Is Acculturation Responsible for the Weak Education Gradient in Health for Asian Immigrant Adults in the United States?*

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Abstract

The weak education gradient in health for immigrant groups challenges the well-documented positive association between education and health. The empirical research to examine *why* the weak association exists is sparse. Researchers hypothesized that, compared to less-educated immigrants, more-educated immigrants stayed longer in the United States and became more acculturated to the American lifestyles, which may worsen more-educated Asian immigrants' health based on previous literature. In this case, the education-health association becomes weak. I used the 2006–2011 NHIS to examine whether this hypothesis applies to Asian immigrants. Results from logistic regression models and chi-square tests do not support the hypothesis. Duration in the United States does not have a significant relationship with self-rated health when adjusting for demographic characteristics. Moreover, less-educated Asian immigrants have longer duration in the United States compared to more-educated Asian immigrants. Future research should identify possible explanations of the weak education gradient in health for immigrants.

Introduction and Background

A vast body of literature has documented the positive association between education and health outcomes among different populations in the United States (Hummer, Benjamins and Rogers 2004; Hummer and Lariscy 2011; Mirowsky and Ross 2003; Williams and Collins 1995; Williams et al. 2010). Moreover, studies have found that the education gradient varies by nativity (Acevedo-Garcia et al. 2010; Acevedo-Garcia, Soobader and Berkman 2005; Goldman et al. 2006; Kimbro et al. 2008; McKinnon and Hummer 2007). For example, Kimbro et al. (2008) found that, for non-Hispanic whites, blacks, Hispanics, and Asians, the education gradients in self-rated health and in work limitations for foreign-born adults are weaker than the gradients for their US-born counterparts.

Researchers have also proposed that the acculturation process might be responsible for part of the weaker association between education and health outcomes for immigrants. Studies show that immigrants' health is negatively affected as they become more acculturated to American society, as measured by the increasing duration of their stay. This pattern has been found for self-rated health, morbidity, health behaviors (e.g., smoking and BMI), infant mortality, and mortality risk (e.g., Acevedo-Garcia et al. 2010; Antecol and Bedard 2006; Cho, Frisbie and Rogers 2004; Frisbie, Cho and Hummer 2001; Landale, Oropesa and Gorman 2000; Singh and Siahpush 2002). For example, Singh and Siahpush (2002) found that immigrants' risk of smoking, obesity, hypertension, and having a chronic condition was higher for those with increased duration in the United States. Recently, Acevedo-Garcia et al. (2010) found that for first-generation Asians and Hispanics, length of residence in the United States is positively related to the odds of reporting poor/fair health. Researchers suspect that the longer that immigrants stay in the United States, the more likely they are to adopt negative behaviors such as an "unhealthy" diet and smoking, which are not common in their countries of origin. Thus, immigrants' health outcomes worsen with longer stays in the United States.

Although there is little information about how the acculturation process differs by immigrants' socioeconomic status (SES) or education, Goldman et al. (2006) and Turra and Goldman (2007) suspect that Hispanic immigrants with higher SES or relatively high education levels are more apt to stay longer in the United States than those with low SES or low education levels. Therefore, immigrants with higher SES or relatively high education levels are more likely to be exposed to unhealthy behaviors and ultimately have negative health outcomes. In this case, the association between education and health would be weak in the cross-sectional data, which cannot capture the cohort effect. Therefore, it is possible that negative acculturation might be responsible for part of the weak education-health relationship for immigrants. If this speculation is correct and applies to Asian immigrants, the education gradient in health for Asian immigrants may be weak because more-educated Asian immigrants stayed longer than less-educated Asian

immigrants in the United States, which may worsen more-educated Asian immigrants' health status.

Despite a few efforts to explain the weaker education gradient in health among immigrants and racial or ethnic minority groups, empirical studies examining *why* the weak gradient exists are sparse. This is an important omission in current social demographic literature on health disparities for two main reasons. First, a weak or even flat relationship between education and health for immigrants challenges the robustness of the well-documented education–health relationship among the general population. Understanding why a weaker gradient exists for immigrants would strengthen and contextualize the existing literature on education and health. Second, the dramatically growing immigrant and minority populations are changing the composition of the U.S. population. Thus, immigrant health is having an important impact on the whole U.S. health profile. Understanding the education gradient in health for immigrants and the policy implications stemming from such work would, potentially, benefit the whole U.S. population.

In this paper, I tested the hypothesis that *Asian immigrants have a weaker education gradient in health because more-educated Asian immigrants are more likely to stay in the United States longer and thus adopt more negative health behaviors, which lead to worse health.* To support this hypothesis, duration in the United States is negatively related to health outcomes for Asian immigrants, and second, more-educated Asian immigrants have longer duration relative to less-educated Asian immigrants in the United States.

Data and Method

The data I used is from the Sample Adult files of the 2006–2010 National Health Interview Survey (NHIS). Only foreign-born Asians are included in this sample. I restricted the samples to adults aged 25–64 because, first, most of the adults in that age group have finished their education, and second, there might be some survivor biases among older respondents.
First, I examined whether level of acculturation is positively related to negative health outcomes and whether this association is mediated by negative health behaviors, such as smoking and high BMI. Health status is measured by self-rated health, and acculturation is measured by the duration in the United States. I conducted logistic regression analyses on self-rated health. The independent variable is duration, and the mediating variables are smoking status and BMI. I also controlled for age and marital status.

Second, if duration is positively related to negative health behaviors and negative health outcomes, I further used descriptive statistics and the chi-square test to examine whether duration in the United States is related to education attainment. If duration in the United States and education attainment are related, the *p*-value of the chi-square test should be less than .05. This conclusion does not exclude the possibility of cohort effect. That is, except for educational

differences, Asian immigrants who came to United States decades ago might be fundamentally different from Asian immigrants who recently immigrated to the United States. Without proper panel data or cohort data, the analyses for the acculturation hypothesis can only explain the observation of the weaker education gradient in health in the cross-sectional data and cannot exclude the possibility of cohort effect.

All analyses were stratified by gender. Appropriate sampling weights were applied to all analyses. The final sample size was 4,543.

Results

Table 1 presents the descriptive statistics by gender and duration of residency in the United States. For both men and women, Asian immigrants who have been in the United States for 10 years or more have higher rates of having poor/fair self-rated health, smoking, and higher average BMI relative to recent Asian immigrants (with durations of < 10 years). These findings are consistent with those of previous literature.

Table 2 and Table 3 present the odds ratio of duration in the United Sates from the logistic regression models predicting poor/fair self-rated health for Asian immigrant women and men, respectively. The first model is the unadjusted model, which shows the direct association between duration and self-rated health. The results from the unadjusted model show that Asian immigrants who have been in the United States for 10 years or more are about twice as likely to have poor/fair health relative to Asian immigrants who have been in the United States for less than 10 years (OR = 1.93 for women; OR = 2.33 for men). Moreover, health behaviors can only explain part of the association between duration in the United States and self-rated health since the odds ratios of duration are still significant when adjusted for smoking status and BMI in adjusted Model 1 for both women and men. However, when adjusting for age and marital status in adjusted Model 2, the significant association between duration in the United States and self-rated health disappeared for both women and men. This result suggests that the relationship between duration in the United States and self-rated health can be mostly explained by the demographic composition of the long-duration Asian immigrants and recent Asian immigrants. This finding is inconsistent with Frisbie et al. (2001), which showed that duration in the United States has a significant relationship with self-rated health for Asian Americans even when controlling for demographic characteristics and health behaviors.

A further supplemental chi-square test also shows that duration in the United Sates is related to education attainment for Asian immigrants ($p < .001$). However, unlike the speculation in the previous literature, Asian immigrants who have been in the United States for 10 years or more have lower education attainment compared to Asian immigrants who have been in the United States for fewer than 10 years. This pattern applies to both genders.

Discussion and Conclusion

Results of this paper show that longer duration in the United States is related to higher rates of smoking and higher BMI, yet duration is not related to self-rated health when adjusting for age and marital status. Moreover, contrary to previous studies' speculations, Asian immigrants who stayed in the United States longer have lower education attainment compared to recent Asian immigrants. Therefore, the hypothesis that *Asian immigrants have a weaker education gradient in health because more-educated Asian immigrants are more likely to stay in the United States longer and thus adopt more negative health behaviors, which lead to worse health,* is not supported. Other possible explanations for the weaker education gradient in health for Asian immigrants include different education–health relationships in the countries of origin, educational differences in health selection, and lower returns on education for Asian immigrants.

Table 1. Descriptive Statistics of Asian Immigrants Aged 25–64 by Gender and Duration of Residency in the United States, National Health Interview Survey, 2006–2011

	Female (*n* = 2,429)		Male (*n* = 2,114)	
	<10 years[a] (*n* = 792)	≧ 10 years[a] (*n* = 1,637)	< 10 years[a] (*n* = 705)	≧ 10 years[a] (*n* = 1,409)
Poor/Fair Self-Rated Health (%)	3.52	6.58	3.34	7.45
Ever Smoked (%)	5.39	9.83	32.62	37.51
BMI (mean)	22.84	23.93	24.82	25.53
Age (mean)	34.60	44.72	34.37	43.72
Married (%)	75.49	67.87	59.35	73.19
Education Level (%)				
More than College	31.46	20.29	43.52	28.09
College	37.09	31.45	35.02	31.03
Some College	11.01	20.95	10.52	20.66
High School or Less	20.44	27.3	10.94	20.21

a. Duration of Residency in the United States

Table 2. Odds Ratios of Duration in the United States from the Logistic Regression Models Predicting Poor/Fair Self-Rated Health[a] for Asian Immigrant Women Aged 25–64 (*n* = 2,429), National Health Interview Survey, 2006–2011

	Unadjusted Model			Adjusted Model 1[c]			Adjusted Model 2[d]		
	OR[b]	95% CI[b]		OR[b]	95% CI[b]		OR[b]	95% CI[b]	
Duration in the United States (<10 years)									
≧ 10 years	1.93**	1.22	3.05	1.72*	1.09	2.73	0.88	0.51	1.51
Log likelihood	-210088			-205161			-194645		

Note: ** $p < 0.01$; * $p < 0.05$

a. Reference categories for self-reported health status (good, very good, excellent)

b. OR, odds ratio; CI, confidence interval.

c. Model adjusted for smoking status and BMI.

d. Model adjusted for age and marital status.

Table 3. Odds Ratios of Duration in the United States from the Logistic Regression Models Predicting Poor/Fair Self-Rated Health[a] for Asian Immigrant Men Aged 25–64 (*n* = 2,429), National Health Interview Survey, 2006–2011

	Unadjusted Model			Adjusted Model 1[c]			Adjusted Model 2[d]		
	OR[b]	95% CI[b]		OR[b]	95% CI[b]		OR[b]	95% CI[b]	
Duration in the United States (<10 years)									
≧ 10 years	2.33**	1.40	3.88	2.15**	1.29	3.6	1.52	0.9	2.7
Log likelihood	-208773			-205424			-201789		

Note: ** $p < 0.01$; * $p < 0.05$

a. Reference categories for self-reported health status (good, very good, excellent)

b. OR, odds ratio; CI, confidence interval.

c. Model adjusted for smoking status and BMI.

d. Model adjusted for age and marital status.

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