alleviate symptoms of depression, alternatives such as physical exercises and psychological and behavioral treatment, and mindfulness cognitive therapy [38–42]. Future research can examine whether Asian Americans or individuals of Mexican and other Hispanic origins choose other alternative treatment methods for depression than antidepressant use.

Some studies have shown the side-effects of antidepressant medication, which can play a role in patients discontinuation of medication or influence their decision to pursue a medication-free option for the treatment of depression [e.g. 43, 44]. Interested researchers may examine whether experiencing side-effects of antidepressants or merely a general mistrust of medication leads to low levels of antidepressant use among Asian Americans and Americans of Mexican and other Hispanic origins.

Additionally, as indicated by our findings, it makes increasingly clear that efforts should be directed to remove language barriers among Hispanic immigrant descendants in order to increase their access to needed antidepressant treatments. Lastly, possible factors, including conceptual barriers regarding western notions and framework of mental illness and mental health services and practical barriers regarding the lack of mental health professionals of Asian background, need to be explored to understand and improve Asian American access to treatment for depression.

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Figure 1.
Predicted Probability of Antidepressant Use By Race/Ethnicity and Language Use among
Individuals Who Are/Were Depressed (N = 4,422)

Table 1.

Weighted Means and Proportions of the Covariates, by Depression and Anti-Depressant Use.

	Depression			Anti-Depressant Use			Weighted Mean
	No	Yes	p-value	No	Yes	p-value	
Age at Wave 4	28	28		28	28		28
Gender			<0.001			<0.001	
Male	0.88	0.12		0.96	0.04		0.48
Female	0.82	0.18		0.91	0.09		0.52
Immigrant Generation						<0.01	
1st generation	0.82	0.18		0.97	0.03		0.05
2nd generation	0.86	0.14		0.97	0.03		0.07
3rd or higher generation	0.85	0.15		0.93	0.07		0.89
Language use						<0.001	
Only English with family	0.85	0.15		0.93	0.07		0.95
Foreign language use with family	0.85	0.15		0.98	0.02		0.05
Race/Ethnicity			<0.001			<0.001	
Non-Hispanic White	0.86	0.14		0.91	0.09		0.69
Non-Hispanic Black	0.78	0.22		0.98	0.02		0.14
Asian American	0.84	0.16		0.98	0.02		0.03
Mexican American	0.87	0.13		0.96	0.04		0.07
Other Hispanics	0.82	0.17		0.96	0.04		0.06
Education			<0.001				
Less than high school	0.72	0.28		0.94	0.06		0.09
High school graduates	0.82	0.18		0.95	0.05		0.18
Some college/V ocational training	0.85	0.15		0.92	0.08		0.43
College degree or higher	0.91	0.09		0.93	0.07		0.30
Currently working at least 10 hrs a week			<0.001			<0.001	
No	0.75	0.25		0.88	0.12		0.19
Yes	0.87	0.13		0.95	0.06		0.81
Current relationship status			<0.001				
Married	0.87	0.13		0.93	0.07		0.42
Cohabiting	0.83	0.17		0.93	0.07		0.21
Dating/Pregnant & In a romantic relationship	0.84	0.16		0.94	0.06		0.18
Not in any type of relationship	0.83	0.17		0.92	0.08		0.20
Current health insurance status			<0.001			<0.01	
No insurance	0.80	0.20		0.95	0.05		0.22
Private insurance	0.89	0.11		0.93	0.07		
Medicaid	0.70	0.30		0.87	0.13		0.78
Chronically Depressed at W1/W2/W3			<0.001			<0.001	
No	0.93	0.07		0.95	0.05		0.62
Yes	0.73	0.27		0.90	0.10		0.38
Depression at W4						<0.001	

	Depression			Anti-Depressant Use			Weighted Mean
	No	Yes	<i>p</i> -value	No	Yes	<i>p</i> -value	
No	-	-	-	0.95	0.05		0.95
Yes	-	-	-	0.84	0.16		0.15
Anti-Depressant use							
No	-	-	-	-	-	-	0.93
Yes	-	-	-	-	-	-	0.07
N	8171	1459	-	9023	607	-	9630

Note: All *p*-values come from Wald tests that account for the complex sampling frame used by Add Health.

Table 2.
Weighted Means and Proportions of the Covariates, by Race/Ethnicity, Immigrant Generation and Foreign Language Use.

	Race/Ethnicity				Immigrant Generation				Foreign Language Use with Family			
	Non-Hispanic White	Non-Hispanic Black	Asian American	Mexican American	Other Hispanics	p-value	1st Gen	2nd Gen	3rd+ Gen	p-value	No	Yes
Age at Wave 4	28	28	28	28	28		29	28	28		28	28
Gender												
Male	0.48	0.44	0.53	0.49	0.46		0.46	0.50	0.47		0.48	0.46
Female	0.52	0.56	0.47	0.51	0.54		0.54	0.50	0.53		0.52	0.54
Education						<0.001						
Less than high school	0.08	0.13	0.02	0.17	0.11		0.11	0.11	0.09		0.09	0.13
High school graduates	0.16	0.22	0.13	0.23	0.17		0.19	0.16	0.18		0.17	0.20
Some college/Vocational training	0.43	0.44	0.37	0.46	0.45		0.39	0.49	0.43		0.43	0.44
College Degree or higher	0.33	0.21	0.48	0.14	0.27		0.31	0.24	0.31		0.31	0.21
Currently working at least 10 hrs a week						<0.05				<0.05		
No	0.19	0.22	0.15	0.17	0.14		0.18	0.13	0.19		0.19	0.14
Yes	0.81	0.78	0.85	0.83	0.86		0.82	0.87	0.81		0.81	0.86
Current relationship status						<0.001				<0.05		
Married	0.46	0.24	0.36	0.46	0.35		0.47	0.38	0.42		0.41	0.48
Cohabiting	0.20	0.26	0.15	0.18	0.24		0.13	0.19	0.21		0.21	0.12
Dating/Pregnant & in a romantic relationship	0.15	0.27	0.20	0.19	0.21		0.15	0.22	0.18		0.18	0.18
Not in any type of relationship	0.19	0.23	0.29	0.17	0.20		0.24	0.20	0.20		0.20	0.22
Current health insurance status						<0.001						
No Insurance	0.21	0.28	0.15	0.24	0.22		0.24	0.20	0.22		0.22	0.27
Private insurance	0.71	0.57	0.81	0.64	0.72		0.71	0.74	0.68		0.69	0.68
Medicaid	0.08	0.15	0.04	0.12	0.06		0.06	0.07	0.09		0.09	0.05
Chronically Depressed at W1/W2/W3						<0.001				<0.001		
No	0.65	0.52	0.56	0.50	0.58		0.55	0.50	0.63		0.63	0.50
Yes	0.35	0.48	0.44	0.50	0.42		0.45	0.50	0.37		0.38	0.50
N	5390	1942	618	848	832		622	1055	7935		8946	684
												9630

Note: All *p*-values come from Wald tests that account for the complex sampling frame used by Add Health.

Table 3.

Weighted Logistic Regression Estimates of Depression in the Nationally Representative Sample of Add Health
Ages 24–34 (N = 9,630)

	Model 1		Model 2		Model 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Age	1.10 ^{***}	(1.04 – 1.15)	1.10 ^{***}	(1.04 – 1.15)	1.03	(0.97 – 1.08)
Female	1.63 ^{***}	(1.36 – 1.96)	1.63 ^{***}	(1.35 – 1.96)	1.32 ^{**}	(1.08 – 1.61)
Race/Ethnicity						
Non-Hispanic White	Ref		Ref		Ref	
Non-Hispanic Black	1.69 ^{***}	(1.33 – 2.15)	1.69 ^{***}	(1.33 – 2.15)	1.25	(0.98 – 1.58)
Asian American	1.20	(0.84 – 1.72)	1.14	(0.76 – 1.72)	1.20	(0.79 – 1.81)
Mexican American	0.97	(0.65 – 1.43)	0.97	(0.62 – 1.52)	0.71	(0.43 – 1.17)
Other Hispanics	1.30	(0.91 – 1.84)	1.29	(0.83 – 1.99)	1.22	(0.79 – 1.87)
Immigrant Generation						
1st Gen			1.16	(0.69 – 1.95)	1.20	(0.73 – 2.00)
2nd Gen			1.00	(0.65 – 1.52)	0.95	(0.61 – 1.48)
3rd Gen			Ref		Ref	
Speaking Another Language with Family			0.90	(0.57 – 1.44)	0.90	(0.56 – 1.45)
Education						
Less Than High School					1.37 [*]	(1.01 – 1.86)
High School					Ref	
Some College					0.91	(0.73 – 1.14)
College Degree or Higher					0.66 ^{***}	(0.52 – 0.85)
Not Currently Working					1.57 ^{***}	(1.25 – 1.96)
Marital Status						
Married					Ref	
Cohabiting					1.23 [*]	(0.99 – 1.53)
Dating					1.31 [*]	(1.02 – 1.68)
Not in a Relationship					1.42 ^{**}	(1.12 – 1.80)
Health Insurance Status						
No Health Insurance					1.33 [*]	(1.04 – 1.69)
Private Insurance					Ref	
Medicaid					1.56 ^{**}	(1.16 – 2.09)
Depressed at W1/II/III					3.89 ^{***}	(3.37 – 4.63)

p<0.001,

**
p<0.01,

*
p<0.05

Table 4.

Weighted Logistic Regression Estimates of Antidepressant Drug Use in the Nationally Representative Sample of Add Health among Individuals Who Are/Were Depressed; Ages 24–34(N = 4,422)*

	Model 1		Model 2		Model 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Age	1.03	(0.96 – 1.12)	1.04	(0.96 – 1.12)	1.05	(0.97 – 1.14)
Female	1.80***	(1.32 – 2.46)	1.81***	(1.32 – 2.47)	1.60**	(1.15 – 2.23)
Race/Ethnicity						
Non-Hispanic White	Ref		Ref		Ref	
Non-Hispanic Black	0.26***	(0.17 – 0.39)	0.26***	(0.17 – 0.39)	0.26***	(0.17 – 0.40)
Asian American	0.13***	(0.04 – 0.42)	0.10**	(0.02 – 0.52)	0.10**	(0.02 – 0.48)
Mexican American	0.35**	(0.19 – 0.68)	0.42*	(0.20 – 0.90)	0.46*	(0.21 – 0.98)
Other Latinos	0.31**	(0.13 – 0.73)	0.35	(0.11 – 1.10)	0.36	(0.12 – 1.10)
Immigrant Generation						
1st Gen			1.85	(0.49 – 6.95)	1.70	(0.46 – 6.33)
2nd Gen			1.33	(0.40 – 4.40)	1.27	(0.39 – 4.17)
3rd Gen					Ref	
Speaking Another Language with Family			0.17**	(0.05 – 0.63)	0.19**	(0.05 – 0.68)
Education						
Less Than High School					0.79	(0.43 – 1.46)
High School					Ref	
Some College					1.23	(0.80 – 1.90)
College Degree or Higher					1.45	(0.92 – 2.31)
Not Currently Working					1.95***	(1.39 – 2.75)
Marital Status						
Married					Ref	
Cohabiting					1.05	(0.71 – 1.55)
Dating					1.16	(0.77 – 1.75)
Not in a Relationship					1.69*	(1.13 – 2.54)
Health Insurance Status						
No Health Insurance					0.53**	(0.34 – 0.84)
Private Insurance					Ref	
Medicaid					1.22	(0.76 – 1.95)

Note: this sub-sample is comprised of respondents who have depression currently or a history of depression.

p<0.001,

**
p<0.01,

*
p<0.05