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RESEARCH ARTICLE

Immigration-related stressors and mental health problems: exploring the role of religious involvement among Asian-American immigrants

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Abstract: Focusing on Asian-American immigrants in the National Latino and Asian American Study, this work examines (1) whether immigration-related stressors are associated with 12-month depressive disorder and suicidal ideation, and (2) how individual religious involvement moderates the associations. Findings from regression analyses reveal that limited English proficiency increases the risk of both 12-month depressive disorder and suicidal ideation. No significant differences in 12-month depressive disorder and suicidal ideation are found by age at immigration. Most importantly, religious coping — frequently seeking comfort from religion — buffers the negative effects of limited English proficiency on suicidal ideation. Our findings suggest the importance of individual religious involvement in helping Asian-American immigrants cope with stress associated with immigration. Mental health professionals may need to integrate religious coping mechanisms into the clinical setting to offer more effective treatments that are sensitive to individuals' religious and spiritual needs.

Keywords: *immigration-related stressors; religious involvement; suicidal ideation; depressive disorder; Asian American immigrants*

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1 Introduction

As the fastest growing minority group, the Asian-American population is expected to reach 33.4 million by 2050 (United States Census Bureau, 2014). Asian Americans are often perceived as a "model minority" in the United States due to their educational and financial success (Yoo, Burrola, and Steger, 2010). This stereotype misleadingly suggests that Asian Americans, as a whole, have also achieved success on other aspects such as physical health and mental health (Chao, Chiu, and Lee, 2010). This notion largely contributes to the long-lasting neglect of Asian Americans' health in both academic world and policy discourse. Although, in recent years, an increasing number of studies have started to examine physical health of Asian-American immigrant population in the U.S. (Salant and Lauderdale, 2003; Yoo, Gee, and Takeuchi, 2009), their mental health, especially those severe mental health outcomes and their important correlates, are generally understudied in the literature. Some of the studies have focused on different mental health indicators among subgroups of Asian-American immigrants (Hurh and Kim, 1990; Mossakowski, 2007; Noh, Kaspar, and Wickrama, 2007; Tabora and Flaskerud, 1997; Won and Kwang, 1990; Yeh, 2003; Yeh, Arora, Inose, *et al.*, 2003). However, these studies are limited by their generalizability and are unable to capture the panorama of mental health issues among Asian-American immigrants. This study aims to fill in the literature gap by examining how immigration-

related factors are associated with severe mental health problems among Asian-American immigrants who constitute approximately 28% of the immigrant population in the U.S., and how individual religious involvement moderates the associations.

Compared to other racial/ethnic groups, the Asian-American population contains a substantially larger proportion (more than 70%) of the foreign-born (Pew Research Center, 2010). For foreign-born immigrants, adapting to new cultural settings is often associated with strain and stress that may result in adverse mental health consequences. Largely due to their close relationships with socioeconomic status, immigration-related factors are found to be associated with depressive disorder and suicidal behaviors among Asian-American immigrants (Alegria, Takeuchi, Canino *et al.*, 2004; Breslau and Chang, 2006; Kposowa, McElvain, and Breault, 2008; Mossakowski, 2007; Zhang, Fang, Wu *et al.*, 2013). However, empirical findings show inconsistent evidence. While some studies found earlier age at immigration increases the risk of developing mental health problems (Mossakowski, 2007; Zhang, Fang, Wu *et al.*, 2013), others found the opposite (Takeuchi, Chuang, Lin *et al.*, 1998). Among foreign-born Asian Americans, approximately 48% of them reported limited English proficiency (Pew Research Center, 2010). When limited English proficiency is examined as a stressor, some studies found that it is associated with psychological distress among Asian-American immigrants (Kim, Worley, Allen *et al.*, 2011; Zhang, Hong, Takeuchi *et al.*, 2012). Another study (Takeuchi, Zane, Hong *et al.*, 2007) revealed that its association with mental disorder only exists among Asian-American males.

This work aims to continue efforts along this line by examining how immigration-related factors such as age at immigration and English proficiency are related to depressive disorder and suicidal ideation among Asian-American immigrants. Major depressive disorder is one of the most common mental illnesses in the United States and it is associated with comorbidity, substantial impairment, poor health, and mortality (Hasin, Goodwin, and Stinson, 2005). Suicide is one of the leading causes of death worldwide; suicidal ideation (serious thought about suicide-related behaviors) is a symptom that is strongly associated with mental disorders (World Health Organization, 2017). The presence of major depressive disorder is among the strongest risk factors that may induce suicidal ideation among Asian Americans (Cheng, Fancher, Ratanasen *et al.*, 2010). Although some studies focusing on mental health issues among Asian Americans have employed depressive disorder as the outcome variable (Breslau and Chang, 2006; Takeuchi, Zane, Hong *et al.*, 2007; Zhang, Fang, Wu *et al.*, 2013), limited efforts have been made to understand suicidal ideation/behaviors. In this regard, it is worthwhile to examine whether immigration-related factors show similar effects on depressive disorder as on suicidal ideation, a more severe episode of mental health problem.

Besides examining the main effects of immigration-related factors, this study also focuses on the stress-buffering role of individual religious involvement. Empirical evidence shows that religious involvement has positive effects on mental health (Hackney and Sanders, 2003; Moreire-Almeida, Neto, and Koenig, 2006), because aspects of religion tend to encourage social support, promote healthy behaviors, enhance self-esteem and sense of personal control, and provide coping resources (Ellison and Levin, 1998; George, Ellison, and Larson, 2002; Nooney and Woodrum, 2002). Meanwhile, the stress-buffering role of religion on mental health is also documented in literature (Bierman, 2006; Bjorck and Thurman, 2007; Bradshaw and Ellison, 2010; Ellison, Boardman, Williams *et al.*, 2001; Ellison, Musick, and Henderson, 2008; Lee, 2007; Kim and Seidlitz, 2002; Krause, 2006; Schnittker, 2001), but few studies have focused on Asian-American immigrants. Being a racial/ethnic minority and an immigrant increases the risk of exposure to the stress of social stigma, prejudice, and discrimination that may generate mental health problems when coping resources are limited (Pearlin, Menaghan, Lieberman *et al.*, 1981; Pearlin, 1989). So if we consider some immigration-related factors as stressors, will religious involvement provide stress-buffering effects that may alleviate their detrimental mental health impact? Recent psycho-social approaches emphasize the ability of religion in

enhancing social support and coping efforts (Ellison, Boardman, Williams *et al.*, 2001; Nooney and Woodrum, 2002; Nooney, 2005) as the possible stress-buffering resources. So the second aim of this study is to examine the stress-buffering role of religious involvement in the associations between immigration-related stressors and mental health problems.

1.1 The Stress Process Paradigm

According to Pearlin (1981), the basic idea of the stress process model lies in the interplay of stressors, stress mediators, and stress outcomes. Stressors include life events that represent the occurrence of discrete negative events and chronic strains that represent problems that last long. In some situations, life events and chronic strains may join forces that create new strain or intensify existing strain that often result in a "diminish of self," which includes lower levels of self-mastery and self-esteem (Pearlin, Menaghan, Lieberman *et al.*, 1981: 340). Many studies have linked these types of stressors to undesirable mental health outcomes (Ellison and Henderson, 2011).

As active agents, individuals usually respond to stressors with a set of behaviors, including cognition, perception, and defense depending on the resources they possess. Pearlin (1985) distinguished these resources into two major categories: social support and coping ability. Social support, largely determined by the size and strength of one's social network, is the resource that one could use to cope with difficulties and problems. Coping is defined as "the actions that people take in their own behalf as they attempt to avoid or lessen the impact of life problems" (Pearlin, 1989: 250). Coping is a complex behavior that varies across individuals and problems that one encounters, but in general, it is shaped by one's self-esteem, sense of personal control, and coping styles (Pearlin, 1989; Pearlin, Menaghan, Lieberman *et al.*, 1981; Ellison and Henderson, 2011). Guided by the stress process model, the current study attempts to link Asian-American immigrants' minority status (as the stressor) and their religious involvement (as coping resources) to their mental health outcomes indicated by 12-month depressive disorder and suicidal ideation.

1.2 Immigration-Related Stressors

This study focuses on two immigration-related stressors, namely, age at immigration and English proficiency. These two stressors are found to be associated with anxiety, depression and suicidal behaviors (Kposowa, McElvain, and Breault, 2008). Specific to age at immigration, acculturative stress model suggests that older age at immigration is more stressful compared to younger age because immigrants of older age have stronger cultural identity from their home countries, thus are more likely to experience cultural conflict with the host country (Berry, Kim, Minde *et al.*, 1987). Takeuchi and colleagues' (1998) study supports this perspective, showing that Chinese immigrants who immigrated after age 20 are more likely to experience major depression than those immigrated before age 20.

On the other hand, the life course perspective views younger age, especially childhood as a vulnerable life stage to cope with "life-altering" events such as immigration. The early stressful experience may have a long reaching effect on their psychological well-being in the adulthood. So the life course perspective predicts that a younger age at immigration is more stressful and at a higher risk of developing mental health problems compare to an older age of immigration. Consistent with this perspective, Zhang and colleagues (2013) revealed that Chinese who immigrated to the U.S. younger than 18 years of age are at a higher risk of developing lifetime depressive disorder, anxiety disorder, and suicidal ideation than those who immigrated to the U.S older than 18 years of age. Focusing on Filipinos, Mossakowski (2007) also found harmful effects of an earlier age of immigration on mental health.

In addition to age at immigration, English proficiency is another important correlate of mental health for Asian-American immigrants. Limited English proficiency is often viewed as a major barrier that hinders the integration of immigrants into the

mainstream society (Gee, Walsemann, and Takeuchi, 2010). Many Asian-American immigrants view English proficiency as an essential tool for their social adaptation and socio-economic mobility in American society. However, it is hard to learn a new language while simultaneously assimilating into a new culture and learning new role relations (Yeh, 2003). Based on nationally representative data, several studies have examined the association between English proficiency and mental health among Asian-Americans. Zhang and colleagues (2012) found that Asian American immigrants with limited English proficiency show higher levels of psychological distress than their US-born counterparts. Another study (Kim, Worley, Allen *et al.*, 2011) revealed that older Asian immigrants with English proficiency show lower rates of lifetime and 12 month disorders compared to those with limited English proficiency. Our study considers immigration at a young age and limited English proficiency as stressors and examines their relationships with mental health problems.

1.3 Religious Involvement and Mental Health Outcomes

Over the past two decades, a large numbers of studies have focused on the relationship between religion and health (see review by Koenig, 2015). Among these studies, many have examined the impact of different dimensions of religious involvement on a series of psychological and mental health outcomes based on clinical, community and population samples. Evidence, from both cross-sectional and longitudinal studies, suggests that favorable mental health outcomes, including higher levels of psychological well-being, lower levels of distress and depression, and lower risk of psychiatric disorders and suicidal behaviors (Bonelli and Koenig, 2013), could be attributed to aspects of religious involvement.

The most convincing evidence came from the comprehensive review articles and studies employing metal-analyses. Gartner and colleagues (1991) reviewed over 200 articles and found positive linkages between religiosity and desirable mental health indicators in most studies. In the *Handbook of Religion and Health*, Koenig and colleagues (2001) summarized more than 1,600 studies that examine the effects of various aspects of religion and a set of indicators of mental health problem. They found that more than half of the studies suggest a significant protective effect of religion. Employing meta-analysis, Hackney and Sanders (2003) examined 34 related studies from 1990 to 2001 and confirmed an overall significant and positive relationship between religiosity and mental health indicators (r=0.10). Bonelli and Koenig (2013) examined 43 articles that published in the top 25% of psychiatry and neurology journals from 1990–2010 and revealed that 31 of them document the beneficial effect of religion on psychological well-being. Based on these empirical findings, we hypothesize that religious involvement is positively related to psychological well-being and may reduce the risk of mental health problems.

1.4 Religious Involvement as the Stress Buffer

One of the major stressors for immigrants is related to the loss of social support. The most common forms of such loss are the lack of family ties and close relationships as their family and friends are often left behind in home countries (Zhang, Fang, Wu *et al.*, 2013). These are viewed to result in a weak social network for the initial period of immigration. In the absence of social connection, individuals often have difficulties in making decisions and judgments, thus become anxious and uncertain about their social status roles in the community (Smart and Smart, 1995). Social support and family ties are also associated with a sense of personal control and social identity (Berkman, Glass, Brissette, *et al.*, 2000; Cohen, 1988; Thoits, 2011). An environment that lacks them may negatively affect both the mentality and ability to cope with stressors and increase the risk of psychological disorders as many studies have indicated (Aneshensel and Frerichs, 1982; Chung, Fred, Ortiz, *et al.*, 2008; Rogler, Cortes, and Malgady, 1991; Smart and Smart, 1995).

Religious involvement may provide alternative social support resources that "intervene between the stressful events and a stress reaction" (Cohen and Wills, 1985: 312) and attenuate the harmful effect of stressors on mental health. Research shows that increased involvement in religious services is associated with an increased level of perceived social support (Bierman, 2006; Ellison and George, 1994; Krause, 2002). Religious gathering provides settings that bring together individuals "who share common belief, values, and interests on a regular basis, for worship, ritual, and other activities to which members ascribe significance" (Ellison and Henderson, 2011: 18) and allow people to extend their social networks and increase frequency of in-person contact with religious community members. In this sense, religious communities are likely to provide reliable and diverse assistance such as financial support, information services, and emotional support (Krause, 2007). Support from fellow church members may be more beneficial compare to support from other resources as religious communities possess high volume of symbolic power that may largely shape individuals' cognition and action toward stressful conditions (Bourdieu, 1979). Taken together, social support acquired from religious involvement may be considered a valuable coping resource.

A wealth of recent studies has tested the stress-buffering effects of different aspects of religious involvement among those who have experienced or are experiencing high levels of stress. Frequently attending religious-services is found to reduce the risk of mental dysfunction resulted from chronic discrimination among African Americans (Bierman, 2006). Religious attendance also buffers against the detrimental effect of financial hardship on psychological distress (Bradshaw and Ellison, 2010). High degree of religious beliefs, religious guidance, and belief in after life mitigate the deleterious effects of stressors on emotional and physical adjustment (Kim and Seidlitz, 2002) and psychological distress (Bradshaw and Ellison, 2010). In addition, religious coping and spiritual help seeking are found to attenuate the detrimental effects of stressful life events on depression (Schnittker, 2001; Bjorck and Thurman, 2007; Lee, 2007). Findings from one longitudinal study of African American adults also support the stress-buffering effect of religion (Ellison, Musick, and Henderson, 2008).

To our knowledge, only a handful of studies have examined the role of religious involvement on mental health among Asian Americans who are highly heterogeneous with regard to immigration status, ethnicity, and religious beliefs. For instance, a large proportion of Chinese and Korean immigrants are Protestants while most Filipinos and Vietnamese claim themselves as Catholics. Although quite a number of Asian immigrants have converted to Christianity after immigration (Ai, Huang, Bjock, *et al.* 2013), many still practice religions originated in Asia, including Buddhism, Taoism, Confucianism, Hinduism, and other folk religions. Religious teachings of Asian faiths are often very different from those of western religions. So this raises a concern of whether the beneficial effect of religion found in other racial/ethnic groups still exists among Asian-American immigrants.

Despite their diverse forms, many Asian religions and traditions have shared values and functions. Most Asian religious beliefs, for instance, take a holistic view of mental health and emphasize the integration of mind, body and spirit (Ai, Huang, Bjock, *et al.* 2013: 80). In this regard, Asia-originated religions may play a unique role in the pathway of the stress process. In addition, Asian-American immigrants are found to view frequent participation in religious activities as a means to enhance their mutual support, group solidarity, and social cohesion when encountering acculturation related challenges (Bjorck, Cutherbertson, Thurman, *et al.* 2001; Fischer, Ai, Aydin *et al.*, 2010). In this sense, despite diversity in religious beliefs and practices, religious involvement is likely to lead to similar beneficial effects for Asian-American immigrants.

Three recent studies have tested both direct and mediating/moderating effects of religion on mental health among Asian Americans. Ai and colleagues (2013) found that religious attendance predicts a low likelihood of major depression among Asian Americans and social support mediates the association. Another study (Appel, Ai,

Huang *et al.*, 2014) revealed that religious attendance reduces the risk of mental health problems, but the stress-buffering role of religion is not identified. Ai and colleagues (2016) examined the heterogeneity of Asian Americans in terms of the association between religious involvement and self-rated mental health and found religious involvement is associated with better self-rated mental health only for the Chinese Americans. These findings demonstrate that religious involvement has the capacity of reducing the risk of mental health problems for Asian Americans. However, the stress-buffering role of religion has not been explicitly tested and identified. It is not clear whether religious involvement could alleviate the detrimental mental health effect of stressors for Asian-American immigrants. The current study continues efforts along this line by examining other indicators of religious involvement and major mental health problems.

Taken together, this study has two major aims. First, we will examine the direct effects of age at immigration and English proficiency on 12-month depressive disorder and suicidal ideation. Based on previous studies, we propose that both a young age at immigration and limited English proficiency will increase the risk of having depressive disorder and suicidal ideation. Second, we aim to test the stress-buffering role of religious involvement. We hypothesize that religious involvement will reduce the risk of depressive disorder and suicidal ideation among those who immigrated to the U.S. at a younger age and those with limited English proficiency.

2 Methods

2.1 Data

This study utilizes the Asian-American immigrant sample from the National Latino and Asian American Study (NLAAS), the first nationally representative study that examines mental health of Asian Americans and Latinos in the United States. The NLAAS is part of the Collaborative Psychiatric Epidemiological Studies (CPES) and its sampling design consists of three stages (Alegria, Takeuchi, Canino *et al.*, 2004; Heeringa, Wagner, Torres, *et al.*, 2004; Duldulao, Takeuchi, and Hong, 2009). The first stage was core sampling of city and contiguous census blocks from which housing units and household members were sampled. The second stage involved the supplementary sampling based on population density. Within this stage, census blocks with more than 5% of the target Asian Americans were over-sampled. The final stage further enlarged the sample size by recruiting the secondary individuals from the households where a primary member had completed the interview. Face-to-face interviews were conducted with primary respondents unless they requested a telephone interview. Secondary respondents were interviewed by telephone. Both in-person and telephone interviews were conducted by bilingual interviewers. After excluding missing values, the final analytical sample consists of 1,641 Asian-American immigrants who were born in a foreign country. The main ethnic groups include Asian Americans of Chinese, Filipino, and Vietnamese descents. The sample only includes a very small number of Asian Americans of other ethnicities.

2.2 Measurement

2.2.1 Dependent Variables

This study examines two aspects of mental health problems — 12-month depressive disorder and suicidal ideation. To measure 12-month depressive disorder, the World Health Organization Composite International Diagnostic Interview (WMH-CIDI), a fully structured diagnostic instrument based on the criteria of the Diagnostic and Statistics Manual of Mental Disorders, Version four (DSM-IV) was used. Suicidal ideation was measured by asking respondents if they had ever seriously thought about committing suicide. Both 12-month depressive disorder and suicidal ideation were

coded as binary variables to contrast those having these mental health problems (1) with others who did not report depressive disorder and suicidal ideation (0).

2.2.2 Focal Independent Variables

Respondents were categorized into two groups for English proficiency: poor/ fair versus good/excellent (the reference group). Age at immigration was measured by a single dummy variable that contrasts immigration at 12 years old or younger (child immigrants) with immigration after 12 years old (adolescent and adult immigrants), with the latter being the reference group. We use "12 years old" as the cut-off point because this age refers to the "1.5 generation" who arrived in the U.S. during childhood or before their early teens (Rumbaut, 1994). They have their home country characteristics but continue their acculturation in the U.S., thus they are considered as "halfway" between the first generation and second generation (the U.S.-born) immigrants.

Three indicators — religious affiliation, service attendance and religious coping —were used to measure individual religious involvement. Religious affiliation was recorded into three categories, namely, Protestant or Catholics (Christian), no religious preference (the reference category), and other religions. Respondents were asked how often they attended religious services and we recoded the responses to contrast those attending religious services on a weekly base with all the others. Religious coping was measured by asking respondents how often they seek comfort from religion/spirituality by praying, meditating, attending a religious/spiritual service, or talking to a religious or spiritual advisor, when encountering problems/difficulties in their family, work, or personal life. The response categories include never, rarely, sometimes, and often. We recorded these responses to contrast those often seeking comfort from religion with all the others. We believe that religion plays a more significant role in the daily life of individuals who often seek comfort from religion and they are qualitatively different from others.

2.2.3 Control Variables

Control variables include socio-demographics such as age, gender (*female*=1), income, marital status, educational attainment, place of education, duration of immigration, employment status and ethnicity. Respondents' age ranges from 18 to 97 years old. We recorded age (in years) into four groups: 18–34 (the reference category), 35–49, 50–64, and 65 years and above. Income was measured by respondent's annual income in constant dollars (recoded into four categories: less than 15,000 dollars, 15,000 to 34,999 dollars, 35,000 to 74,999 dollars, and 75,000 dollars or more). Marital status was categorized as "married" (the reference category), "divorced/separated/widowed" and "never married". Educational attainment was divided into four groups, i.e. "less than 11 years of education (without high school diploma)", "12 years of education (high school graduation), "13 years to 15 years education (some college) and "16 years of education or more (with college degree; the reference category)". We controlled for place of education (i.e., the majority of education received before 16 years old). We contrasted those who received their education primarily in the U.S. to those received education in other countries (the reference category). Previous studies suggest that the detrimental effect of stressor is more salient for the foreign-educated Asian Americans because foreign education indicates limited psychosocial resources, fewer economic opportunities, and lower levels of English proficiency (Walton, Takeuchi, Herting, *et al.* 2009; Zhang and Hong, 2013). Duration of immigration was categorized into four groups: less than 5 years (reference), 5 to 10 years, 11 to 20 years, and more than 20 years. Employment status was recorded as "employed", "unemployed" (the reference category), and "not in the labor force". Ethnic groups include "Filipino," "Vietnamese," "Chinese," and "Other Asian" with the Chinese being the reference category.

We also controlled for perceived social support because it is a potential protective factor that may buffer the detrimental effect of stressors on mental health among Asian-American immigrants (Mossakowski and Zhang, 2014). We included two variables that

access perceived support from family members, and perceived support from friends. Both variables were measured by the sum of two items: (1) how much the respondents can open up to family or relatives/friends and talk about their worries (1–4), and (2) how much the respondent can rely on family or relatives/friends if they need help with serious problems (1–4).

2.3 Analysis

Descriptive statistics that summarize distributions of study variables and bivariate analyses that summarize the zero-order associations between independent variables and dependent variables were presented in Table 1. Following this, multivariate logistic regressions were conducted to analyze the relationship between focal independent variables and dependent variables, adjusting for the effects of control variables. Results from logistic regressions were presented in Tables 2–3. For both tables, Model 1 examined the association between immigration-related factors (age at immigration and English proficiency) and mental health problems (12-month depressive disorder/ suicidal ideation), controlling for all the socio-demographic factors. Model 2 explored the relationship between individual religious involvement (religious affiliation, service attendance, and religious coping) and mental health problems. In Model 3, both immigration-related factors and indicators of religious involvement were incorporated to see if their effects on mental health problems remain. In the final model (Model 4), we introduced the interaction terms between religious involvement and immigration-related factors to examine the stress-buffering effect of religion. Only the significant interaction terms were reported.

Considering the three stage sampling design of the NLAAS, weighted analyses were employed in STATA. We first used command "svyset SECLUSTR [pweight=NLAASWGT], strata (SESTRAT)" before variable management section in STATA to specify weight and sampling design in the NLAAS. And then we generated subsample for Asian-American immigrants. Finally we used command "svy, subpop (Asian)" before every logistic regression model to conduct weighted logistic regression.

3 Results

3.1 Descriptive Statistics

Among 1,641 Asian-American immigrants, approximately 3.99% reported having major depressive disorder for the past 12 months, and 5.39% reported that they had seriously thought about committing suicide. As shown in Table 1, 16.49% of the respondents immigrated to the U.S. younger than or at age 12. Approximately 41.67% of the respondents indicated limited English proficiency. In terms of religious involvement, 32.24% of the respondents attended religious services more than once a week and 26.94% reported having sought comfort from religion frequently when encountering difficulties. Approximately 41.94% of respondents were Christian; 21.81% of them did not have any religious affiliation, and 36.25% were with other religious traditions. For control variables, approximately 70% of the respondents were under 50 years old. More than half of the respondents were female (53.43%) and most of them were married (74.37%) and employed (63.46%). For social economic status, 65.22% of Asian immigrants reported having at least some college level of education, 84.95% of them received their education outside the U.S. before age 16, and 39.28% of them reported having an annual income being more than $75,000. More than 65% of the respondents have stayed in the U.S. for over 10 years. Nearly one third (30.60%) of Asian-American immigrants were Chinese, and 16.30%, 19.69%, 33.41 were Vietnamese, Filipino and other Asian, respectively. The means of two scales, perceived social support from family and perceived social support from friends, are 5.41 (SD=1.94) and 5.11 (SD=1.85), respectively.

Table 1. Prevalence of 12-month depressive disorder and suicidal ideation by immigration-related factors and demographic variables for Asian-American immigrants (N = 1,641)

	Total Sample		12-Month Depressive Disorder		Suicidal Ideation	
	n	%	%	Chi²	%	Chi²
Age groups				28.33†		12.61
18 – 34	575	35.02	2.22		2.55	
35 – 49	572	34.85	1.26		1.79	
50 – 64	326	19.89	0.16		0.66	
≥ 65	168	10.24	0.35		0.39	
Gender				0.94		2.07
Male	764	46.57	2.04		2.20	
Female	877	53.43	1.95		3.19	
Marital status				81.46***		84.12***
Married/cohabiting	1,220	74.37	1.57		2.36	
Divorced/separated/widowed	129	7.82	0.47		0.62	
Never married	292	17.81	1.95		2.41	
Education				15.37		4.46
Less than 12 years	306	18.66	0.39		0.66	
12 years	265	16.12	1.14		0.89	
13 – 15 years	364	22.20	0.76		1.37	
16 years or more	706	43.02	1.71		2.47	
Education received before 16 yrs				34.37*		42.51***
United States	246	15.05	1.39		1.82	
Other country	1,394	84.95	2.60		3.57	
Household income ($)				22.21		11.26
< 15,000	303	18.45	1.39		1.40	
15,000 - 34,999	225	13.71	0.37		0.84	
35,000 – 74,999	469	28.56	1.16		0.96	
≥ 75, 000	644	39.28	1.07		2.18	
Employment status				22.73		
Employed	1,041	63.46	2.43		3.01	
Unemployed	104	6.31	0.68		0.53	
Not in labor force	496	30.23	0.88		1.85	
Ethnicity				2.04		4.12
Vietnamese	502	16.30	0.51		0.58	
Filipino	349	19.69	0.54		1.10	
Chinese	475	30.60	1.13		1.73	
Other Asian	315	33.41	1.80		1.98	
Age at immigration				43.21*		44.81***
Immigrant, ≤ 12 Years old	271	16.49	1.43		1.97	
Immigrant, >12 Years old	1,370	83.51	2.56		3.42	
Years in the U.S.				17.54		4.32
Less than 5 years	302	18.42	0.40		0.82	
5 – 10 years	257	15.67	0.94		0.79	
11 – 20 years	564	34.39	1.84		1.66	
More than 20 years	517	31.52	0.81		2.1	
English proficiency				8.14		0.12
Fair/poor	684	41.67	2.19		2.32	

Excellent/good	957	58.33	1.80		3.07	
Religious attendance				18.56*		0.18
Weekly	529	32.24	0.53		0.76	
Less than once a week	1,112	67.76	3.46		4.63	
Social Support						
Perceived support from family	1,641	5.41(1.94)		7.41		15.90
Perceived support from friend	1,641	5.11 (1.85)		13.43		12.85
Religious affiliation				52.90**		31.59*
Protestant/Catholics	688	41.94	1.91		2.82	
No religion	358	21.81	0.92		1.41	
Other religions	595	36.25	1.19		1.19	
Seek comfort from religion				7.48*		0.39*
Never/rarely/sometimes	1,199	73.06	3.37		3.81	
Often	442	26.94	0.62		1.57	

Notes: Chi² = Chi Square; †$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ (two tailed tests).

Bivariate findings were also summarized in Table 1. The prevalence of the 12-month depressive disorder among those who immigrated to the U.S. after 12 years old was significantly higher than immigrants who arrived in the U.S. at 12 years old or younger (Chi-square = 43.21, $P < 0.05$). Similar pattern was found for suicidal ideation (Chi-square = 44.81, $P < 0.01$). Those who rated their English proficiency as excellent/good are not significantly different from those with limited English proficiency in the prevalence of the 12-month depressive disorder and suicidal ideation.

Asian-American immigrants who attended religious services weekly reported a lower level of the 12-month depressive disorder compared to those who attended religious services less than once a week. Compared to those who reported they never/rarely/sometimes seek comfort from religion, those who reported they often seeking comfort from religion show significantly lower prevalence of the 12-month depressive disorder and suicidal ideation. Immigrants who consider themselves as Protestant or Catholics have significantly higher percentages of 12-month depressive disorder and suicidal ideation compared to those with other religious beliefs and those do not have any religious beliefs.

3.2 Multivariate Analyses

3.2.1 12-Month Depressive Disorder

Table 2 summarized odds ratios (OR) and the 95% confidence intervals (CI) of immigration-related factors and indicators of religious involvement on the 12-month depressive disorder using weighted logistic regressions. All models are adjusted for socio-demographic controls. As shown in Model 1, Asian-American immigrants with limited English proficiency were significantly more likely to report higher levels of 12-month depressive disorder compared to immigrants with excellent/good English proficiency (OR = 4.14. 95% CI = [1.87, 9.18]). Specifically, the odds of having 12-month depressive disorder for Asian-American immigrants with limited English proficiency are 314% ({4.14-1} × 100%) higher than the odds of Asian-American immigrants with excellent/good English proficiency. This result indicates a strong direct effect of English proficiency on 12-Month depressive disorder. No significant differences in the 12-month depressive disorder were found by age at immigration.

Model 2 shows the direct effect of individual religious involvement. For Asian-American immigrants, those who attend religious services on a weekly basis were at a lower risk of the 12-month depressive disorder than those who attend religious services less than once a week (OR = 0.30. 95% CI = [0.11, 0.83]). No significant effects were found for religious affiliation and religious coping. Both immigration-related stressors

Table 2. Weighted logistic regressions of 12 months depressive disorder on independent variables: Asian-American Immigrants (N = 1,641)

	Model 1	Model 2	Model 3
Ethnicity ([a] Chinese)			
Filipino	1.27 (0.52, 3.13)	0.76 (0.27, 2.12)	1.10 (0.36, 3.35)
Vietnamese	0.65 (0.21, 2.04)	0.84 (0.24, 2.88)	0.76 (0.21, 2.74)
Other Asian	1.68 (0.64, 4.41)	1.55 (0.52, 4.55)	1.77 (0.64, 4.89)
Gender ([a] Male)			
Female	1.01 (0.49, 2.07)	1.11 (0.55, 2.25)	0.98 (0.47, 2.07)
Age ([a] 18-34 years)			
35 – 49 years old	0.82 (0.32, 2.09)	1.07 (0.42, 2.71)	0.79 (0.33, 1.87)
50 – 64 years old	0.21(0.03, 1.39)	0.27(0.04, 1.66)	0.23 (0.04, 1.45)
65 years old and above	0.85 (0.07, 9.92)	1.48 (0.20, 10.84)	0.97 (0.13, 7.34)
Marital status ([a] Married/cohabiting)			
Never married	4.49(1.74, 11.58)**	3.48(1.41, 8.58)**	4.22(1.77,10.07)**
Divorced/separated/widowed	3.14(0.91, 10.86)†	2.46(0.86, 7.02)†	2.95(1.04, 8.33)*
Education ([a] More than 16 years)			
0 – 11 years	0.35 (0.09, 1.42)	0.56 (0.15, 2.02)	0.37 (0.09, 1.48)
12 years	1.01 (0.33, 3.10)	1.38 (0.51, 3.73)	0.98 (0.32, 3.04)
13 – 15 years	0.57 (0.21, 1.57)	0.75 (0.28, 2.02)	0.62 (0.23, 1.71)
Education received before age 16 ([a] Other country)			
United States	2.80(0.99, 7.91)†	1.33(0.46, 3.86)†	2.55(0.90, 7.25)†
Household income([a] Above $ 75,000)			
$0 – $14,999	1.55 (0.60, 3.97)	1.66 (0.61, 4.55)	1.26 (0.48, 3.26)
$15,000 – $34,999	0.56 (0.10, 3.17)	0.69 (0.12, 3.88)	0.50 (0.09, 2.80)
$35,000 – $74,999	1.20 (0.49, 2.97)	1.38 (0.51, 3.74)	1.11 (0.44, 2.79)
Employment status ([a] Employed)			
Unemployed	2.16 (0.68, 6.79)	2.53 (0.97, 6.55)	2.32 (0.75, 7.22)
Not in labor force	0.53 (0.16, 1.71)	0.59 (0.21, 1.62)	0.66 (0.22, 2.03)
Age at immigration ([a]> 12 years)			
≤ 12 years	0.67 (0.23, 1.98)		0.67 (0.24, 1.86)
Years in the U.S. ([a] Less than 5 years)			
5 – 10 years	3.30(1.25, 8.69)*	3.11*(1.07, 9.03)	3.05 (1.20, 7.75)
11 – 20 years	3.23(1.03, 10.10)*	2.50 (0.81, 7.71)	3.16 (1.07, 9.31)
More than 20 years	2.12 (.63, 7.15)	1.50 (0.50, 4.53)	1.80 (0.55, 5.92)
English proficiency ([a] Excellent/good)			
Fair/poor	4.14(1.87, 9.18)***		4.09(1.84, 9.08)**
Perceived social support from family members	0.92 (0.77, 1.10)	0.89 (0.77, 1.04)	0.91 (0.77, 1.07)
Perceived social support from friends	0.99 (0.79, 1.24)	0.99 (0.79, 1.26)	1.00 (0.80, 1.26)
Religious affiliation ([a] No religion)			
Protestant/Catholics		2.28 (0.76, 6.87)	2.26 (0.73, 6.98)
Other religions		0.99 (0.40, 2.49)	0.98 (0.39, 2.44)
Religious attendance ([a] Less than once a week)			
Weekly		0.30*(0.11, 0.83)	0.30*(0.11, 0.85)
Seek comfort from religion ([a] Never/rarely/sometimes)			
Often		0.91 (0.20, 4.09)	0.92 (0.20, 4.10)

Notes: Odds ratios and 95% confidence intervals (in parentheses) are provided; †p< 0.1, *p< 0.05, **p< 0.01, ***p< 0.001 (two tailed tests); [a] reference groups.

and religious involvement indicators were included in model 3. The odds ratios for both limited English proficiency and weekly religious services attendance on 12-month depressive disorder remain significant and substantial.

Finally, we introduced the interaction terms between religious involvement and immigration-related stressors to examine whether religious involvement provides any stress-buffering effect for Asian-American immigrants. Results show that none of the odds ratios for the interaction terms are significant (results not shown).

3.2.2 Suicidal Ideation

Table 3 presents the odds ratios of immigration-related stressors and indicators of individual religious involvement on suicidal ideation. Limited English proficiency also increases the risk of having suicidal ideation for Asian-American immigrants. The odds of having suicidal ideation for those with limited English proficiency are 2.17 times greater than those who rated their English proficiency as excellent/good. No significant differences in the suicidal ideation were found by age at immigration.

Model 2 examines the direct effects of individual religious involvement. Results indicate that none of the measured religious involvement variables show significant direct effect on suicidal ideation. Model 3 includes both immigration-related stressors and indicators of religious involvement. Adjusting for religious involvement, the odds ratios of limited English proficiency remain significant and substantial. Finally, the interaction terms between religious involvement and immigration-related stressors were included in Model 4. The significant odds ratio of the interaction term between "seeking comfort from religion" and "English proficiency" suggests that Asian-American immigrants with limited English proficiency but frequently seeking comfort from religion presented a significant lower risk of having suicidal ideation by 81.85% ({1-[.05 × 3.63]} × 100%) compared to those with limited English proficiency but never/sometimes seeking comfort from religion. Interactions between religious attendance/religious affiliation and immigration-related stressors were not statistically significant.

4 Discussion

In summary, our results reveal several interesting patterns. First, as expected, limited English proficiency was associated with increased risk of having 12-month depressive disorder and suicidal ideation among Asian-American immigrants. However, no significant differences in the 12-month depressive disorder and suicidal ideation were found by age at immigration. Second, we found that weekly religious service attendance was associated with a reduced risk of 12-month depressive disorder. Finally, we identified the stress-buffering effect of religious coping for the association between limited English proficiency and suicidal ideation. Those with limited English proficiency but frequently seeking comfort from religion were at a lower risk of having suicidal ideation compared to those with limited English proficiency but rarely or just sometimes seeking comfort from religion.

Our findings suggest that limited English proficiency is a risk factor for Asian-American immigrants and it could result in severe depressive disorder, which is consistent with findings from the previous studies (Kim, Worley, Allen *et al.*, 2011; Zhang, Hong, Takeuchi *et al.*, 2012). Unlike Hispanics and other minority groups who share a common language regardless of their country of origin, a variety of languages have been used by Asian-American immigrants in the U.S. The most commonly used Asian language is Chinese with approximately only 2.8 million speakers in the U.S. (United States Census Bureau, 2014). Asian-American immigrants often view high levels of English proficiency essential for them to navigate through daily contexts and integrate with the host communities. On average, they also have higher levels of education compared to other minority immigrants. These well-educated Asian-American immigrants have a high expectation regarding their achievement in the U.S. In this sense, being proficient in English is vital to meet their social and economic expectations (Zhang, Hong, Takeuchi *et al.*, 2012) and lack of it tends to greatly reduce

Table 3. Weighted logistic regressions of suicidal ideation on independent variables: Asian-American immigrants (N = 1,641)

	Model 1	Model 2	Model 3	Model 4
Ethnicity ([a] Chinese)				
Filipino	1.18 (0.57, 2.41)	0.77 (0.27, 2.16)	0.91 (0.31, 2.67)	0.95 (0.30, 2.98)
Vietnamese	0.58 (0.26, 1.27)	0.68 (0.31, 1.49)	0.66 (0.31, 2.67)	0.70 (0.33, 1.46)
Other Asian	1.17 (0.41, 3.38)	1.14 (0.46, 2.84)	1.29 (0.51, 3.24)	1.36 (0.52, 3.54)
Gender ([a] Male)				
Female	1.47(0.65, 3.32)	1.45 (0.64, 3.29)	1.40 (0.61, 3.22)	1.50 (0.71, 3.15)
Age ([a] 18-34 years)				
35 – 49 years old	1.40 (0.45, 4.33)	1.57 (0.52, 4.75)	1.37 (0.50, 3.74)	1.28 (0.50, 3.29)
50 – 64 years old	0.94 (0.21, 4.18)	1.01 (0.21, 4.78)	0.95 (0.21, 4.18)	0.85 (0.22, 3.28)
65 years old and above	0.59 (0.08, 4.52)	0.72 (0.09, 5.63)	0.59 (0.08, 4.63)	0.56 (0.09, 3.54)
Marital status ([a] Married/cohabiting)				
Never Married	4.86(1.48, 16.04)**	5.02(1.52,16.57)**	5.05(1.54,16.58)**	5.89(2.08, 16.69)***
Divorced/Separated/Widowed	3.01(0.93, 9.77)†	2.51(0.77, 8.12)†	2.68(0.85, 8.45)†	3.07(0.92, 10.19)†
Education ([a] More than 16 years)				
0 – 11 years	0.63 (0.22, 1.81)	0.88 (0.30, 2.60)	0.71 (0.24, 2.05)	0.71 (0.24, 2.09)
12 years	0.79 (0.31, 2.00)	1.01 (0.40, 2.56)	0.85 (0.35, 2.06)	0.74 (0.31, 1.79)
13 – 15 years	0.83 (0.34, 2.05)	0.98 (0.40, 2.43)	0.88 (0.38, 2.07)	0.83 (0.36, 1.90)
Education received before age 16 ([a] Other country)				
United States	1.94 (0.57, 6.59)	1.97 (0.66, 5.92)	2.18 (0.63, 7.56)	2.09 (0.54, 8.03)
Household income ([a] Above $ 75,000)				
$0 – $14,999	0.71 (0.31, 1.61)	0.70 (0.30, 1.67)	0.63 (0.29, 1.39)	0.62 (0.29, 1.36)
$15,000 – $34,999	0.84 (0.33, 2.17)	0.88 (0.32, 2.44)	0.75 (0.27, 2.11)	0.75 (0.26, 2.14)
$35,000 – $74,999	0.48 (0.19, 1.17)	0.50 (0.21, 1.20)	0.45 (0.18, 1.13)	0.48 (0.19, 1.22)
Employment status ([a] Employed)				
Unemployed	1.72 (0.54, 5.51)	1.98 (0.63, 6.22)	1.91 (0.59, 6.21)	1.76 (0.49, 6.30)
Not in labor force	1.42 (0.63, 3.17)	1.54 (0.67, 3.51)	1.53 (0.66, 3.55)	1.55 (0.68, 3.50)
Age at immigration ([a]> 12 years)				
≤ 12 years	1.36 (0.52, 3.53)		1.12 (0.42, 2.98)	1.66 (0.43, 6.46)
Years in the U.S. ([a] Less than 5 years)				
5 – 10 years	1.13 (0.28, 4.61)	1.11 (0.32, 3.87)	1.14 (0.32, 4.08)	1.00 (0.31, 3.21)
11 – 20 years	0.91 (0.21, 3.83)	0.78 (0.20, 2.94)	0.87 (0.22, 3.44)	0.88 (0.26, 3.05)
More than 20 years	1.59 (0.33, 7.66)	1.31 (0.33, 5.15)	1.47 (0.33, 6.53)	1.27 (0.35, 4.69)
English proficiency ([a] Excellent/good)				
Fair/Poor	2.17(0.97, 4.85)†		2.22 (1.06, 4.65)*	4.67 (1.45, 15.00)*
Perceived social support from family members	1.00 (0.87, 1.15)	0.99 (0.86, 1.13)	1.00 (0.87, 1.15)	0.97 (0.84, 1.12)
Perceived social support from friends	0.95 (0.79, 1.14)	0.95 (0.81, 1.13)	0.96 (0.80, 1.14)	0.95 (0.79, 1.13)
Religious affiliation ([a] No religion)				
Protestant or Catholics		1.36 (0.40, 4.67)	1.37 (0.40, 4.64)	1.47 (0.42, 5.17)
Other religions		0.58 (0.20, 1.70)	0.58 (0.20, 1.68)	0.60 (0.21, 1.72)
Religious attendance ([a] Less than once a week)				
Weekly		0.61 (0.30, 1.21)	0.62 (0.31, 1.22)	0.93 (0.43, 2.03)
Seek comfort from religion ([a] Never/ rarely/sometimes)				
Often		1.48 (0.82, 2.67)	1.52 (0.83, 2.79)	3.63(1.68, 7.84)***

Often seek comfort from religion × Immigration ≤ 12 years	1.02 (0.21, 5.04)
Often seek comfort from religion × Fair/ poor English	0.05(0.01, .20)***
Weekly attendance × Immigration ≤ 12 years	0.29 (0.05, 1.55)
Weekly attendance × Fair/poor English	1.11 (0.29, 4.17)

Notes: Odds ratios and 95% confidence intervals (in parentheses) are provided; †p< 0.1, *p< 0.05, **p< 0.01, ***p< 0.001 (two tailed tests); [a] reference groups.

their self-esteem and self-worth, which in turn, may lead to psychiatric disorders and even suicidal ideation.

Surprisingly, our finding on age at immigration does not support either the acculturative stress model (Berry, Kim, Minde *et al.*, 1987) or the life course perspective. Acculturative stress model predicts that acculturative stress should be more severe among those who arrived in the U.S. in an older age as older immigrants often have already developed social networks and have internalized cultural/social norms from their country of origin. As a result, a conflict between two sets of norms and values is likely to emerge (Breslau, Borges, Hagar *et al.*, 2009). They may find themselves hard to accommodate a strange or even a hostile environment in the host country. Within this environment it is even harder to develop a social network and receive social support as coping resources for stress (Rogler, Cortes, and Malgady, 1991).

On the other hand, those younger age immigrants tend to spend most of their adolescence and early adulthood in the U.S. The life course perspective emphasizes the importance of these life stages to develop emotional and cognitive abilities (Giedd, 2004; Gogtay, Giedd, Lusk, *et al.*, 2004; Mossakowski, 2007). These stages are also vulnerable stages in the life course when social network and coping resources may not be fully developed to handle stressful life events. Research shows that the developmental context that leads individuals to a different "life course trajectory" may vary by age at immigration (Fuligni, 2004; Rumbaut, 2004). Early socioeconomic developmental contexts and the experience of dealing with stress have a long reaching effect on the development of stress coping abilities as adults (Hayward and Gorman, 2004). These younger immigrants have a greater chance of facing several unique psychosocial stressors such as alienation, aggression, anxiety, low self-esteem and intergeneration conflicts (Lynch, 1992). Also, the discrepancy between the dominant values of their home countries expressed in their household or communities and the American values manifested by their peers at schools may serve as chronic stressors resulting in mental health problems in adulthood (Fuligni, 2004; Leu, Yen, Gansky *et al.*, 2008). However, none of these two perspectives were supported by our data. Hence, alternative models need to be developed and tested in future research to continuously disentangle the unique effect of age at immigration on mental health status among Asian-American immigrants.

Most importantly, we found that religious coping (frequently seeking comfort from religion) provides a stress-buffering effect for the association between limited English proficiency and suicidal ideation among Asian-American immigrants. This finding, to some extent, supports the stress-buffering model. The question remains unclear is why only religious coping buffers the detrimental effect of limited English proficiency on suicidal ideation. One possible explanation has to do with our measurement for religious involvement that may distort and underestimate the stress-buffering effects of religion (Schnittker, 2001). Research shows that measures of religious involvement may have a better prediction power over mental health if they were measured in a more direct way (Pargament, Ensing, Falgout, *et al.*, 1990). In this regard, perhaps if we include measures such as specific religious guidance through religious teaching (instead of using religious affiliation), and church-based social support (instead of religious

services attendance), we could find a more salient stress-buffering effect of religious involvement. With current data, however, these speculations are unable to be tested.

Another important question is why this stress-buffering effect only exists between limited English proficiency and suicidal ideation. Why religious coping does not work to reduce the high risk of 12-month depressive disorder among those with limited English proficiency? In other words, under what conditions could religious coping buffer the detrimental effect of stressors on mental health? Some have argued that religion may have stress-buffering effects only under extreme circumstances as individuals often rely more on tangible secular coping resources to deal with moderate stressful conditions (Schnittker, 2001). For instance, religious teaching may be more useful in interpreting events that are beyond the range of daily life experience than events that could be attributed to "identifiable and mundane causes" (Schnittker, 2001: 396). Accordingly, although both 12-month depressive disorder and suicidal ideation are mental health problems, the latter is more severe and extreme than the former. Perhaps, for Asian-American immigrants, social support from their families and communities is the primary resource to help them cope with daily hassles and normal stressors. Suicidal ideation, however, occurs when stressful events trigger the feeling of desperation more frequent and severe than usual that is beyond the range of one's family and community members' capacities. Under this extreme circumstance when the tangible secular resources are likely to be exhausted, religion becomes one of the last resorts.

The current study has several limitations. First, our findings are based on cross-sectional data. Therefore, we are unable to address causal relationships. Second, measures of English proficiency, religious coping, depressive disorder and suicidal ideation are heavily relied on self-reports that are likely to be influenced by respondents' differential understanding and interpretation of the survey questions. Last but not the least, given the small sample sizes for various Asian ethnic groups in the NLAAS, we are unable to examine the possible variability in the relationship between immigration-related stressors and mental health as well as in the stress buffering ability of religion across different ethnic groups.

5 Conclusions

Despite these limitations, the current study provides a comprehensive understanding of whether immigration-related stressors are associated with severe mental health problems and how individual religious involvement moderates the associations. Although religious coping only provides stress-buffering effect for the association between limited English proficiency and suicidal ideation, the effect of religion should be aware of and emphasized in the clinical setting. For instance, adequate training needs to be provided for psychiatrists and other mental health professionals to help them better integrate religiosity/spirituality into the clinical practice in order to offer more effective treatments. In addition, being sensitive to patients' religious/spiritual needs may also work to encourage them to seek professional help. This is particularly relevant to Asian Americans, the racial/ethnic group showing a significant lower rate of mental health service utilization than others (Abe-Kim, Takeuchi, Hong *et al.*, 2007).

Authors Contributions

First author: research design, data analysis, and manuscript writing. Second author: research design and manuscript writing.

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Ethics Statement

The analyses described in this paper were performed using secondary data obtained from publicly available sources as outlined in the Data and Methods section.

Availability of Supporting Data and Materials

Data used in this study could be obtained from the following link for replication and review.
www.icpsr.umich.edu/icpsrweb/CPES/studies/20240

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