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Twelve-month prevalence of *DSM-IV* mental disorders among older Asian Americans: Comparison with younger groups

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Based on public-use data from the National Latino and Asian American Study (NLAAS), 2002–2003, we examined the 12-month prevalence rates of any depressive, anxiety, or intermittent explosive disorder among older Asian Americans and compared them to those among younger cohorts. The 12-month prevalence rate among older adults, 7.4% in the 60+ group, was significantly lower than those among younger groups. We also found that correlates of mental disorder were not the same among different age groups. Among the 60+ group, ethnicity, work status, years in the United States, family conflict, and social disability score were the significant covariates of a diagnosis of mental disorder. The findings appear to suggest that, compared with younger cohorts, older Asian Americans may have lower reactivity to life stressors and/or more adaptive coping strategies.

Introduction

Both lifetime and current prevalence estimates of mental disorders in the general population have consistently shown age differences. According to data from the National Comorbidity Survey Replication (NCS-R), lifetime prevalence in the 60+ group [26.1%, standard error (SE) = 1.7] of any mood, anxiety, impulse control, or substance use disorder meeting the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (*DSM-IV*) diagnostic criteria was about half that in the younger groups (Kessler et al., 2005a). The National Survey of American Life (NSAL) also showed that older (60+) African Americans had a significantly lower lifetime prevalence rate (4.5%, SE = 0.8) of major depressive disorder than their younger counterparts (Williams et al., 2007). Older Latinos (65+) in the National Latino and Asian American Study (NLAAS) also appeared to have lower lifetime (27.6%, SE = 4.3) and 12-month prevalence (14.2%, SE = 4.0) rates of overall psychiatric disorder than their younger counterparts (Alegria et al., 2007). Eighteen general population surveys of community-dwelling adults as part of the World Mental Health (WMH) Surveys Initiative also found that 12-month prevalence rates of depressive and anxiety disorders decreased with age (Scott et al., 2008).

Despite the emerging knowledge base about age difference in the prevalence of mental disorders and reasons for such difference, one racial group that was consistently excluded in previous research is Asian Americans. Because of their heterogeneity with respect to nativity, immigration history, cultural and linguistic heritage, socioeconomic status, and degree of acculturation, a representative sample of Asian Americans was difficult to obtain. Prior to the NLAAS, a nationally representative sample household survey conducted between 2002 and 2003, little systematic research was done on the prevalence of and risk and protective factors for mental disorders among nationally representative samples of older Asian Americans and the differences between older and younger groups. Using data from the NLAAS, the present study had two purposes: (1) to compare the 12-month prevalence of depressive, anxiety, or intermittent explosive disorder among older Asian Americans to that among younger groups; and (2) to examine age group differences in correlates for these mental disorders.

Literature review

Older Asian Americans' mental health

According to the US Census Bureau (2002), the Asian American population is growing faster than any other racial group in the United States. The number of older Asian Americans (65+) is growing even faster than the total number of Asian Americans and the number of older adults of any other race/ethnicity. With 78% of older Asian Americans being foreign born, their wide socioeconomic, cultural, and linguistic variability has been reflected in the diverse findings related to their physical and mental health statuses (mostly depression and posttraumatic stress disorder; Min & Moon, 2006). Depression and depressive symptoms are the most frequently studied mental health issues in older Asian Americans (Iwamasa & Hilliard, 1999). Despite their diverse findings on the rates of depressive symptoms among different ethnic groups, previous studies of older Asian Americans showed that such immigration- and acculturation-related factors as

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shorter length of residence in the United States and limited English proficiency, poor health status, and the lack of family support and quality relationship were significant risk factors for depression (Casado & Leung, 2001; Min, Moon, & Lubben, 2005; Ngo, Tran, Gibbons, & Oliver, 2001; Shibusawa & Mui, 2001).

The only study of age difference in 12-month and lifetime prevalence rates of mental disorders among Asian Americans used data from the Chinese American Psychiatric Epidemiological Study conducted in Los Angeles County in 1994 (Takeuchi et al., 1998). It found that age and sex were not significant correlates of a 12-month occurrence of major depressive episode and dysthymia, but that low income (less than $25,000 annually as opposed to $50,000 or more), unemployed as opposed to employed status, and having experienced at least one recent negative life event were. Lifetime prevalence rates of a major depressive episode and dysthymia were significantly higher among the oldest group (50–65) than among the younger groups (18–29 and 30–49). However, the authors cautioned that the cohort difference may be based on the timing of immigration rather than a simple age effect, since a large proportion of the respondents in the study were immigrants, and immigration after age 20 was associated with increased likelihood of having a major depressive episode and dysthymia compared to immigration before age 20.

An NLAAS-based study found that the lifetime and 12-month prevalence rates of any depressive, anxiety, or substance use disorder among Asian Americans were 17.3% (SE = 1.2%) and 9.2% (SE = 0.8%), respectively (Takeuchi et al., 2007). These prevalence rates among Asian Americans appear to be lower than those found by the NCS, the NCS-R, and the NLAAS among non-Hispanic Whites, non-Hispanic Blacks, and Hispanics/Latinos (Alegria et al., 2007; Blazer, Kessler, McGonagle, & Swartz, 1994; Breslau, Kendler, Su, Aguilar-Gaxiola, & Kessler, 2004; Grant et al., 2004; Kessler, Chiu, Demler, & Walters, 2005b). With respect to the correlates of mental disorders, Takeuchi et al. (2007) found a complex picture of the differing influences of ethnic origin, nativity and generational statuses, English proficiency, and immigration-related factors by gender, which is likely to be a reflection of the wide heterogeneity among Asian Americans. However, age differences in the prevalence and correlates of mental disorders among the NLAAS Asian Americans have not yet been examined.

Possible reasons for age difference

The relatively low point prevalence of virtually all mental disorders, except dementia, among older than younger adults, may reflect age-related difference in stress exposure and emotion regulation. Despite an increase in the role loss, chronic illness, and disability in late life, older adults may be advantaged in having lower rates of exposure to stressors in the domains of work, finance, and interpersonal relationships than their younger and middle-aged counterparts (Kessler, Mickelson, Walters, Zhao, & Hamilton, 2004). Compared to younger adults, older adults were also found to have lower reactivity to daily stressors including physical problems, experience fewer (less frequent) negative emotions, and have greater stability of highly positive states and greater self-control over their emotions in everyday life (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Diehl, Coyle, & Labouvie-Vief, 1996; Neupert, Almeida, & Charles, 2007; Phillips, Henry, Hosie, & Milne, 2006). Older adults' overall good mental health may be associated with their use of more adaptive emotion regulation and engagement in coping strategies to distance themselves from negative cognition and emotions. Older adults tend to use emotion-focused coping strategies when problems are emotionally charged and highly salient (Blanchard-Fields, Jahnke, & Camp, 1995). Older adults are also more likely than younger ones to use secondary control strategies such as flexible goal adjustment, positive reappraisal of outcomes, downward social comparison, and focus on the here and now rather than the past and the future (Brandtstädter & Renner, 1990; Heckhausen & Schulz, 1995; Ryff, 1991; Wrosch, Dunne, Scheier, & Schulz, 2006).

Perceived discrimination and social desirability bias

The findings of previous studies, discussed earlier, show that immigration- and acculturation-related factors, health status, level of family support, and sociodemographic variables, including ethnic origin, level of income, and employment status, are correlates of mental disorders in Asian Americans. Recent studies also underscore the importance of considering perception of discrimination and social desirability bias as correlates of mental health in Asian Americans. One NLAAS-based study found that self-reported perceived racial discrimination was significantly associated with a 12-month diagnosis of mood, anxiety, or substance use disorders, controlling for acculturative strain, poverty, family cohesion, and social desirability bias among Asian Americans (Gee, Spencer, Chen, Yip, & Takeuchi, 2007). Another NLAAS-based study also found that discrimination was a significant risk factor for psychological distress in immigrant older adults as well as immigrant and US-born 18–30 and 31–40 groups, controlling for family cohesion, ethnic identity, and social desirability (Yip, Gee, & Takeuchi, 2008). A significant relationship between perceived racial discrimination and mental disorders among other racial/ethnic minorities has also been documented (Finch, Kolody, & Vega, 2000; Kessler, Mickelson, & Williams, 1999).

Yip et al.'s study also found that that older Asian Americans (51–75), both immigrants and US-born,

scored significantly higher than younger cohorts on social desirability. However, social desirability was significantly negatively correlated with self-reported psychological distress only among the older adults who were immigrants. Although Yip et al. and Gee et al. used the social desirability variable primarily to control socially desirable reporting related to perceived discrimination, we believe that older Asian Americans may provide socially desirable responses to questions regarding mental health for cultural reasons. Most traditional Asian cultural values and beliefs tend to stigmatize mental health problems. Suppression and internalization of psychological symptoms is also viewed as more acceptable and virtuous than open expression and discussion of them, especially with those outside one's family, and therefore it fosters 'face-saving' expressions and behaviors (Zane & Yeh, 2002). Consequently, many older Asian Americans, especially those who are immigrants, may express symptoms of mental disorders in somatic complaints (Douglas & Fujimoto, 1995). They may also understate and underreport symptoms of mental disorders out of their desire to avoid perceived stigma, save face, and avoid shaming their families.

Hypotheses

Based on the literature review, we proposed to test three exploratory hypotheses in the present study: (1) older Asian Americans (60+) would have a lower prevalence rate of mental disorders than their younger counterparts; and (2) controlling for sociodemographic characteristics and immigration-related factors, such life stressors as health problems and perceived discrimination would be less likely, but social desirability would be more likely to be associated with a diagnosis of mental disorder among older Asian Americans than among their younger counterparts.

Methods

Sample

The NLAAS, 2002–2003, collected data from the nationally representative samples of adults (18+) from four groups of Latinos (Cuban, Mexican, Puerto Rican, and other; $n = 2554$), from four groups of Asian Americans [Chinese, $n = 600$; Filipino, $n = 508$; Vietnamese, $n = 520$; and other (Japanese, Korean, Asian Indian, and other; $n = 467$)], and from a small control group of non-Latino Whites ($n = 215$). For the Asian American sample, interviews (mostly face-to-face and some telephone) were conducted in English, Mandarin, Cantonese, Tagalog, and Vietnamese. About 50% of the sample of Chinese origin, 87.7% of the sample of Filipino origin, 24.5% of the sample of Vietnamese origin, and 98.6% of the sample of other origins were interviewed in English. Of the respondents who were of age 60 or older, 39.8% of the Chinese sample, 66.6% of the Filipino sample, 0% of the Vietnamese sample, and 100% of other Asian sample were interviewed in English. Public-use data pertaining to all 2095 Asian American sample members, aged 18–94, were used for this study. Persons aged 60 years and older constituted 14.1% of the Asian American sample. Lifetime and 12-month prevalence of mental disorders composed of the *DSM-IV* diagnoses were measured by the WMH-Composite International Diagnostic Interviews (Kessler & Ustun, 2004). A more detailed description of the NLAAS study design can be found elsewhere (Alegria et al., 2004a, b; Pennell et al., 2004).

Variables and measures

The dependent variable was meeting, *versus* not meeting, the 12-month *DSM-IV* diagnosis – hierarchy-free – criteria (the occurrence of the problem within 12 months of the interview) for any of the following disorders: depressive disorder [major depressive disorder (MDD) or dysthymia]; anxiety disorder [generalized anxiety disorder (GAD), panic disorder (PD), agoraphobia with or without PD, panic attack, social phobia, or posttraumatic stress disorder (PTSD); and intermittent explosive disorder (IED)]. Given the very low prevalence rates of depressive disorder and IED especially among the 60+ group, we chose to focus our analysis on the 12-month prevalence rate of any disorder. Substance use disorders – alcohol abuse/dependence and drug abuse/dependence – were excluded from the analysis because their 12-month prevalence rates were zero among the 60+ group.

Sociodemographic characteristics

These included ethnicity (Chinese, Filipino, Vietnamese, and other Asian, with 'other Asian' as the reference category); gender (female = 1; male = 0); marital status (married/cohabiting = 1; others = 0); self-reported employment status (employed = 1; unemployed/not in the labor force = 0); completed years of education; and the 2001 household income-to-needs ratio (the ratio of income to the official poverty threshold).

Immigration-related variables

These included the number of years in the United States/nativity (up to 5 years; 6–10 years; 11–20 years; 21+ years; and US-born) and English-language proficiency [mean score of speaking, reading, and writing skills self-reported on a 4-point scale (1 = poor to 4 = excellent)].

Life stressors

(1) Health status: These included the number of medical conditions diagnosed by a doctor or other healthcare professional (heart disease; high blood

pressure; asthma; chronic lung disease; ulcer in the stomach or intestines; epilepsy; diabetes; and cancer); and self-rated emotional health on a 5-point scale (1 = poor to 5 = excellent); (2) family conflict: This was measured with the mean score of the following five items on a 3-point scale (1 = hardly ever or never to 3 = often): being too close to family interferes with your goals; you argue with family over different customs; you feel lonely and isolated due to lack of family unity; family relations are less important to people close to you than they are to you; and your personal goals conflict with those of your family. Higher scores represent more conflict (Cronbach's alpha = 0.76); and (3) perceived frequency of discrimination based on race/ethnicity, gender, age, skin color, or other reasons: This was measured with the following nine items, adopted from the Detroit Area Study Discrimination Questionnaire (Williams, Yu, Jackson, & Anderson, 1997), on a 6-point scale (0 = never to 5 = almost every day): you are treated with less courtesy than others; you are treated with less respect than others; you receive poorer restaurant service than others; people treat you as though you are not smart; people act afraid of you; people act as though you are dishonest; people act as though they think they are better than you; you are called names/insulted; and you are threatened/harassed. Higher scores represent a more frequent perception of discrimination (Cronbach's alpha = 0.91).

Social desirability

This was measured with the summed score of the following 10 items, adopted from the Crowne–Marlowe Social Desirability Scale (Crowne & Marlowe, 1960), on a 2-point scale (0 = not true or 1 = true): I never met a person that I did not like; I have always told the truth; I always win at games; I have never been bored; I never get lost, even in unfamiliar places; I never get annoyed when people cut ahead of me in line; my table manners at home are as good as when I eat out in a restaurant; I have never lost anything; no matter how hot or cold it gets, I am always quite comfortable; it does not bother me if someone takes advantage of me. Higher scores represent a higher tendency to present more socially acceptable responses (Cronbach's alpha = 0.71).

According to data in Table 1, there was no significant difference in the ethnic composition, gender distribution, and level of family conflict by age group. As expected, however, the income-to-needs ratios were lower among the 18–29 and 60+ groups. With regard to the number of years in the United States/nativity, the older adult group had the largest proportion of people who were US-born or had lived in the United States 21+ years. Compared to the younger cohorts, the older adults had significantly lower education, more chronic medical conditions, lower self-rated emotional health statuses, lower English proficiency, and lower perceived frequency of discrimination, but higher social desirability scores. The mean perceived frequency of discrimination score among the 60+ group was less than half that among the 18–29 group, while the mean social desirability bias score among the 60+ group was nearly twice that among the 18–29 group. Immigrant older adults who had lived in the United States 20 or fewer years had significantly higher mean social desirability bias score than did their US-born age peers [3.8 (SD = 2.3) *vs.* 2.2 (SD = 2.2), $p < 0.05$].

Analysis method

First, 12-month prevalence rates of mental disorders among four age groups (18–29; 30–44; 45–59; and 60+) were calculated and the age differences compared. These specific age categories were used in previous studies based on NCS-R and NSAL (Kessler et al., 2005a; Williams et al., 2007). Bivariate analysis showed that the prevalence rates were significantly different ($p = 0.003$) among the four groups. We used multivariate logistic regression analyses to examine (1) the association between the age group variable (with the 60+ group as the reference category) and the likelihood of a 12-month *DSM-IV* diagnosis; and (2) significant correlates of the probable 12-month *DSM-IV* diagnosis in each age group. In the latter analyses, 41 members of the 45–59 group and 45 members of the 60+ group were not included as the perfect prediction of the outcomes was caused by a response category of the years in the US/nativity variable. In the 45–59 group, no one who had immigrated 1–5 years earlier met the diagnostic criteria, and all respondents in this category were excluded from regression analysis. In the 60+ group, no US-born individual met the diagnostic criteria, and all US-born respondents were excluded from the analysis. As a result, the reference category for the years in the US/nativity variable for the 60+ group was the '21 or more years' category. We estimated adjusted odds ratios (OR) for each covariate. To generate nationally representative estimates, we adjusted all the analyses for clustering and stratification in sampling using the *svy* command in *Stata/MP 10.0 for Windows* (Stata Corp., 2007).

Results

Prevalence rate

Data in Table 2 show that the unadjusted 12-month prevalence rate was 13.6% (SE = 0.9) among all age groups combined; however, the age group difference ranged from 7.4% (SE = 1.7) in the 60+ group to 20.1% (SE = 2.3) in the 18–29 group. The older adults' rate was less than half that of the 18–29 group, even excluding substance use disorders. Of individual disorders among all age groups, panic attack was the most prevalent (6.2%, SE = 0.9), followed by MDD (4.6%, SE = 0.7), social phobia (3.0%, SE = 0.5), and

Table 1. Sample characteristics by age group and age group differences.

	Age group					
	All ages	18–29	30–44	45–59	60+	*p*
n	2095	517	770	552	256	
Weighted %	100	26.0	36.1	23.8	14.1	
Ethnicity (%)						0.717
Vietnamese	12.9	11.2	13.8	14.0	12.0	
Filipino	21.6	21.1	21.0	20.7	25.4	
Chinese	28.7	27.8	28.7	31.3	26.0	
All other Asian	36.8	39.9	36.4	34.0	36.7	
% Female	52.6	50.3	51.9	54.4	55.3	0.526
Marital status (%)						<0.001
Married	68.7	30.9	83.2	86.0	72.3	
Divorced/separated/ widowed	8.4	1.5	5.8	11.0	23.3	
Never married	22.9	67.6	11.0	3.0	4.5	
Years of education	13.73 (3.05)	14.19 (2.16)	14.21 (2.83)	13.24 (3.63)	12.45 (3.47)	<0.001
Work status (%)						<0.001
Employed	63.8	56.0	75.3	76.4	27.4	
Unemployed	6.4	9.6	6.0	6.7	0.8	
Not in the labor force	29.9	34.4	18.7	17.0	71.9	
Income-to-needs ratio	5.61 (4.71)	4.42 (4.38)	6.49 (4.66)	6.19 (4.94)	4.58 (4.45)	<0.001
Years in the US (%)						<0.001
<=5 years	13.7	23.3	14.2	6.9	6.2	
6–10 years	12.1	10.1	17.0	9.2	8.5	
11–20 years	26.1	24.0	32.2	24.2	17.7	
21 or more years	24.3	6.7	16.5	43.3	44.8	
US-born	23.7	35.9	20.1	16.5	22.9	
English proficiency (1: poor; 4: excellent)	2.90 (0.95)	3.39 (0.71)	2.90 (0.90)	2.69 (1.05)	2.40 (0.93)	<0.001
Number of medical conditions	0.54 (0.82)	0.17 (0.40)	0.30 (0.56)	0.71 (0.89)	1.57 (0.99)	<0.001
Self-rated emotional health (1: poor; 5: excellent)	3.88 (0.95)	4.01 (0.83)	3.96 (0.92)	3.77 (1.06)	3.67 (0.99)	0.002
Family conflict (1 : hardly ever/never; 3: often)	1.31 (0.36)	1.34 (0.38)	1.31 (0.36)	1.30 (0.37)	1.26 (0.28)	0.216
Perceived frequency of discrimination (Range: 0–45)	7.33 (6.2 7)	9.05 (6.55)	7.81 (6.09)	6.68 (6.54)	4.00 (4.33)	<0.001
Social desirability	2.23 (1.94)	1.76 (1.62)	2.08 (1.88)	2.46 (2.21)	3.10 (1.92)	<0.001

Note: p denotes significance level in age group differences.

IED (2.3%, SE = 0.4). Without including panic attack, the age group difference, ranging from 7.0% for the 60+ group to 15.4% for the 18–29 group, was still significant ($p < 0.01$). Age group difference was significant in the prevalence rates of MDD, panic attack, and IED, with the 60+ group having the lowest and the 18–29 group the highest rates of these disorders. For agoraphobia, the 30–44 group had the lowest rate. Age difference in the prevalence rates of dysthymia, GAD, PD, social phobia, and PTSD was not statistically significant; however, the rates of dysthymia, GAD, PD, and social phobia appear to be lower in the 60+ group than in the three youngest groups, while the rate of PTSD among the 60+ group (2.2% [$n = 7$], SE = 1.0) appears to be the highest of all. Further analysis showed that all seven older adults who met the PTSD diagnostic criteria were immigrants.

Further analysis (not reported in the tables) showed that gender difference in the 12-month prevalence rates was significant only among the 18–29 group (14.1%, SE = 2.1 for male and 26.0%, SE = 2.3 for female, $p = 0.008$). Compared to men, women in this age group had a significantly higher prevalence rate of IED (1.7%, SE = 0.6 *vs.* 5.2%, SE = 1.3, $p = 0.02$), and marginally significantly higher rates of dysthymia and GAD (0.8%, SE = 0.5 *vs.* 4.4%, SE = 1.3, $p = 0.06$ and 0.4%, SE = 0.4 *vs.* 3.3%, SE = 1.3, $p = 0.08$), respectively.

Correlates of diagnosis

The results of multivariate logistic regression analysis of all age groups combined (in the first column of Table 3) show that, controlling for other sociodemographics, immigration-related factors, life stressors, and social desirability, the 30–44 group and the 45–59 group were not significantly different from the 60+ group to have a probable 12-month *DSM-IV* diagnosis, while the 18–29 group was significantly more likely than the 60+ group [OR = 3.2; 95% confidence interval (CI) = 1.1–9.1] to have such a diagnosis. In addition to being in the 18–29 group, being female, having a higher number of chronic illnesses, having

Table 2. Unadjusted 12-month prevalence rates (%) of *DSM-IV* mood, anxiety, intermittent explosive, and substance use disorder by age group.

	Age group										
	All ages		18–29		30–44		45–59		60+		
Age group	%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)	*p*
Depressive disorders	5.00	(0.74)	8.63	(1.65)	5.53	(1.44)	2.03	(0.65)	1.97	(0.87)	<0.001
Major depressive disorder	4.60	(0.73)	7.76	(1.28)	5.47	(1.45)	1.55	(0.63)	1.72	(1.07)	0.001
Dysthymia	1.59	(0.40)	2.57	(0.85)	1.67	(0.94)	0.93	(0.36)	0.67	(0.50)	0.312
Anxiety disorders	10.00	(0.87)	12.94	(1.96)	8.88	(1.71)	10.87	(2.09)	6.00	(1.58)	0.148
General anxiety disorder	1.35	(0.24)	1.83	(0.55)	1.37	(0.47)	1.25	(0.56)	0.58	(0.46)	0.597
Panic disorder (PD)	1.50	(0.44)	1.29	(0.42)	1.79	(1.00)	1.47	(0.70)	1.24	(1.00)	0.933
Agoraphobia w/or w/o PD	0.33	(0.11)	0.25	(0.20)	0.05	(0.05)	0.83	(0.38)	0.36	(0.22)	0.029
Panic attack	6.17	(0.86)	8.74	(1.66)	5.75	(1.39)	6.60	(1.67)	1.78	(1.04)	0.049
Social phobia	3.03	(0.47)	3.85	(0.82)	2.79	(0.93)	3.40	(1.11)	1.53	(0.92)	0.522
Post-traumatic stress disorder	1.28	(0.36)	1.31	(0.63)	1.16	(0.30)	0.91	(0.46)	2.19	(1.02)	0.426
Intermittent explosive disorder	2.25	(0.38)	3.46	(0.70)	2.93	(0.74)	0.94	(0.47)	0.46	(0.45)	0.009
Substance use disorders	1.30	(0.28)	3.38	(0.86)	0.80	(0.21)	0.56	(0.33)	0.00	NA	0.002
Alcohol abuse	0.62	(0.20)	1.70	(0.63)	0.40	(0.21)	0.15	(0.15)	0.00	NA	0.011
Alcohol dependence	0.15	(0.08)	0.16	(0.12)	0.19	(0.20)	0.15	(0.15)	0.00	NA	0.856
Drug abuse	0.80	(0.25)	2.30	(0.78)	0.27	(0.27)	0.42	(0.29)	0.00	NA	0.007
Drug dependence	0.29	(0.16)	0.78	(0.60)	0.13	(0.13)	0.15	(0.15)	0.00	NA	0.226
Any of the above not counting alcohol and drug problems	13.62	(0.94)	20.11	(2.33)	12.44	(1.78)	11.98	(2.13)	7.42	(1.72)	0.003

Note: *p* denotes significance level in age group differences based on design-based *F*-test.

reported a higher perceived frequency of discrimination, and having a higher level of family conflict were significantly positively associated with the likelihood of a *DSM-IV* diagnosis. On the other hand, having higher self-ratings of emotional health, having lived in the United States 5 or fewer years or 21 or more years as opposed to having been born in United States, and a higher degree of social desirability were significantly negatively associated with the likelihood of a diagnosis. Marital status was a marginally significant factor.

When the four age groups were analyzed separately (in the second through fifth columns of Table 3), family conflict was the only significant correlate for all four age groups. One unit increase in family conflict was associated with 3.2 greater odds of having met the *DSM-IV* diagnostic criteria for the 18–29 group and 7.6 greater odds of having met the criteria for the 30–44 group. For the 60+ group, the odds were 4.6 greater.

Self-ratings of emotional health, perceived frequency of discrimination, and female gender were significant for the 18–29 group only. A one unit increase in the perceived frequency of discrimination was associated with 1.1 greater odds of having met the diagnostic criteria. Being a female was associated with almost 2.5 greater odds of having met the diagnostic criteria in the youngest group. In addition, persons in this age group who had lived in United States 21+ years were significantly less likely than their US-born age peers to have met the diagnostic criteria. Being of Vietnamese ethnicity, as compared to being 'other Asian', was marginally significantly negatively associated with having met the diagnostic criteria.

For the 30–44 group, each chronic illness increased the odds of having met the diagnostic criteria by 2.1. Marital status was significant only for this age group. Among married persons, the odds of having met the diagnostic criteria were about half that among non-married persons. All immigrants in this age group were significantly or marginally significantly less likely than their US-born age peers to have met the diagnostic criteria. For the 45–59 group, immigrants who had lived in United States 6–20 years were significantly less likely than their US-born age peers to have met the diagnostic criteria.

For the 60+ group, the number of chronic illnesses was a marginally significant covariate. Each chronic illness increased the odds of having met the criteria by 2.0 (95% CI = 0.94–4.42), while a one unit increase in social desirability score decreased the odds of having met the diagnostic criteria by 0.49. As opposed to being 'other Asian', being of Chinese ethnicity was significantly positively associated with having met the diagnostic criteria. Being of Vietnamese ethnicity was marginally significantly positively associated with having met the diagnostic criteria. However, the wide CIs for this age group, reflective of the large SEs of the ethnicity variable's coefficients, require caution in interpretation. The odds of employed persons having met the diagnostic criteria were significantly lower (0.30) than was the case of those who were unemployed or not in the labor force. Having lived in United States for 6–10 years, as compared to 21+ years, increased such odds by almost 6.0. We speculate on two possible interpretations for this finding: (1) the immigration- and acculturation-related stress among this group of

Table 3. Covariates of mental health diagnosis in the 12 months by age group: Logistic regression results.

	All ages ($n = 2082$)		18–29 years ($n = 513$)		30–44 years ($n = 767$)		45–59 years ($n = 507$)[a]		60+ years ($n = 209$)[b]	
	Adj. OR	(95% CI)	Adj. OR	(95% CI)	Adj. OR	(95% CI)	Adj. OR	(95% CI)	Adj. OR	(95% CI)
Ethnicity										
Vietnamese	0.88	(0.48, 1.63)	0.34^{+}	(0.11, 1.09)	1.62	(0.52, 5.05)	1.47	(0.49, 4.38)	14.21^{+}	(1, 201.37)
Filipino	0.90	(0.58, 1.39)	0.81	(0.43, 1.51)	1.10	(0.44, 2.7)	0.61	(0.16, 2.36)	7.16	(0.52, 98.25)
Chinese	1.09	(0.55, 2.15)	1.05	(0.51, 2.16)	1.06	(0.28, 3.96)	0.53	(0.21, 1.31)	66.51**	(7.06, 626.25)
(Other Asian)	Ref		Ref		Ref		Ref		Ref	
Gender										
Female	1.63**	(1.21, 2.19)	2.47**	(1.3, 4.68)	1.44	(0.75, 2.75)	1.36	(0.6, 3.08)	1.46	(0.31, 6.85)
(Male)	Ref		Ref		Ref		Ref		Ref	
Marital status										
Married	0.70^{+}	(0.47, 1.05)	0.94	(0.52, 1.7)	0.49**	(0.32, 0.77)	0.66	(0.26, 1.67)	0.85	(0.14, 5.11)
(Not married)	Ref		Ref		Ref		Ref		Ref	
Years of education	0.98	(0.91, 1.05)	1.06	(0.98, 1.16)	1.03	(0.92, 1.15)	0.90	(0.78, 1.04)	1.07	(0.92, 1.25)
Work status										
Employed	0.97	(0.67, 1.41)	1.48	(0.79, 2.77)	0.64	(0.34, 1.21)	0.83	(0.37, 1.89)	0.30*	(0.1, 0.9)
(Unemployed/NILF)	Ref		Ref		Ref		Ref		Ref	
Income-to-need ratio	1.02	(0.98, 1.06)	1.07	(0.99, 1.15)	0.99	(0.93, 1.07)	1.05	(0.95, 1.15)	0.92	(0.82, 1.04)
Years in the US										
<=0 5 years	0.53*	(0.29, 0.98)	0.82	(0.31, 2.21)	0.20*	(0.05, 0.75)	NA		0.38	(0.02, 7.54)
6–10 years	0.69	(0.38, 1.24)	0.53	(0.14, 1.92)	0.28^{+}	(0.07, 1.1)	0.53	(0.16, 1.75)	5.98*	(1.43, 25.08)
11–20 years	0.70	(0.45, 1.09)	1.46	(0.73, 2.93)	0.26**	(0.1, 0.68)	0.33*	(0.11, 0.95)	1.84	(0.53, 6.41)
21 or more years	0.56*	(0.32, 0.98)	0.32**	(0.15, 0.71)	0.25**	(0.11, 0.56)	0.38^{+}	(0.14, 1.02)	Ref	
(US-born)	Ref		Ref		Ref		Ref		NA	
English Proficiency	1.02	(0.82, 1.26)	1.11	(0.71, 1.75)	0.78	(0.45, 1.36)	1.37	(0.84, 2.24)	0.77	(0.31, 1.91)
Number of chronic illness	1.36*	(1.01, 1.82)	1.37	(0.82, 2.3)	2.09***	(1.46, 3)	1.22	(0.79, 1.88)	2.04^{+}	(0.94, 4.42)
Self-rated emotional health	0.64***	(0.52, 0.8)	0.43***	(0.31, 0.58)	0.80	(0.59, 1.08)	0.72	(0.47, 1.1)	1.30	(0.82, 2.07)
Perceived frequency of discrimination	1.05***	(1.03, 1.07)	1.10***	(1.05, 1.15)	1.02	(0.97, 1.08)	1.01	(0.96, 1.07)	1.07	(0.94, 1.23)
Family conflict	4.28***	(2.71, 6.75)	3.18**	(1.5, 6.71)	7.63***	(3.54, 16.44)	6.49***	(2.99, 14.09)	4.55*	(1.09, 19.01)
Social desirability	0.88*	(0.79, 0.97)	0.96	(0.76, 1.21)	0.87	(0.73, 1.04)	0.95	(0.77, 1.17)	0.49***	(0.34, 0.7)
Age group										
18–29 years	3.17*	(1.1, 9.1)								
30–44 years	2.17	(0.71, 6.63)								
45–59 years	1.92	(0.63, 5.81)								
60+ years	Ref									
Model statistics	$F(21, 26) = 13.81$***		$F(18, 28) = 7.75$***		$F(18, 28) = 8.72$***		$F(17, 25) = 7.80$***		$F(17, 22) = 2.67$*	

Notes: Adj. OR = Adjusted odds ratio; CI = Confidence interval; Ref = reference category; NILF = not in the labor force.
[a]Respondents living in the US less than 5 years in this age group ($n = 41$) were not included in this analysis due to perfect prediction of the outcome; [b]Respondents born in the US in this age group ($n = 45$) were not included in this analysis due to perfect prediction of the outcome.
***, **, *, $^{+}$are $p < 0.001$, $p < 0.01$, $p < 0.05$, $p < 0.10$.

recent immigrants may have affected their mental health; and (2) recent immigrants may have less effective coping mechanisms than long-term immigrants. This finding also suggests that the mental health advantage, in terms of 12-month prevalence rates, of Asian American immigrants over their US-born counterparts and long-term immigrants may not apply to the 60+ group.

Discussion

As hypothesized, unadjusted 12-month prevalence rate of *DSM-IV* depressive, anxiety, or intermittent explosive disorder among older (60+) Asian Americans was significantly lower than that among the younger cohorts. Controlling for sociodemographics, immigration-related factors, life stressors, and social desirability, the age category of 18–29 years, as opposed to that of 60+ years, was still significantly positively associated with having met the *DSM-IV* diagnostic criteria, while the age categories of 30–44 years and 45–59 years were not significantly different from the category of 60+ years. Our findings also show that, with the exception of family conflict, the correlates of a mental disorder were not the same for different age groups.

The NLAAS data did not allow direct testing of the degree of stress exposure and reactivity and coping skills. However, the findings of this study suggest that older Asian Americans, like older adults of other racial/ethnic backgrounds, may have had lower rates of exposure and/or reactivity to stress and better coping skills than younger Asian Americans. Although the 60+ group had more medical conditions, the number of medical conditions was marginally significant for the group, while it was a significant covariate for the 30–45 group. The finding that the 60+ group reported significantly lower perceived frequency of discrimination and that the perception was not significantly associated with a probable diagnosis of mental disorder also suggests that these older adults had a lower degree of exposure and/or reactivity to discrimination than persons in the 18–29 group. As compared to the three younger groups, the oldest group (60+) also had less education, lower income, and lower English proficiency, all of which may be risk factors for mental health problems. However, these were not significant correlates of mental disorders among older Asian Americans. It appears that the older group had lower reactivity to physical health problems and better regulation of their emotions in the face of multiple life stressors.

Better regulation of emotions in everyday life among older than among younger adults may be explained by the socioemotional selectivity theory, a lifespan theory of social motivation that posits that awareness and perception of time limitations lead people to select and pursue emotionally meaningful goals (Carstensen, 1992; Carstensen, Isaacowitz, & Charles, 1999). Increased importance of emotional goals may be one reason older adults use coping strategies aimed primarily at regulating and optimizing emotional experience. Because chronological age is inextricably and negatively associated with the amount of time left in life, age-related tendencies/patterns also emerge in prioritizing emotionally meaningful social partners over peripheral ones and focusing more time and physical, cognitive, and emotional energy and resources on selected social relationships. Studies of emotional experience in everyday life across lifespan among African Americans, European Americans, and Hong Kong Chinese found that socioemotional selectivity theory may be universally applicable to people regardless of their racial/ethnic, cultural, and socioeconomic status differences (Carstensen, Fung, & Charles, 2003; Carstensen et al., 2000). The finding that family conflict was highly significantly correlated with metal disorder in the 60+ group appears to provide further support for the application of the socioemotional selectivity theory. However, the cross-sectional nature of the data did not allow us to sort out whether family conflict was a cause or a result of the mental disorder. Future studies of mental health in older Asian Americans need to examine the exact mechanism of adaptive coping strategies aimed at regulating and optimizing emotional experience among older Asian Americans.

The significantly higher mean social desirability score in the 60+ group and the significant negative correlation between the social desirability score and a probable diagnosis of mental disorder in the older group, but not in the three younger groups, suggest the following two interrelated possibilities: (1) older Asian Americans were more likely than their younger counterparts to have provided socially acceptable responses; and (2) social desirability may be an indicator of repressive coping and, thus, is a correlate of mental disorder. Providing more socially acceptable responses may suggest that older Asian Americans are simply more culturally traditional. Furthermore, a significantly higher mean social desirability score among older immigrants than that among US-born older adults suggests that older immigrants are more culturally traditional than US-born older adults. At the same time, socially desirable responses may also represent the older adults' tendency to engage in repressive coping or express less negativity and more positivity. In previous studies of aging and psychopathology, social desirability scales were used to provide an assessment of the extent to which individuals would use repressive coping or report less negative and more positive affect (Erskine, Kvavilashvili, Conway, & Myers, 2007; Phillips et al., 2006). In Erskine et al.'s study, older repressive copers had worse mental health than nonrepressive copers. We speculate that the significantly higher social desirability scores in older adults may reflect their repressive coping, which may have a negative effect on their mental health. In the present study, we were not able to sort out possible cultural factors influencing socially

desirable reporting bias from repressive coping, negativity, and positivity effect. However, we suspect a close connection between more traditional cultural values and repressive coping, based on the finding that the recency of immigration, as opposed to longer residency in the United States or US birth, was a significant correlate of mental disorder in the 60+ group and that older immigrants reported significantly higher social desirability bias scores than their US-born age peers.

The 12-month prevalence rates among the three younger groups of Asian Americans still appear to be below those of their non-Hispanic White age peers that were reported in a previous study based on NCS-R (Kessler et al., 2005a), although direct comparison between our NLAAS-based finding and the NCS-R-based findings is not warranted. Further research is needed to compare both 12-month and lifetime prevalence rates among all racial/ethnic groups and to examine the persistence of disorders. The NCS data showed that (1) non-Hispanic Blacks and Hispanics tended to have disorders that were more persistent than those of the non-Hispanic Whites, although non-Hispanic Blacks had a lower lifetime risk of depressive, anxiety, and substance use disorder and that (2) Hispanics had a lower lifetime risk of substance use disorder than did non-Hispanic Whites (Breslau et al., 2004). The cross-sectional nature of the NLAAS data did not allow any examination of possible persistence of disorders among the Asian American sample.

The limitations of the NLAAS with regard to the sample, the sole reliance on *DSM-IV* diagnostic criteria, cross-sectional data, and the lack of detail related to the circumstances of immigration have been fully described elsewhere (Takeuchi et al., 2007). The cultural sensitivity of *DSM-IV* diagnostic criteria in Asian Americans is still problematic and may have led to underdetection and underdiagnosis of symptoms and lower prevalence rates of mental disorders in the Asian American sample, especially among older adults who may be more culturally traditional than their younger counterparts (Dana, 2002). Specific to the present study, analysis of the cross-sectional data was an especially serious limitation since we could not identify the significant relationship between family conflict and a psychiatric diagnosis as a causal relationship. It is also possible that the presence of psychopathology could have heightened individuals' sensitivity to and perception of discrimination. Future research on age group difference requires longitudinal data that will also allow examination of stress exposure, reactivity, and coping skills. Another limitation was the relatively small sample sizes that resulted from age stratification. Lack of the statistical power may have been a barrier to finding any significant association between English proficiency and mental disorders in any age group. The small sample size was also responsible for the wide CIs, reflective of the large SEs of the ethnicity variable's coefficients in the 60+ group. The fact that 100% of 'other Asian' sample members in the 60+ group were interviewed in English also limited the generalizibility of the study. Further research with a larger and more representative sample is needed to delineate more accurate age group differences in ethnic origin and other risk and protective factors.

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