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The Interrelationships between Acculturative Stress, Family Dynamics, and Mental Health in Asian Immigrants in the National Latino and Asian American Study (NLAAS)

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2011

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Abstract

The Interrelationships between Acculturative Stress, Family Dynamics, and Mental Health in Asian Immigrants in the National Latino and Asian American Study (NLAAS)

By Chioma Ihekweazu

Approximately 70% of the 17.3 million Asian Americans in the United States are foreign-born. Since immigrants are expected to experience stress as a result of migration, it is important to understand how this stress manifests itself in regards to their health, and to identify any factors that may be affecting this relationship. The National Latino and Asian American Study (NLAAS) is a nationally representative survey conducted in 2002-2003 that estimates the prevalence of psychiatric disorders and health services utilization rates in the Latino and Asian American populations in the U.S. The primary objective of this study was to look at relationships between acculturative stress, family dynamics (family cohesion and family conflict), and psychiatric disorders (depression and anxiety) among Asian immigrants (n=1638) using data from the NLAAS. Acculturative stress and family conflict were found to be significantly associated with any 12-month depressive disorder (OR = 1.36, 95% CI = 1.14, 1.62, p=0.0009 and OR = 1.49, 95% CI = 1.25, 1.78, p<0.0001 respectively), while only family conflict was significantly associated with any 12-month anxiety disorder (OR = 1.42, 95% CI = 1.20, 1.67, p=0.0001). Our findings suggest that family conflict may be particularly salient for the mental health of Asian immigrants. Future studies need to focus on the relationship between stress, family conflict, and mental health specifically for this population.

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Introduction

Asian Americans represent the fastest growing minority group in the United States. They account for approximately six percent of the total U.S. population, 70% of whom are immigrants (Pew Research Center, 2012; Takeuchi et al., 2010). Acculturation often occurs along with immigration, a process during which individuals begin to integrate themselves into their host society and adopt the beliefs and traditions of the new culture (Abraído-Lanza et al, 2006). Unfortunately, acculturation may occur at the expense of an individual's health. While the association between acculturation and specific health outcomes has been well established, a study by Hwang and Ting (2008) found that a more direct contributor to the negative health outcomes observed may be acculturative stress.

Acculturative Stress

There have been various conceptualizations of acculturative stress in the literature (Berry & Annis, 1974; Lee et al, 2004; Lueck & Wilson; 2010, Gong et al, 2011; Samuel, 2009; Hwang & Ting, 2008). Generally, acculturative stress is viewed as stress that results from the process of acculturating. Acculturative stress may stem from leaving behind family members or friends, lack of social and financial resources in the host country, experiencing discrimination, being in an unfamiliar environment, having to learn a new language, or feelings of loneliness and isolation (Hovey, 2000). High levels of acculturative stress have been shown to be significantly associated with high levels of depression and suicide ideation. As Asian Americans are expected to comprise a larger proportion of the US population in the coming years, it is important to better understand the relationship that exists between acculturative stress and their mental health.

Asian Americans and Mental Health

Despite growing research in this area, the mental health needs of Asian Americans have historically been understudied. This is likely due to their underrepresentation in epidemiological studies, the high level of stigma Asian Americans attach to mental health issues, and the model minority myth which claims that they are well-adjusted and thriving in the U.S, and consequently, do not need to be targeted in research studies (Clough et al, 2013; Africa & Carrasco, 2011; Lee et al, 2009).

Prevalence estimates for any psychiatric disorder in Asian Americans have ranged from 8.0-15.2%, with the two most common types being depressive and anxiety disorders (Breslau et al, 2006; Takeuchi et al, 2007; Chae et al, 2012). While depression by itself is a major risk factor for suicide, the comorbidity of depression and anxiety leads to an even greater risk of suicide, which was reported as the 10th leading cause of death for Asian Americans in 2009 (CDC MMWR, 2011; Mui & Kang, 2006; Aina & Susman, 2006).

Although these estimates may seem on par with other racial/ethnic groups, research suggests that these are conservative estimates due, at least partly, to the reasons previously cited (Asnaani et al., 2010). Since Asian Americans are also less likely to seek out treatment compared to other racial groups, psychiatric disorders may persist and can have dire consequences (Kalibatseva & Leong, 2011).

Differences seen in prevalence estimates of psychiatric disorders among Asian Americans may be explained by differences in population characteristics (Leu et al, 2008). There exists considerable heterogeneity between Asian ancestry groups with respect to migration histories, educational attainment, occupation, social status, and available financial resources (Kramer et al, 2002; Clough et al, 2010; Pew Research

Center, 2012). While as a group, Asian Americans may seem to be highly educated and financially stable, a focus on individual ancestry groups reveal that some are doing well while others are struggling. Differences in social support in the context of family relationships may also serve to explain differences in mental health.

Literature Review

Since many Asian cultures place such great emphasis on family relationships, any conflict in the family unit may have profound effects on their overall mental health, above what may be seen in other racial groups (Kim et al., 2001; Walton & Takeuchi, 2010). For Asian immigrants, migrating to a new country and adapting to a new environment is a challenging experience, so family relationships are likely to become even more critical during this time. Previous studies have evaluated the relationship between acculturative stress and family dynamics, and the relationship between family dynamics and mental health in Asian Americans (Lueck & Wilson, 2010; Zhang & Ta, 2010; Walton & Takeuchi, 2010; Sangalang & Gee, 2012).

When considered with relationships with non-family members, research has shown that family relationships may be more salient for mental health among Asian Americans. A study by Zhang & Ta (2009) separated social relationships into three groups: family cohesion, relative and friend support, and neighborhood social cohesion. While the effects of relative support, friend support and neighborhood social cohesion on mental health were diminished after controlling for covariates, family cohesion remained significantly associated with mental health.

Studies in Asian immigrant elders have found that family relationships were significant predictors of depression. These studies included individuals of Chinese,

Korean, Filipino, Vietnamese, and Japanese descent, and they found that those who lived with or close to family members were less likely to be depressed than those who did not (Mui 2000; Mui & Kang, 2006; Lee & Holm, 2011). Living alone and apart from family members may prove devastating for elders as many Asian cultures highly value family cohesion and interdependence. These results suggest that family cohesion plays an important role in the mental health of Asian immigrant elders.

The importance of family relationships on mental health has also been demonstrated in younger Asian immigrant populations. A study by Cho and Haslam (2010) studied the effects of acculturative stress, life stress, and social support on suicide ideation and psychological distress in Korean immigrant high school students. Students who did not come to the U.S. with both parents reported higher levels of distress and were more likely to report suicidal thoughts. A study of Korean international college students also found significant associations between family support and depressive symptomatology, with individuals who reported more family support reporting fewer depressive symptoms (Lee et al, 2004). These findings suggest the importance of parental support and family networks in positive psychological adjustment for Asian immigrant students.

Overall, these studies have found that family dynamics is significantly associated with mental health. Many of these studies focusing on family dynamics among Asian immigrants, however, have either focused on the relationship between family cohesion or family conflict with mental health; these studies have not looked at the relationships between both family cohesion and family conflict on mental health, simultaneously.

The primary objective of this study was to look at the relationships between acculturative stress, family dynamics, namely family cohesion and family conflict, and mental health (depression, and anxiety) among Asian immigrants using data from the National Latino and Asian American Study. It was hypothesized that greater family cohesion would be associated with decreased odds of having depression or anxiety, and greater family conflict would be associated with increased odds of having depression or anxiety.

The framework for this research was provided by the Process of Social Stress Theory, which was developed by Pearlin and colleagues (Pearlin et al, 1981). According to Pearlin, the process of social stress combines three major conceptual domains: the sources of stress (i.e. life events or chronic stressors), the mediators of stress (i.e. social support), and the manifestations of stress (i.e. health outcomes). A part of this theory states that the primary stressor may lead to exposure to additional stressors and result in more severe psychological consequences (Pearlin, 2010).

In our study, acculturative stress and family conflict were considered to be the sources of stress, while family cohesion was considered to be a protective factor providing a means through which individuals could receive social support. Specifically in Asian immigrant populations, studies have shown that individuals who report greater support networks seem to display better mental health outcomes than their counterparts who lack similar networks (Lee et al., 2004). To our knowledge, no study has concurrently focused on the interrelationships between acculturative stress, family dynamics, and depression and anxiety in a nationally representative sample of Asian immigrants.

Methods

Sample and Procedures

The National Latino and Asian American Study (NLAAS) is a nationally representative survey conducted in 2002-2003 that estimates the prevalence of psychiatric disorders and health services utilization rates in the Latino and Asian American populations in the United States (Alegria et al., 2004). Survey respondents were at least 18 years of age and resided in the United States. There were a total of 4,649 participants in the NLAAS sample. This study focused exclusively on Asian participants (n=2095). Three sampling procedures were used to recruit participants for the study (Heeringa et al., 2004). First, core and secondary sampling units were selected which consisted of a multistage stratified area probability design to obtain a nationally representative sample of Asian Americans. Next, high-density supplemental sampling was performed, which involved oversampling of census block groups where target Asian ancestry groups (Chinese, Filipino, and Vietnamese) represented at least 5% of total households. Finally, secondary respondents were recruited from households where an eligible participant was already selected. Sampling weights were then constructed to take into account the joint probabilities of selection into the NLAAS.

The NLAAS materials for Asian Americans were available in Mandarin, Cantonese, Tagalog, Vietnamese, and English. Materials were translated using standard translation and back-translation techniques. All participants received a study brochure and an introductory letter. Those who consented to take part in the study were screened and interviewed by trained professionals who were tested by an independent service to access bilingual language proficiency with regards to all NLAAS materials. Interviewers

had similar cultural and linguistic profiles as the respondents to whom they administered the survey. Interviews were conducted with computer-assisted interviewing software in the preferred language of the respondent. Face- to-face interviews with the participants were administered in the core and high-density samples with exceptions made for respondents who specifically requested a telephone interview or when face-to-face interviewing was not possible. The average length of each interview was approximately 2.4 hours. For quality control purposes, a randomly selected sample of participants from the study with completed interviews was contacted to validate the data. Our final analytic sample was restricted to foreign born Asian American respondents (n=1638) as acculturative stress is of particular relevance for foreign-born individuals. The Asian American population in NLAAS consists primarily of Chinese, Vietnamese, and Filipino subjects as well as an 'other' Asian category that comprised smaller sized Asian groups such as Korean and Japanese Americans. Weighted response rates were 69.3% for primary respondents and 73.6% for secondary respondents.

Measures

Acculturative Stress. Acculturative stress was assessed using a nine-item index. Other studies have used this measure and found associations with mental health (Lueck & Wilson, 2010; Lueck & Wilson, 2011; Tummala-Narra et al, 2012). Participants were asked questions about possible discrimination and legal and migratory stresses such as, "Do you feel guilty for leaving your family and friends in your country of origin?" and "Do people treat you badly because they think you do not speak English?" to which they responded yes or no. No responses were assigned a value of 0 and yes responses were assigned a value of 1. Possible scores ranged from 0-9.

Family Cohesion. Family cohesion was assessed using 10 items taken from the Circumplex Model of Marital and Family Systems (Olson, 1986). This scale demonstrated high internal consistency with an alpha of 0.92. Participants were presented with items such as, "Family members feel very close to each other," and "Family togetherness is very important," to which they responded on a scale of 1-4 from 'strongly disagree', to 'strongly agree.' Possible scores ranged from 10-40. All items were reverse coded so that higher scores corresponded to higher levels of family cohesion.

Family Conflict. Family conflict was assessed using five items taken from a subscale of the Hispanic Stress Inventory (Cervantes et al., 1991). This scale demonstrated adequate internal consistency with an alpha of 0.76. Participants were presented with items such as, "Because of the lack of family unity, you have felt lonely and isolated," and "Your personal goals have been in conflict with your family" to which they responded on a scale of 1-3 from 'hardly ever or never,' to 'often.' Possible scores ranged from 5-15 with higher scores being indicative of higher levels of conflict.

Diagnostic Measures. Twelve month prevalence of psychiatric disorders were assessed using the diagnostic interview of the World Mental Health Survey Initiative version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI, Kessler & Ustun, 2004), based on criteria of the Diagnostic and Statistics Manual of Mental Disorders, version 4 (DSM-IV, American Psychiatric Association, 1994). Twelve-month depression was defined as meeting criteria for either major depressive disorder or dysthymia within the past year. Twelve-month anxiety was defined as meeting criteria for any of five anxiety disorders (generalized anxiety disorder (GAD), posttraumatic stress disorder (PTSD), agoraphobia, panic disorder, and social phobia)

within the past year. Diagnoses were made with DSM-IV organic exclusion criteria (Alegria et al, 2007). The validity of the earlier CIDI diagnostic assessments were consistent with those obtained independently by trained clinical interviewers (Wittchen, 1994).

Demographic Characteristics

Demographic and immigration-related measures included in the analyses were gender, age at immigration (<12, 13-17, 18-34, 35+), years spent in the U.S (<5, 5-10, 11-20, 20+) U.S. citizenship (yes or no), marital status (married/cohabiting, divorced/separated/widowed, never married), employment status (employed, unemployed, not in work force), poverty index (ration of household income to poverty threshold), years of education (0-11, 12, 13-15, ≥16 years), and English language proficiency. English language proficiency was assessed using a three-item scale that measured how well respondents, read, spoke, and understood English. This scale demonstrated high internal consistency with an alpha of 0.95. Participants responded on a scale of 1-4 from 'poor' to 'excellent' with total possible scores ranging from 3-12.

Missing Data

Four measures had missing values where the within subject mean was used for estimation: acculturative stress, family cohesion, family conflict, and English language proficiency. Mean substitution was performed for measures where participants had at least 80% complete data. For the measures with remaining missing values after mean substitution was completed (acculturative stress, family cohesion, and family conflict), and for English language proficiency, the Markov Chain Monte Carlo (MCMC) multiple imputation procedure was performed to correct for the missing values. Five imputations

were generated for measures with missing data. The values from the imputations were then aggregated to create a final estimate of the missing values, upon which the final analyses were based.

Analysis Plan

The data was analyzed using SAS-callable SUDAAN, which allows for statistical analysis of complex survey sampling methods such as those used in the NLAAS. Bivariate analyses were performed to determine the relationship between acculturative stress, family cohesion, and family conflict and the two mental health outcomes, twelve-month depression and anxiety. A series of multivariable logistic regressions were then performed to test the main effects of our primary predictors on the mental health outcomes. Finally, we tested for interactions between our primary predictors and mental health outcomes.

Results

Descriptive Characteristics

Table 1 shows the weighted descriptive characteristics of foreign-born Asian Americans in the NLAAS. The average prevalence rates of any 12-month depressive disorder and any 12-month anxiety disorder were 3.54% (n=62) and 4.58% (n=75) respectively. Study measures were stratified based on presence of either outcome. There were 868 females (46.45%) in our sample. The average level of acculturative stress was 1.90, which differed significantly based on presence of any 12-month depressive disorder. The average family cohesion score was 37.09, which differed based on depression category ($p<0.0001$) as well as anxiety category ($p<0.001$). Finally, the average family conflict score was 6.54, and there was also a statistically significant

difference based on depression category ($p<0.0001$) and anxiety category ($p<0.0001$). Relationships with other demographic variables are presented in Table 1.

Depression

Table 2 shows the results for the weighted logistic regression models for foreign-born Asian Americans with depression in the NLAAS. Acculturative stress (Model 1) demonstrated a significant effect on any 12-month depressive disorder (OR =1.51, 95% CI =1.25, 1.83, $p<0.0001$) when tested individually controlling for all covariates. Both family cohesion (Model 2) and family conflict (Model 3) demonstrated significant effects on any 12-month depressive disorder (OR = 0.93, 95% CI = 0.87, 0.99, $p<0.05$ and OR = 1.56, 95% CI = 1.32,1.84, $p<0.0001$ respectively) when tested separately controlling for all covariates. In the final model (Model 4) which included acculturative stress, family cohesion, and family conflict, family cohesion dropped out of significance, while acculturative stress and family conflict both remained significantly associated with any 12-month depressive disorder (OR = 1.36, 95% CI = 1.14, 1.62, $p=0.0009$ and OR = 1.49, 95% CI = 1.25, 1.78, $p<0.0001$ respectively). There were no significant interactions found between the primary predictors and any 12-month depressive disorder.

Anxiety

Table 3 shows the results for the weighted logistic regression models for foreign-born Asian Americans with anxiety in the NLAAS. Separately, acculturative stress (Model 1: OR = 1.19, 95% CI = 1.01, 1.39, $p=0.036$), family cohesion (Model 2: OR = 0.93, 95% CI = 0.88, 0.98, $p=0.0062$), and family conflict (Model 3: OR = 1.44, 95% CI = 1.26, 1.65, $p<0.0001$) all demonstrated a significant main effect on presence of any 12-month anxiety disorder controlling for all covariates. In the final model (Model 4),

including acculturative stress, family cohesion, and family conflict, acculturative stress and family cohesion dropped out of significance while family conflict (OR = 1.42, 95% CI = 1.20, 1.67, p=0.0001) remained significantly associated with any 12-month anxiety disorder. There were no significant interactions found between the primary predictors and any 12-month anxiety disorder.

Discussion

Based on the Process of Social Stress Theory, we expected that higher levels of family cohesion would be associated with reduced odds of having any 12-month anxiety or depressive disorder. We found that higher levels of family cohesion were associated with a reduced chance of having either outcome. These findings are in agreement with several studies that have looked at associations between family cohesion and mental health in Asian immigrant populations (Chae et al, 2012; Juang & Alvarez, 2010; Lee & Holm, 2011; Zhang & Ta, 2009). Positive family dynamics such as family cohesion can serve as a support network from which individuals can receive social support. We also expected that greater levels of family conflict would be significantly associated with an increased chance of having either psychiatric disorder, which we did find.

While family cohesion was significantly associated with both outcomes when tested individually, it lost significance when tested with family conflict. A possible explanation for this is that family cohesiveness more directly speaks to the type of support networks in which individuals are embedded rather than the support that they receive from such networks. As social support has been hypothesized to be a protective factor against stressors, a more direct measure of social support, such as the nature of family interactions, may have yielded different results in our final model.

Family conflict remained significantly associated with both health outcomes when tested by itself, and when tested with the other two predictors. Stress proliferation in the Process of Social Stress Theory provides some insight as to why this was seen. In the context of stress proliferation, acculturative stress may serve as the initial stressor that makes individuals more susceptible to experiencing additional stressors such as family conflict. Our findings support this suggesting that family conflict may be the more dominant stressor impacting the mental health of Asian immigrants.

If acculturative stress does serve as the initial stressor for Asian immigrants, more resources should be allocated to preventing or reducing acculturative stress in this population. This could be done through creating transitional programs that will help Asian immigrants adjust to life in the U.S. (e.g. improving language skills or finding jobs). Additionally, it may be beneficial to create community-based educational interventions for Asian immigrants that identify stressors that they may likely encounter, and teach them strategies to cope with these stressors. Since family relationships are highly valued in many Asian cultures, these interventions would ideally also incorporate family counseling, rather than solely focusing on individuals.

Our study had several strengths. First, we exclusively focused on foreign-born Asian Americans. Although immigrants comprise a majority of the Asian American population in the U.S, very few studies have looked at them exclusively. This study contributes to the growing literature on how these factors relate to mental health in this rapidly growing population. Another strength of this study was the use of clinically validated diagnostic tools (DSM-IV) for depressive and anxiety disorders. In addition, our study focused on multiple disorders for depression and anxiety, and those that were

diagnosed within the past 12 months. Since a majority of our sample had been in the U.S. for 11 or more years, this reduces the likelihood that these disorders developed prior to coming to the U.S. Furthermore, this study is one of the first to look at the relationships between acculturative stress, family dynamics, and mental health concurrently. Finally, our study used data from a nationally representative sample of Asian immigrants in the U.S. unlike many studies that have used convenience samples.

The findings from our study should also be considered in light of a few limitations. First, the cross-sectional nature of this study does not allow for any conclusions to be drawn about cause and effect relationships. In addition, while presence of the psychiatric disorders was established using a clinically validated tool, it is possible that the low rates of depressive and anxiety disorders were reflective of cultural bias in instrumentation, which may have underestimated the actual prevalence of depression and anxiety in our population. It may be missing sub-thresholds for individuals who have lower but still significant levels of depression or anxiety. Finally, many Asian groups vary dramatically with respect to social and financial resources, as well as their immigration histories, all of which can alter the relationship between stress, family dynamics, and mental health. Due to our small sample size, however, we were unable to look at the various Asian ancestry groups individually.

Future Directions

With this study, we have identified a few issues that should be addressed in future studies looking at the mental health of Asian immigrants. As other studies have discussed, Asian Americans constitute a highly diverse racial group (Kramer et al, 2002; Clough et al, 2010; Pew Research Center, 2012). Future research should seek to focus on

the relationships between acculturative stress, family dynamics, and mental health for specific Asian ancestry groups.

Subsequently, while gender was not significant in our analyses, this may be due to our limited sample size. Prior research has demonstrated that gender does alter the relationships between stress, family relationships, and mental health (Walton & Takeuchi, 2010; Leu et al, 2011). Future studies looking at relationships between these three factors should consider doing gender-stratified analyses. Men and women assume different roles within the family, exposing them to different things that may differentially impact their mental health. Performing gender-stratified analyses will tell us about the nature of these differences.

Finally, while there are some studies that have focused on the relationship between family cohesion and mental health in Asian Americans, more studies need to look at the relationships between stress, family conflict, and mental health outcomes, specifically in Asian immigrants. It is important that these studies use broader definitions of family conflict, rather than focusing exclusively on family conflict stemming from acculturation gaps (Crane et al, 2005; Hwang and Wood, 2009; Hwang et al, 2010).

In summary, our findings suggest that family dynamics, particularly family conflict, is salient for the mental health of Asian immigrants. The stress that ensues as a result of acculturation may influence family relationships, and lead to the development of psychiatric disorders. In groups that highly value family relationships, conflict within the family can prove to be even more detrimental for their mental health. With Asian Americans being the fastest growing racial group in the U.S, a group that is primarily comprised of immigrants, it will be important to understand their unique mental health

needs and the factors that influence their mental wellbeing so that appropriate prevention and treatment plans can be developed.

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Appendix

Table 1 – Weighted descriptive characteristics of foreign-born Asian American subjects (n=1638) in the National Latino and Asian American Study (NLAAS; 2002-2003)

	Depression		**Anxiety**		Total
	No	Yes	No	Yes	
Acculturative Stress, Mean (SE)***	1.85 (0.08)	3.10 (0.35)	1.88 (0.08)	2.33 (0.33)	1.90 (0.08)
Family Cohesion, Mean (SE)*** †††	37.23 (0.15)	33.96 (1.10)	37.20 (0.16)	35.00 (0.84)	37.09 (0.17)
Family Conflict, Mean (SE)*** †††	6.44 (0.06)	8.80 (0.36)	6.45 (0.07)	8.16 (0.31)	6.54 (0.07)
Gender, n (%)					
Males	740 (95.27)	30 (4.73)	731 (94.64)	39 (4.36)	770 (53.55)
Females	836 (95.92)	32 (4.08)	832 (95.08)	36 (4.92)	868 (46.45)
Age at immigration, n (%)					
<12 years	216 (91.36)	21 (8.64)	220 (93.27)	17 (6.73)	237 (16.53)
13-17 years	122 (93.92)	8 (6.08)	121 (91.70)	9 (8.30)	130 (6.61)
18-34 years	861 (96.25)	25 (3.75)	858 (96.03)	28 (3.97)	886 (54.13)
35+ years	377 (97.71)	8 (2.29)	364 (94.21)	21 (5.79)	385 (22.73)

Years in USA, n (%)					
<5 years	292 (96.56)	10 (3.44)	292 (97.14)	10 (2.86)	302 (18.42)
5-10 years	290 (94.00)	10 (6.00)	285 (93.32)	15 (6.68)	300 (15.67)
11-20 years	508 (94.47)	24 (5.43)	505 (94.74)	27 (5.26)	532 (34.39)
20+ years	486 (97.12)	18 (2.88)	481 (94.48)	23 (5.52)	504 (31.52)
Years of Education, n (%)					
0-11 years	292 (97.60)	8 (2.40)	289 (95.32)	11 (4.68)	300 (18.71)
12 years	261 (93.01)	13 (6.99)	261 (94.95)	13 (5.05)	274 (16.14)
13-15 years	357 (96.28)	12 (3.72)	350 (95.74)	19 (4.26)	369 (22.05)
≥16 years	666 (95.39)	29 (4.61)	663 (94.21)	32 (5.79)	695 (43.10)
Marital status, n (%)					
Married/cohabiting	1213 (97.80)	24 (2.20)	1191 (95.79)	46 (4.21)	1237 (74.30)
Divorced/separated/widowed	121 (94.00)	9 (6.00)	120 (91.09)	10 (8.91)	130 (7.84)
Never married	242 (87.23)	29 (12.77)	252 (92.73)	19 (7.27)	271 (17.86)
Work status, n (%)					
Employed	1044 (96.06)	32 (3.94)	1029 (95.30)	47 (4.70)	1076 (63.37)

Unemployed	108 (89.27)	8 (10.73)	112 (97.64)	4 (2.36)	116 (6.33)
Not in labor force	424 (96.01)	22 (3.99)	422 (93.41)	24 (6.59)	446 (30.30)
English language proficiency, Mean (SE)	8.01 (0.15)	7.56 (0.52)	8.01 (0.15)	7.60 (0.40)	7.99 (0.15)
Poverty index, Mean (SE)	5.51 (0.18)	4.60 (0.89)	5.49 (0.18)	5.05 (0.79)	5.47 (0.18)

Depression: * $p<0.05$ ** $p<0.01$ *** $p<0.001$

Anxiety: † $p<0.05$ †† $p<0.01$ ††† $p<0.001$

Table 2 – Weighted Multivariate Logistic Regression Models for foreign-born Asian Americans with any 12-month depressive disorder (n=62) in the National Latino and Asian American Study (NLAAS; 2002-2003)

	Model 1, Acculturative Stress OR (CI)	Model 2, Family Cohesion OR (CI)	Model 3, Family Conflict OR (CI)	Model 4, All OR (CI)
Acculturative Stress	1.51 (1.25-1.83)***			1.36 (1.14-1.62)***
Family Cohesion		0.93 (0.87-0.99)*		0.99 (0.92-1.07)
Family Conflict			1.56 (1.32-1.84)***	1.49 (1.25-1.78)***
Males vs. Females	1.08 (0.48-2.39)	1.03 (0.45-2.34)	1.04 (0.43-2.52)	1.08 (0.45-2.60)
Years in the U.S. (ref: <5 years)				
5-10 years	2.03 (0.68-6.11)	1.80 (0.62-5.25)	1.50 (0.53-4.19)	1.72 (0.60-4.95)
11-20 years	2.24 (0.77-6.56)	1.78 (0.66-4.76)	1.47 (0.46-4.68)	1.71 (0.52-5.61)
20+ years	1.43 (0.47-4.35)	0.96 (0.34-2.69)	0.75 (0.24-2.36)	0.95 (0.29-3.07)
Age at immigration (ref: <12 years)				
13-17	0.54 (0.13-2.23)	0.67 (0.16-2.83)	0.58 (0.11-3.02)	0.52 (0.09-2.90)
18-34	0.34 (0.13-0.88)	0.53 (0.18-1.53)	0.42 (0.14-1.24)	0.31 (0.11-0.88)

35+	0.17 (0.03-0.92)	0.28 (0.05-1.55)	0.33 (0.05-2.14)	0.26 (0.04-1.59)
Years of Education (ref: 0-11 years)				
12	3.02 (0.78-11.67)	2.89 (0.77-10.78)	2.98 (0.63-14.14)	2.65 (0.57-12.23)
13-15	1.85 (0.38-8.96)	1.63 (0.36-7.50)	1.46 (0.22-9.63)	1.55 (0.24-10.01)
≥16 years	3.20 (0.71-14.44)	3.29 (0.76-14.18)	2.83 (0.50-16.15)	2.56 (0.44-10.80)
Marital Status (ref: Married/cohabiting)				
Divorced/separated/widowed	3.27 (1.41-7.60)***	2.31 (1.12-4.76)***	2.17 (1.62-9.23)**	2.50 (1.07-5.81)**
Never married	5.50 (2.22-13.66)	4.51 (1.81-11.23)	3.87 (0.84-5.61)	3.64 (1.61-8.22)
Work Status (ref: Employed)				
Unemployed	2.22 (0.88-5.64)	2.38 (0.83-6.79)	1.92 (0.72-5.13)	1.92 (0.77-4.79)
Not in labor force	0.98 (0.44-2.19)	0.95 (0.41-2.18)	0.84 (0.35-2.01)	0.93 (0.40- 2.18)
English language Proficiency	0.84 (0.74-0.97)*	0.81 (0.69-0.93)**	0.83 (0.70-0.98)*	0.86 (0.73-1.01)
Poverty Index	1.01 (0.93-1.09)	1.01 (0.92-1.10)	1.00 (0.92-1.09)	1.01 (0.93-1.10)

*$p<0.05$ **$p<0.01$ ***$p<0.001$

Table 3 – Weighted Multivariate Logistic Regression Models for foreign-born Asian Americans with any 12-month anxiety disorder (n=75) in the National Latino and Asian American Study (NLAAS; 2002-2003)

	Model 1, Acculturative Stress OR (CI)	Model 2, Family Cohesion OR (CI)	Model 3, Family Conflict OR (CI)	Model 4, All OR (CI)
Acculturative Stress	1.19 (1.01-1.39)*			1.10 (0.94-1.29)
Family Cohesion		0.93 (0.88-0.98)**		0.99 (0.93-1.06)
Family Conflict			1.44 (1.26-1.65)***	1.42 (1.20-1.67)***
Males vs. Females	0.91 (0.49-1.69)	0.90 (0.48-1.66)	0.88 (0.49-1.58)	0.89 (0.50-1.60)
Years in the U.S. (ref: <5 years)				
5-10 years	2.42 (0.79-7.39)	2.31 (0.76-7.02)	1.92 (0.62-5.91)	1.98 (0.64-6.16)
11-20 years	2.13 (0.81-5.60)	1.86 (0.73-4.77)	1.68 (0.65-4.30)	1.74 (0.67-4.55)
20+ years	2.28 (0.84-6.19)	1.83 (0.70-4.78)	1.62 (0.60-4.36)	1.73 (0.63-4.75)
Age at immigration (ref: <12 years)				
13-17	1.11 (0.35-3.50)	1.20 (0.37-3.93)	1.16 (0.31-4.28)	1.14 (0.31-4.20)

18-34	0.52 (0.15-1.81)	0.62 (0.17-2.28)	0.54 (0.15-1.93)	0.52 (0.15-1.77)
35+	0.63 (0.20-1.95)	0.75 (0.24-2.41)	0.79 (0.25-2.52)	0.77 (0.24-2.45)
Years of Education (ref: 0-11 years)				
12	1.18 (0.35-3.99)	1.12 (0.33-3.81)	1.08 (0.30-3.81)	1.05 (0.28-3.88)
13-15	1.20 (0.34-4.21)	1.07 (0.30-3.79)	0.94 (0.24-3.67)	0.96 (0.24-3.78)
≥16 years	2.01 (0.60-6.76)	1.87 (0.54-6.54)	1.54 (0.45-5.28)	1.51 (0.44-5.16)
Marital Status (ref: Married/cohabiting)				
Divorced/separated/widowed	2.20 (0.84-5.76)	1.79 (0.65-4.94)	2.02 (0.77-5.26)	2.08 (0.76-5.70)
Never married	1.61 (0.57-4.49)	1.33 (0.46-3.86)	1.26 (0.43-3.65)	1.22 (0.44-3.36)
Work Status (ref: Employed)				
Unemployed	0.46 (0.12-2.70)	0.48 (0.12-1.91)	0.35 (0.07-1.67)	0.35 (0.07-1.66)
Not in labor force	1.42 (0.66-3.09)	1.42 (0.65-3.11)	1.35 (0.62-2.95)	1.39 (0.62-3.08)
English language Proficiency	0.92 (0.83-1.01)	0.90 (0.81-1.01)	0.91 (0.82-1.02)	0.92 (0.94-1.08)
Poverty Index	1.00 (0.94-1.07)	1.00 (0.93-1.07)	1.00 (0.94-1.08)	1.01 (0.83-1.03)

$^{*}p<0.05$ $^{**}p<0.01$ $^{***}p<0.001$