Language Proficiency and Health Status: Are Bilingual Immigrants Healthier?

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ABSTRACT

Bilingual immigrants appear to have a health advantage, and identifying the mechanisms responsible for this is of increasing interest to scholars and policy makers in the United States. Utilizing the National Latino and Asian American Study (NLAAS; n=3,264), we investigate the associations between English and native-language proficiency and usage and self-rated health for Asian and Latino U.S. immigrants from China, the Philippines, Vietnam, Mexico, Cuba, and Puerto Rico. Our findings demonstrate that measures of strong English *and* native-language proficiency are associated with better self-rated physical and mental health; and moreover, these associations are not mediated by socioeconomic status, acculturation, family and social support, stress and discrimination, or health behaviors. Finally, country of origin interacts with language skills such that some ethnic groups gain more health advantages from strong English or native-language skills compared to others, demonstrating complex associations among health, language, and nationality.

INTRODUCTION

The "healthy immigrant effect"—whereby immigrants initially appear healthier than the native-born, although with time in the U.S. their health status declines—continues to puzzle scholars. Acculturation, or the process by which immigrants adapt to a host country, is a primary explanation of this phenomenon. Acculturation in health research is typically measured using length of time in the U.S., immigrant generation, and/or language of interview, with the assumption that longer time in the U.S., a later immigrant generation, and preferring the country of origin language are representative of lower levels of acculturation. More recent scholarship has included dual language measures as additional indicators of acculturation status, finding a positive association between bilingualism and self-rated physical and mental health (Mulvaney-Day, Alegria and Sribney 2007). While scholars are increasingly interested in the relationship between immigrant language proficiency and health status (Bzostek, Goldman and Pebley 2007; Jerant, Arellanes and Franks 2008; Gee and Ponce 2010; Gee, Walsemann and Takeuchi 2010), there has been only limited scholarship exploring why and how both English *and* native-language proficiency may influence immigrant health. In other words, it is unclear which immigrant ethnic groups benefit from bilingualism; whether English or native language proficiency is more important; and which mechanisms link language use and proficiency with both physical and mental health outcomes.

In the analysis that follows, we utilize a novel, nationally-representative U.S. dataset with large samples of Latino and Asian foreign-born adults to test how measures of English and native-language proficiency and use are related to self-rated physical and mental health. We measure language proficiency and use by creating unique and comprehensive scaled measures based on indicators of self-assessed proficiency, language used with friends, family, when

thinking, and growing up as a child. We also explore the role of multiple explanatory mechanisms, including country of origin, acculturation, socioeconomic status, stress and discrimination, social and familial support, and health behaviors. Finally, we pay particular attention to the importance of ethnicity by testing how measures of English and native-born language vary by country of origin in their associations with self-rated health.

BACKGROUND

Language and Self-Rated Health

Self-rated physical health is one of the most commonly examined measures of overall health status and is widely acknowledged to be a reliable predictor of mortality (DeSalvo et al. 2006), although the salience of the measure differs by SES (Dowd and Zajacova 2007). Self-rated mental health is a newer and less explored measure, but at least two studies have identified links between low self-rated mental health and mental morbidity measures (Fleishman and Zuvekas 2007; Mawani and Gilmour 2010). Less acculturated immigrants—conceptualized as those who have spent less time in the U.S. or migrated at older ages—tend to have better self-rated physical and mental health (Cho and Hummer 2001; Frisbie, Cho, and Hummer 2001; Singh and Siahpush 2002; Antecol and Bedard 2006; Mulvaney-day et al. 2007), although the evidence for mental health is mixed, with some scholars finding no significant associations between acculturation and mental health after controlling for SES and demographic characteristics (Franzini and Fernandez-Esquer 2004; Erosheva, Walton and Takeuchi 2007; Zhang and Ta 2009), while others suggest that the relationship depends on country of origin (Jerant et al. 2008). Together, we believe these two self-rated measures encompass an overall assessment of an individual's health; and for immigrants they may be especially important indicators of overall health as they often do not rely on health care access for the diagnosis of

health conditions. In addition, because of concern that self-rated health may be interpreted differently by different ethnic groups or due to the translation of question items (Bzostek et al. 2007), it is important to examine self-rated health measures within ethnic groups and to be cognizant of potential language differences in item interpretation. Language as a key measure of acculturation has been explored previously as a predictor of health status, including self-rated health (e.g. Mulvaney-Day et al. 2007; Kandula, Lauderdale, and Baker 2007), although it remains unclear *why* language use or proficiency is connected to subjective health status. While the specific roles that language skills play in determining health status are unclear, we argue that this relationship likely differs based on country of origin and the context of incorporation (Portes and Zhou 1993; Menjívar 2000; Portes and Rumbaut 2001; Reitz 2002; Menjívar 2006). Moreover, given the varied profiles of immigrants based on their country of origin, these relationships are best explored comparatively across multiple immigrant ethnic groups to see whether more general patterns emerge. Furthermore, as over 95% of the U.S. non-Hispanic White population *does not* speak a language other than English, it is unconvincing to us that non-Hispanic Whites are an appropriate comparison group for a study of language proficiency and health (Kandula et al. 2007).

Past research focusing on self-rated health shows that Asian and Latino immigrants who are bilingual in both English and their native language tend to have better self-rated physical and mental health than immigrants who are not bilingual (Mulvaney-Day et al. 2007). While English fluency is sometimes considered an indicator of greater acculturation in the health literature (Finch and Vega 2003; Franzini and Fernandez-Esquer 2003; Kandula et al. 2007), as well as an important resource for accessing U.S. health services (Leclere, Jensen and Biddlecom 1994; Hahm et al. 2007; Gee and Ponce 2010), far less scholarship has examined native-language

maintenance among immigrants and its effects on health. One reason for this gap in the literature is that previous studies have generally assumed that linguistic shifts occurred across generations rather than within first-generation individuals; however, recent scholarship has demonstrated that even among first-generation immigrants, linguistic changes toward English may occur, albeit at different rates depending on age and context of language usage (Akresh 2007). Furthermore, Alba and Nee (2003) have documented a history of both governmental and cultural forces discouraging native-language maintenance among U.S. immigrants, which may explain why less attention has been paid to it in the health literature. However, works by Linton and Jiménez (2009) and Jiménez (2010) show that the continuous flow of Latino migrants in recent decades has helped to increase the longevity and vitality of Spanish among U.S. Latinos. This trend, coupled with the large size of the U.S. Latino immigrant population—particularly Mexican immigrants—has helped make Spanish fluency more relevant in daily life and has highlighted the positive effects of bilingualism for the human capital of U.S. born Latinos (Jiménez 2010), suggesting that these benefits may extend to first-generation, foreign-born Latinos as well.

Less work has examined the role of language among Asians because few U.S.-born respondents do not speak English (Erosheva et al. 2007). However, Gee and Ponce (2010) and Kandula et al. (2007) found that Asian immigrants with limited-English proficiency had worse self-rated physical health, but did not examine the role of Asian-language proficiency. In contrast, Jerant et al. (2008) found that Spanish-speaking Latino immigrants had more positive physical and mental health outcomes after controlling for SES, while others have concluded that there are no significant language effects on Asian immigrant mental health (Leu et al. 2008) and Latino immigrant physical health (Zsembik and Fennel 2005), while some argue that language differences are due to translation issues (Angel and Guarnaccia 1989; Bzostek et al. 2007).

Further confounding our current understanding of the language-SRH relationship is disagreement over how to measure language proficiency. Some studies have used language of interview or language spoken in the household (e.g., Zsembik and Fennel 2005; Bzostek et al. 2007; Jerant et al. 2008), while others have employed more diverse measures of language fluency, including self-rated proficiency at reading, writing, and speaking, as well as context of use, such as the degree to which a language is used with family and with friends (Mulvaney-Day et al. 2007; Gee et al. 2010). According to recent work by Gee et al. (2010: 563), the use of measures of both language proficiency and language context of use is theoretically problematic because "proficiency and preference may influence health through different mechanisms", and, in particular, because under varying model specifications, they find that the relationship between self-rated health and language among Asian immigrants differs in significance depending on which types of language measures are being used. Another recent study (Akresh and Frank 2010) found that discordance in self- and interviewer-assessed language proficiency influenced labor market outcomes, another caution to relying only on one kind of language measure. While we agree about the importance of considering exactly how indicators of language fluency are constructed, we argue that one should include as much information about the overall language skills of our respondents as is available—in order to best model the total effects of language on self-rated health (see *Methods* section below).

Explanatory Mechanisms

Very few studies have attempted to comprehensively discern the mechanisms behind the language-health link. One primary proposed mediator of the language-health link for immigrants is SES, a widely-acknowledged major predictor of health status (Adler and Newman 2002). Most analyses of immigrant health include basic measures of socioeconomic status, although recent

scholarship on both physical and mental health outcomes (Goldman et al. 2007; Kimbro et al. 2008) has found flatter SES gradients for immigrants than the native born, indicating that the relationship between SES and health likely differs by ethnic group. This hypothesis is supported research showing that SES mediates the relationship between ethnicity and self-rated health for Latinos, but not for Asians (Kandula et al. 2007), and that SES mediates the effects of SES on SRH for Latinos (Mulvaney-Day et al. 2007). The ways in which SES mediates the language-SRH relationship, however, remain largely unexplored, and we suspect it may be an important mediator due to the vast differences in SES across immigrant ethnic groups as well as the likely linkage between higher SES and English proficiency (Solé 1990; Jasso and Rosenzweig 1990).

Aside from SES, scholars have largely agreed that language skills may shape how immigrants form social connections, which has significant mental and physical health implications (Mulvaney-Day et al. 2007; Jerant et al. 2008; Zhang and Ta 2009). For example, Portes and Rumbaut (2001) found that language dissonance among parents and children—where parents chiefly speak their native-language while their children speak English--can have a negative impact on well-being, while families characterized by selective acculturation—where English proficiency is gained while native-language skills are maintained—experience more positive outcomes. This may help explain why language skills are related to health status, as family support has positive effects on mental health (Bird et al. 2001; Mulvaney-Day et al. 2007) by providing both emotional and structural supports (Thoits 1995), while family conflict is associated with negative health behaviors (McQueen, Getz and Bray 2003).

Language may also impact access to and levels of friendship and social support. Individuals who maintain native-language fluency while also learning English may be better equipped to both retain friendships in their countries of origin and form new ones in the U.S.,

which may help explain previous findings of a positive association between bilingualism and self-rated health (Mulvaney-Day et al. 2007). Further supporting this hypothesis, Kawachi and Berkman (2000) found that support from close friends was positive for both physical and mental health outcomes, and we hypothesize that part of the relationship between language proficiency and both physical and mental health will be explained by familial and social supports.

The experience of high levels of stress (Kritz and Gurak 2004; Krueger and Chang 2008) and perceived discrimination (Williams, Neighbors and Jackson 2008) also impacts physical (Finch and Vega 2003) and mental (Agbayani-Siewert, Takeuchi and Pangan 1999) health statuses of recent and more acculturated immigrants. Limited- and non-English speakers may be particularly vulnerable to experiencing discrimination, as well as more likely to have limited access to health care, lower quality of care, limited employment opportunities, and higher stress levels (Gee and Ponce 2010), all of which may impact health. Consequently, we hypothesize that measures of stress and discrimination will further mediate the language-SRH relationship.

Studies have also repeatedly demonstrated links between duration of residence in the U.S. and age at migration with English language use and proficiency (Espenshade and Fu 1997; Stevens 1999; Akresh 2007). Age at migration can shape the capacity and speed at which immigrants learn English, as well as their opportunities to socialize with native-English speakers (Rumbaut 2004; Leu et al. 2008). Scholars have also identified pre- immigration factors that may influence language proficiency (Espenshade and Fu 1997), including the linguistic context in the country of origin and how similar the native-language is to English, such that speakers of Romance-languages—including Spanish—are thought to have an easier time learning English than Asian-language speakers (Jasso and Rosenzweig 1990; Espenshade and Fu 1997). We hypothesize that immigrants from countries with wide-spread English use will benefit less from

English fluency in terms of health status; while English-speaking immigrants whose countries of origin do not emphasize English proficiency will show *greater* health advantages.

Beyond language differences, country of origin captures additional factors which may explain why language skills matter for mental and physical health. Portes and Rumbaut (2001) examine how country of origin can impact incorporation, including the type of reception received from the U.S. government, along with the size and concentration of the existing ethnic community. Other scholarship has drawn similar conclusions, pointing to the complex ways in which nationality, legal status, and government immigration and social welfare policies can interact to produce divergent immigrant outcomes (Portes and Zhou 1993; Menjívar 2000; Reitz 2002; Menjívar 2006). This has important implications for our analysis, as Mexican immigrants have received relatively hostile treatment at the hands of the U.S. government, while Cubans and Vietnamese have been afforded special status as asylees or refugees, and these differences in treatment may be related to English language acquisition, native-language maintenance, and health status. Thus, we hypothesize that immigrants whose country-of-origin groups tend to live in concentrated communities in the U.S. will benefit more from native-language maintenance, while groups characterized by more dispersed communities will benefit less.

DATA, MEASURES, AND METHOD

Data

We examine data on foreign-born adults from the National Latino and Asian American Study (NLAAS). Collected in 2002-2003, the NLAAS is a nationally representative community household survey designed to examine mental health and health care among U.S. Latinos and Asians Americans aged 18 and older. A multistage, stratified national area probability sample was drawn from the non-institutionalized U.S. population, with oversampling of areas with a

moderate-to-high density of Latinos and Asian Americans. All interviewers were bilingual, and interviews were conducted in person and in English, Spanish, Vietnamese, Chinese (either Mandarin or Cantonese), or Tagalog. The overall response rate was 65.6% for Asian Americans and 75.5% for Latinos (see Heeringa et al. 2004 for detailed sampling descriptions). When weighted, the NLAAS includes a nationally representative sample of 4,649 adults, including 2,554 Latinos (including Mexican, Puerto Rican, Cuban, and other Latino groups) and 2,095 Asian Americans (including Chinese, Vietnamese, Filipino, and other Asian groups). Because of our focus on language use among immigrants, we limit the sample to foreign born respondents, and we remove two additional cases with missing information on self-rated health, resulting in a final sample size of 3,264 respondents. Rates of item non-response are nonexistent or small (under 2-3% for most measures), with the exception of one measure, index of neighborhood trust (see measures sections), where 15.4% of cases are missing. Rather than exclude cases with missing values, for all measure with missing values we impute missing cases using a regression-based prediction, based on the demographic and socioeconomic measures listed in Table 1.

Measures

Our dependent measures are *self-rated physical health* and *self-rated mental health,* where respondents are asked to rate their overall physical [mental] health status on a five-point scale (1 = poor and 5 = excellent). Our key predictors are constructed measures of English and Asian/Spanish language proficiency. The NLAAS includes measures of English and native language proficiency where respondents are asked to rate their ability to read, write, and speak English and Asian/Spanish on four-point scales (where 1 = poor and 4 = excellent). Respondents are also asked how much they use each language on a five-point likert scale (where 1=only Asian/Spanish and 5=only English) in a variety of contexts, including with family, with friends,

when thinking, as well as at home growing up. Additionally, the NLAAS includes an indicator of whether or not the respondent took the survey in English (where 1=yes), as well as interviewer-rated scores of English proficiency for respondents who took the survey in English. Ayers (2010) has argued that interviewer-assessed measures of language ability may be more accurate than self-assessed ratings, and using NLAAS data found significant differences in self- and interviewer-assessed ratings for individual respondents. However, the NLAAS does not include interviewer-assessed measures of fluency in native-languages. This means that the interviewer-assessed English fluency ratings promoted by Ayers (2010) are not appropriate for our analysis given our specific interest in *bilingualism*. Also, bilingual English-Spanish speakers were randomly assigned to either the English or Spanish version of the survey, while all other bilingual respondents were allowed to choose which language they preferred for the interview, meaning that interviewer-assessments of English fluency for some bilingual speakers is not included. As such, we cannot consider language of interview alone to be an accurate measure of English fluency, as some bilingual Latinos were randomly assigned to the Spanish survey instrument. Nevertheless, we recognize Ayers' (2010) and Akresh and Frank's (2010) caution of using self-reported language proficiency, and note the potential for bias in these measures.

We calculated Pearson correlation coefficients for all combinations of the self-rated English and native-language variables for reading, writing, and speaking, along with all of the context of use language measures, and based on the high multicollinearity present among these variables, we decided to create scaled measures that would allow us to include multiple indicators of language use and context without introducing instability into our models. Our factor analysis indicated that the relative frequency with which immigrants use English versus their native language when communicating with friends and family, while thinking, and at home

growing up is more related to their self-assessed English skills than it is to their proficiency in their native languages (at least in our sample). Based on the results of principal-component factor analysis, two scaled measures were created. First, our scaled measure of *English proficiency* is calculated by summing eight measures of respondents' abilities to read, write, and speak English, along with how often they use English with family, friends, when thinking, how much English they spoke at home while growing up, and whether or not they took the survey in English (α=.92). Higher values on the scale indicate greater proficiency in English. Second, *Asian/Spanish proficiency* is based on three measures and is the sum of respondents' values for how well they read, write, and speak their native language (α=.92). Both scales are standardized to allow for easier interpretations of results. By creating two distinct measures of language ability and use based upon the clusters identified in our factor analysis, we are able to perform a more nuanced examination of the role of language in shaping health outcomes for immigrants.

We also examine several categories of control measures. Demographic characteristics include *gender* (1 = female) and *age at interview* (range: 18-97). We adjust for acculturation status with several measures that tap different but interrelated aspects of the acculturative process for U.S. migrants, including *age at migration* to the United States (1 = age 18 or older, 0 = before age 18), whether they currently *remit money* to relatives in their country of origin (1 = yes, 0 = no), and whether they *migrated to the U.S. voluntarily* (1 = yes, 0 = no), and *how frequently they make return visits to their country of origin* (where 1 = never, and 4 = often).

We include five measures of SES, including dummy variables for *completed schooling* which contrasts adults who (a) did not complete high school against (b) those who graduated from high school, and (c) adults with at least some college experience. We also include measures of *employment* (1 = currently working, 0 = otherwise) and *poverty status* (1 = income below the

2001 federal poverty line, 0 = higher). For *relative income* respondents rank from 0 to 10 how well off they are relative to all other people in the United States (where higher values = more well off), and we measure the extent to which respondents report that they *don't have enough money to meet their needs* (where 1 = more than enough, 2 = just enough, and 3 = not enough).

For stress and discrimination, we control for *acculturative stress*, which is a summed index (α = .71) based on responses to nine yes-no questions about stress experienced since migrating to the U.S. (e.g., "Have you felt guilty about leaving family or friends in your country of origin?"). We also include two measures of discrimination, including the *frequency of day-to-day discriminatory treatment* on the basis of national origin/ancestry, race, or skin color (where 1 = never and 6 = almost everyday), which is constructed from the average of nine questions about routine experiences with racial discrimination (e.g., being treated with less respect than other people; α = .91). We also construct an *index of negative treatment*, which is the average of three questions (α= .83) that ask respondents to rate how often, because of their race, they perceive that others dislike them, treat them unfairly, or treat their friends unfairly (where 1 = never and 4 = often), as well as two measures that tap negative aspects of relationships with friends and family. First, our measure of *negative social support* is an averaged index based on four questions that ask how frequently friends and family argue with and make too many demands on the respondent (where 1 = less than once a month and 5 = almost every day; α = .69). Second, *family cultural conflict* is an averaged index (α = .76) based on five questions addressing issues of cultural and intergenerational conflict between respondents and their families (e.g., arguments over different customs), where 1 = hardly ever or never, 2 = sometimes, and 3 = often.

We also control for multiple measures of social networks and support, including *marital status* (1 = married or cohabiting, 0 = otherwise), the *number of adults and children living in the*

household, and the frequency of *attendance at religious services* (where 1 = never and 5 = more than once a week). Additionally, we construct an index of *neighborhood trust*, which is the average of seven questions ($\alpha = .81$) about perceptions of neighborhood safety and social cohesion (e.g., how safe the respondent feels being out alone in his or her neighborhood at night, whether people in the neighborhood can be trusted), where 1 = not at all true and 4 = very true. *Positive social support* is constructed from six questions ($\alpha = .73$) that gauge the availability of support from friends and family (e.g., how much they can rely on relatives they don't live with if they have a serious problem), where 1 = less than once a month and 5 = almost every day. *Family cohesion* is constructed from 10 questions ($\alpha = .93$) that gauge family closeness and communication (e.g., family members like to spend free time with each other, family members feel very close to each other), where 1 = hardly ever or never, 2 = sometimes, and 3 = often.

Last, we control for health behaviors and medical care access and use. This includes three dummy variables for *smoking status* (current smoker, former smoker, and never smoked), and *heavy drinkin*g, defined as two or more drinks per day for women, and three or more drinks per day for men (USDHHS 2005). For medical care, we include three dummy variables for *health insurance status*, contrasting adults who (a) are uninsured against (b) adults who report that they only have private health insurance, and (c) adults who report that they have some type of public health insurance (e.g., Medicaid). We also include a measure of whether respondents have a *regular medical doctor* who they usually visit for routine medical care (1 = yes, 0 = no), and the *number of visits last year for a routine physical check-up*.

Method of Analysis

All analyses were run using the STATA 11.0 software package. We utilized Taylor-series-approximate methods with SVY commands to adjust for the complex sample design of the

NLAAS. All analyses are also weighted with the final sampling weight. We begin by presenting sample characteristics for foreign-born adults, followed by OLS regression models predicting self-rated physical and mental health for both Latino and Asian American adults, focusing on the role of English and Spanish/Asian language proficiency in predicting self-rated health, and how this differs across Latino and Asian ethnic groups. We also tested two different specifications for our self-rated health measures: logistic models with dichotomous outcomes for both "excellent/good health" and "fair/poor health," to test differences based on a threshold for health status (high or low). We also specified ordinal logit models. In all cases – across outcomes and ethnic groups – results were virtually identical, so here we only present OLS model results.

RESULTS

Weighted NLAAS sample characteristics by ethnic subgroup, and bivariate tests for differences, are displayed in Table 1. First we see that among Asians, those from "other" Asian countries and the Philippines have the highest self-rated physical and mental health; while among Latinos, those from "other" Latin American countries and Cuba have the highest self-rated physical and mental health. We also notice significant differences in English and native-language measures, such that among Asians, Filipinos report the strongest English, while Vietnamese report the weakest. Chinese immigrants report the weakest native-language skills, while those from other Asian countries report the highest. Among Latinos, Mexicans report the weakest English, while Puerto Ricans—as expected—report the strongest English; and Cubans report the highest Spanish skills, while Mexicans and Puerto Ricans report the lowest.

---Table 1 about here---

We also see large differences by SES for the immigrant groups, illustrating the diversity in experience – within panethnic groups – faced by different groups when they migrate to the

U.S. Among Asians, Vietnamese have the lowest education level, and over one-third (37.6%) live in poverty, while Filipino and other Asians report the highest relative incomes. Among Latinos, Mexicans have much lower education levels compared to all other groups, and just over half report incomes below the poverty line, while Puerto Ricans report the highest relative incomes. Only small differences in employment emerge across groups, with approximately two-thirds of all respondents employed, with slightly lower proportions for Vietnamese, Other Asian, and Puerto Rican immigrants. Filipino and Vietnamese immigrants report living in larger households and have higher levels of neighborhood trust, positive social support, positive family support, positive family cohesion, and church attendance compared to the Chinese. Compared to Mexicans, all other Latinos report smaller household sizes, and Cubans report higher levels of neighborhood trust, positive social support, and positive family cohesion.

Regression Models: Self-Rated Physical Health

We next present results for OLS regression models predicting self-rated physical health among Asians (Table 2a) and Latinos (Table 2b). We show a series of six step-wise models in order to assess the direct effects of language use and proficiency on health, and the mediating roles of the measures described above and listed in Table 1. The final model includes all measures, as well as interaction terms to test whether the observed relationships between language proficiency and self-rated health differ by country of origin.

---Table 2a about here---

In Model 1 in Table 2a, we see that compared to Chinese immigrants, Filipinos, Vietnamese, and other Asians all report better SRPH. As hypothesized, higher scores on the English proficiency scale are significantly associated with better SRPH. In Model 2, we test the association between Asian language proficiency and SRPH, and see that on its own, it is not a

significant predictor of SRPH for Asians. Note, however, that adding this measure causes interesting changes in the country of origin coefficients, indicating potential interaction effects between country of origin and Asian language proficiency for SRPH. In Model 3, we include both language proficiency measures, and see that once we control for both, each is significant, with higher levels of proficiency benefiting SRPH -- suggesting that without accounting for English proficiency, there was a suppression effect for Asian language proficiency.

In Model 4, we add our SES and acculturation measures, and see very little mediation of the language proficiency measures, suggesting that for Asian immigrants, language proficiency benefits to SRPH are not driven by either SES or acculturation. In Model 5, we again see little evidence of mediation of either language proficiency association when measures of stress and discrimination, social networks and support, and health behaviors and access to care are added. Only one measure of social support—number of people in household—is significant, with respondents living in larger households reporting better SRPH.

Finally, in the full model (Model 6), which adds interaction terms between country of origin and Asian proficiency (interaction terms between country of origin and English proficiency were non-significant), we do see mediation of the Asian proficiency association. Indeed, much of the effect on SRPH was driven by Vietnamese immigrants, for whom proficiency in Vietnamese is a strong, positive predictor of better self-rated physical health. This relationship is depicted in Figure 1 (note that the association for Filipinos approaches significance, in the same direction as for Vietnamese immigrants). Thus, we find evidence to support our hypothesis that retaining proficiency in one's home language is supportive of better self-rated physical health, but only for Vietnamese immigrants. Finally, even after accounting for

the country of origin and Asian language proficiency interaction, we see a strong, positive association between English language proficiency and better SRPH across all ethnic groups.

---Figure 1 about here---

Next we turn to results from the models predicting SRPH for Latino immigrants, in Table 2b. In the first three models, we see that relative to Mexicans, Cubans, and to a much lesser extent "other" Latin Americans, report better SRPH, while Puerto Ricans do not significantly differ from Mexicans. English proficiency also has a significant, positive association with SRPH among Latinos, very similar to the magnitude of the effect for Asians. We also see in Model 2 that Spanish proficiency is positively associated with SRPH among Latinos. When we include both language measures, both are significant predictors of better SRPH and Cubans remain significantly more likely to report better SRPH compared to Mexicans. When we add SES and acculturation measures in Model 4, we see significant mediation for English proficiency—although it remains a significant predictor of better SRPH—but virtually no mediation of Spanish proficiency. Additional analysis (not shown) demonstrates that this mediation is due to measures of SES, not acculturation, and that Latino immigrants who report higher relative incomes as well as those who are employed report better SRPH. In Model 5 we add all other explanatory factors, including measures of stress and discrimination, social networks and support, and health behaviors and access to care; none significantly mediate the relationships between English and Spanish language proficiency and SRPH. Finally, in Model 6 we add interaction terms to explore the relationship among English language proficiency, country of origin, and SRPH (in results not shown, we also tested terms interacting Spanish proficiency with country of origin and interaction of our two language measures, but none were significant).

--- Table 2b and Figure 2about here ---

As shown in Figure 2, the relationship between English proficiency and SRPH depends on country of origin, as Puerto Ricans gain a stronger advantage in SRPH relative to the other Latino groups with stronger English skills. Also note in Model 6 that Cubans retain their strong SRPH advantage relative to Mexican immigrants, even after accounting for various explanatory factors such as SES and stress and discrimination.

Regression Models: Self-Rated Mental Health

---Table 3a about here---

Next we turn to results from our models predicting self-rated mental health, presented in Table 3a. Similar to the results found for physical health, Filipino, Vietnamese, and other Asians all enjoy a mental health advantage compared to Chinese immigrants. We also see that English proficiency has a strong, positive association with SRMH. In Model 2, when we substitute Asian language proficiency for English proficiency, we see that Asians who are more fluent in their native language report better SRMH. In Model 3, we note that both language proficiency measures retain significance as predictors of SRMH, and also that the country of origin effects for the Philippines and for Other Asian Countries are mediated by language proficiency.

SES and acculturation measures in Model 4 appear to significantly mediate the relationship between English proficiency and SRMH, but have a smaller effect on Asian language proficiency; however, both language measures remain strong, significant predictors of better mental health. Additional models (not shown) demonstrate that the mediation effect comes chiefly from SES measures, similar to the results for SRPH. In the full model, we see no evidence of additional mediation for either language measure, although positive family cohesion is a strong, positive predictor of better SRMH. We tested for interaction terms between both language measures and country of origin; none were significant.

---Table 3b about here---

Finally, we turn to results predicting SRMH for Latino immigrants. Here we see that English proficiency is a strong, positive predictor of SRMH for Latinos, as is Spanish proficiency (Model 2). Interestingly, in Model 2 gender becomes a significant, negative predictor of SRMH, such that women report worse mental health compared to men when we control for Spanish language ability. When both language measures are included in Model 3, the gender effect remains significant and negative. Unlike for SRPH, we see no evidence of significant mediation for either language measure when we add indicators of acculturation and SES status. In the full model we again see no mediation for either language measure; in fact, the coefficient for English proficiency increases slightly when we control for stress and discrimination, social networks and support, and health behaviors and access to care. Negative social support and negative family cohesion are negatively associated with SRMH, while positive social support is positively associated with SRMH; however, none of these indicators appear to explain the relationships between English and Spanish proficiency and mental health. Interaction tests between both language measures and country of origin were not significant.

DISCUSSION

Our results clearly demonstrate the strong connections between English and native-language proficiency and both physical and mental self-rated health for Latino and Asian immigrants, and results were robust across multiple model specifications. We find no evidence, however, that the effects of language proficiency on health are due to social or familial support, and minimal evidence that socioeconomic status mediates the relationship between language and physical and mental health. Similarly, we find no evidence that acculturation, stress, discrimination, or health behaviors account for this relationship. Finally, we find large

differences by country of origin for the relationships between language proficiency and self-rated physical health, but interestingly not for self-rated mental health. In particular, we find evidence that the language-health relationship *differs* by ethnic group only for Vietnamese and Puerto Rican immigrants (relative to Chinese and Mexican immigrants, respectively).

Our most striking finding is that none of the mechanisms which have been hypothesized to be responsible for the effects of language on health—acculturation, familial and social support, stress and discrimination, and health behaviors—had any significant mediating effects in our models. We did see some mediation by SES on the effects of English ability for Latino physical health; however, English proficiency remained significant throughout these models, and thus SES appears to explain only a small part of the language-health relationship. Clearly, our language measures are tapping into something important which we are not measuring in this study. It is conceivable that strong proficiency in both languages reflects a 'cultural flexibility' which allows bilingual immigrants to more easily navigate the culture of sending and receiving countries, which translates into better self-rated health. Future research interested in unpacking this relationship should identify the unique cultural and linguistic skills of bilingual immigrants which may shape their physical and mental health statuses.

Nevertheless, we do find interesting country of origin effects. Among Asians, initial results indicate that all groups—Filipinos, Vietnamese, and other Asians—report significantly better self-rated physical and mental health statuses compared to Chinese immigrants, but that most of the ethnic group differences are attenuated by control measures. Among Latinos, initially both Cubans and other Latin Americans have significant physical and mental health advantages over Mexican immigrants, and in the final models Cubans maintain their physical health advantage while other Latin Americans maintain their mental health advantage (compared to

Mexicans). We speculate that this may be due to these two groups' opposite contexts of reception. Cuban refugees have historically been welcomed and provided with special government services while Mexican immigrants are often targeted in deportation raids, and this may help explain differences in health status. In other words, because their contexts of reception are so disparate, the health disparities among these two groups persist regardless of English or Spanish language ability. However, our data do not allow us to investigate which aspects of country of origin or the context of incorporation may be driving these findings; future research should examine which factors of nationality impact the language-self-rated health relationship.

Across all groups, we see positive physical and mental health effects for both language measures. As hypothesized, for Asians, Vietnamese immigrants appear to drive a large part of the effect of native-language proficiency on physical health, which is likely due to the concentrated nature of Vietnamese immigrant communities, where maintaining strong ethnic ties, including language skills, is highly valued (Zhou and Bankston 1994). However, we also see a positive (and nearly significant) physical health effect for Filipinos, which is more difficult to explain, as Filipinos in the U.S. tend to live in more dispersed communities (Portes and Rumbaut 2001); however, we speculate that Filipinos may benefit from native-language maintenance because it facilitates ties to friends and relatives in the Philippines not captured with our measures.

Finally, across all ethnic groups, we do not see evidence of differential language effects by country of origin on self-rated mental health. This is somewhat surprising as we expected mental health to be more sensitive to social and cultural conditions which may vary by language proficiency and country of origin. We speculate that the strong social desirability to avoid admission of mental health problems (Zhang and Ta 2009) may override the more nuanced

differences in mental health status among language proficiency and ethnicity that we had expected to find. Our work requires replication with more objective mental health outcomes in order to explore this finding further.

There are some limitations to our study. First, with cross-sectional data we cannot employ longitudinal measures of language proficiency and health status. Additionally, we do not have indicators of respondents' satisfaction with their health care, including whether they have experienced language barriers/translation issues, nor any indication of the quality of care individuals have received, and these factors may help explain the language-SRH relationships we find. Finally, while we believe that our scaled measures of English and Asian/Spanish language proficiency and use offer a significant improvement over simply using the language of interview or language used in the household, we do acknowledge that our measures are based on self-reported fluency and context of use, and that these measures may be biased (Ayers 2010; Akresh and Frank 2010). Despite these limitations, we are confident that our study makes a contribution to the literature by clearly demonstrating that scholars cannot explain away language effects via SES and social/family support differences; as well as further documenting the impact of language and culture on both the physical and mental health status of U.S. immigrants.

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Table 1. NLAAS Sample Characteristics: Percentages and Means (Standard Deviations)

	China	Philippines	Vietnam	Other Asian	Mexico	Puerto Rico	Cuba	Other Latin American
Self-Rated Health								
Physical health	3.1 (1.1)	3.6(1.2)***	3.3(2.0)	3.7(0.9)***	3.1(.7)	3.1(1.4)	3.4(2.2)**	3.4(.8)*
Mental health	3.5(1.2)	4.0(1.2)***	3.6(1.9)	4.2(0.9)***	3.5(.7)	3.6(1.2)	3.8(2.0)*	4.0(.8)***
Demographic Characteristics								
Female	54.5(.6)	57.0(.6)	54.2(.9)	50.2(.5)	45.2(.3)	47.5(.6)	48.2(.9)	54.0(.4)*
Age at interview	43.6(17.4)	46.7(21.1)	44.4(25.6)	37.9(13.1)***	35.8(7.7)	47.3(18.2)***	51.8(30.8)***	39.7(11.6)***
Language Measures								
English proficiency scale	-.27(.8)	.51(.7)***	-.62(1.1)***	.39(.4)***	-.58(.3)	-.12(.7)***	-.44(1.1)*	-.31(.5)***
Asian/Spanish proficiency scale	.08(1.1)	.18(1.2)	.30(1.4)*	.37(.8)***	.05(.5)	.04(.9)	.31(1.2)***	.23(.6)**
Acculturation Status								
Age at migration 18+	78.4(.5)	76.4(.6)	80.2(.7)	73.4(.4)	56.5(.3)	47.7(.6)*	74.4(.8)***	66.6(.4)*
How often visited county of origin	2.2(1.1)	2.4(1.3)*	1.8(1.5)***	2.3(1.0)	2.3(.6)	2.8(1.0)***	1.5(1.5)***	2.5(.8)
Remits money to relatives	35.7(.6)	64.6(.6)***	63.7(.8)***	33.7(.4)	43.1(.3)	16.2(.4)***	40.4(.9)	48.6(.4)
Migrated to U.S. voluntarily	69.5(.6)	68.4(.6)	83.0(.6)***	72.6(.4)	72.6(.3)	72.8(.5)	32.5(.9)***	67.3(.4)
Socioeconomic Status								
Education								
< high school	21.9(.5)	14.6(.5)	35.2(.8)***	9.9(.3)***	68.1(.3)	44.3(.6)***	33.7(.9)***	38.6(.4)***
High school graduate	17.4(.5)	14.8(.5)	20.6(.7)	13.5(.3)	19.2(.3)	22.6(.5)	25.9(.8)***	19.7(.3)
Any college	60.7(.6)	70.6(.6)	44.2(.9)**	76.6(.4)***	12.7(.2)	33.1(.5)***	40.4(.9)***	41.7(.4)***
Poor	27.0(.5)	13.8(.4)***	37.6(.8)**	18.0(.4)*	52.0(.3)	33.2(.5)***	35.6(.9)**	33.8(.4)***
Relative income	5.4(2.4)	6.2(2.1)***	5.0(3.8)	6.2(1.7)***	5.2(1.3)	5.9(2.3)**	5.5(3.9)	5.4(1.5)
Employed	65.3(.6)	66.1(.6)	62.0(.8)*	61.2(.5)*	64.8(.3)	53.0(.6)*	57.3(.9)	66.8(.4)
Extent doesn't have enough $ to meet needs	2.0(.8)	2.1(.7)	2.1(.9)	2.1(.6)	2.4(.3)	2.4(.6)	2.4(1.1)	2.4(.5)
Stress and Discrimination								
Acculturative stress	2.1(2.2)	1.2(1.8)***	1.8(2.5)	1.9(1.6)	2.9(1.5)	1.5(1.7)***	1.9(3.0)***	2.3(1.5)***
Frequency of discriminatory experiences	1.1(1.1)	1.4(1.3)*	1.1(1.4)	1.3(.9)*	1.2(.6)	1.2(1.2)	1.0(1.2)**	1.1(.7)
Frequency of negative treatment	1.9(.8)	1.7(.9)***	1.6(1.2)***	1.8(.7)	1.9(.5)	2.1(.9)*	1.6(1.3)***	1.7(.6)
Negative social support	1.7(.6)	2.0(.7)***	1.5(.9)***	1.8(.5)	1.7(.4)	1.7(.7)	1.6(1.1)*	1.7(.5)
Negative family cohesion	1.3(.4)	1.3(.5)	1.2(.6)*	1.4(.3)	1.3(.2)	1.3(.4)	1.2(.7)*	1.2(.3)
Social Networks and Support								
Married/Cohabitating	74.3(.5)	77.4(.5)	75.8(.7)	72.0(.4)	76.0(.3)	59.1(.6)***	65.0(.9)**	64.0(.4)***
Number of people in household	2.7(1.7)	3.2(2.3)***	3.5(2.7)***	2.7(1.4)	3.5(1.2)	2.4(1.5)***	2.5(2.4)***	2.8(1.3)***
Neighborhood trust	3.2(.5)	3.3(.6)***	3.4(.9)***	3.2(.5)	3.0(.4)	3.0(.8)	3.3(1.0)***	3.0(.5)
Positive social support	2.4(.8)	2.7(1.0)***	2.0(1.2)***	2.7(.6)***	2.5(.5)	2.7(.7)***	2.9(1.3)***	2.6(.6)
Positive family cohesion	3.6(.6)	3.8(.5)***	3.8(.7)***	3.7(.4)***	3.6(.3)	3.6(.6)	3.8(.7)***	3.7(.4)*
Attendance at religious services	1.7(.1)	3.4(.2)***	2.6(2.2)***	2.7(1.3)***	2.8(.8)	2.7(1.6)	2.2(2.3)***	2.8(1.1)
Health Behaviors and Access to Care								
Health insurance status								
Uninsured	15.7(.4)	11.5(.4)	18.3(.7)	13.0(.3)	56.0(.3)	13.7(.4)***	24.9(.8)***	30.4(.4)***
Only private insurance	57.4(.6)	66.2(.6)	46.6(.9)*	61.8(.5)	29.0(.3)	44.1(.6)**	33.3(.9)	47.1(.4)***
Any public insurance	26.9(.5)	22.4(.5)	35.1(.8)	25.2(.4)	15.0(.2)	42.2(.6)***	41.9(.9)***	22.5(.3)
Has a regular doctor	67.5(.6)	71.6(.6)	64.9(.8)	64.4(.5)	40.4(.3)	83.4(.4)***	70.1(.8)***	62.1(.4)***
Number of routine doctor's visits in past year	1.8(3.8)	2.3(4.1)	2.7(9.4)*	2.2(3.4)	1.5(2.0)	3.0(7.6)**	2.3(7.2)**	1.9(3.1)
Smoking status								
Never smoked	79.9(.5)	65.0(.6)***	71.1(.8)**	73.5(.4)	67.8(.3)	50.8(.6)***	58.1(.9)*	69.8(.4)
Current smoker	9.6(.4)	13.2(.4)	15.3(.6)*	15.1(.3)	14.7(.2)	19.4(.4)	18.8(.7)	12.5(.3)
Former smoker	10.5(.4)	21.8(.5)***	13.5(.6)	11.5(.3)	17.4(.2)	29.9(.5)***	23.1(.8)	17.6(.3)
Current heavy drinker	2.9(.2)	12.1(.4)***	3.4(.31)	5.3(.2)	20.4(.3)	21.7(.5)	17.8(.7)	17.2(.3)
Sample Size	472	349	501	315	486	217	501	423

NOTE: *p ≤ .05, **p ≤ .01, ***p ≤ .001 (two-tailed test, relative to Chinese for Asian respondents, and relative to Mexicans for Latino respondents).

Table 2a. Unstandardized Coefficients and (Standard Errors) from OLS Regression Models among Foreign-Born Asian Adults, Predicting Self-Rated Physical Health

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Demographic Characteristics						
Female	-.09(.07)	-.11(.06)	-.10(.07)	-.10(.07)	-.14(.08)	-.14(.08)
Age at interview	-.01(.00)***	-.02(.07)***	-.01(.00)***	-.01(.00)***	-.01(.00)***	-.01(.00)***
Country of Origin (ref: China)						
Philippines	.25(.09)**	.51(.07)***	.20(.08)*	.18(.07)*	.13(.11)	.13(.11)
Vietnam	.27(.07)***	.15(.07)*	.26(.07)***	.23(.08)**	.16(.10)	.12(.09)
Other Asian Countries	.30(.08)***	.46(.08)***	.23(.08)**	.27(.09)**	.25(.10)*	.28(.10)**
Language Measures						
English proficiency scale	.32(.06)***		.37(.06)***	.35(.06)***	.34(06)***	.34(.06)***
Asian proficiency scale		.08(.04)	.13(.04)***	.11(.04)**	.11(.04)**	.07(.05)
Acculturation Status						
Age at migration 18+				.02(.09)	.03(.08)	.04(.08)
How often visited county of origin				-.01(.03)	-.01(.03)	-.01(.03)
Remits money to relatives				.10(.06)	.09(.06)	.08(.06)
Migrated to U.S. voluntarily				.09(.07)	.06(.07)	.05(.07)
Socioeconomic Status						
Education (ref: < high school)						
High school graduate				-.15(.11)	-.11(.11)	-.12(.11)
Any college				-.21(.10)*	-.16(.09)	-.16(.09)
Poor				-.01(.09)	-.02(.09)	-.02(.09)
Relative income				.06(.02)**	.04(.02)*	.04(.02)*
Employed				.08(.05)	.06(.05)	.05(.05)
Extent doesn't have enough $ to meet needs				-.20(.04)***	-.17(.04)***	-.18(.04)***
Stress and Discrimination						
Acculturative stress					-.01(.02)	-.01(.02)
Frequency of discriminatory experiences					-.03(.03)	-.02(.03)
Frequency of negative treatment					-.09(.06)	-.09(.06)
Negative social support					-.03(.05)	-.04(.05)
Negative family cohesion					.01(.09)	.02(.09)
Social Networks and Support						
Married/Cohabitating					-.07(.07)	-.07(.08)
Number of people in household					.05(.03)*	.05(.02)
Neighborhood trust					.08(.07)	.07(.07)
Positive social support					.03(.06)	.02(.06)
Positive family cohesion					.13(.08)	.13(.08)
Attendance at religious services					-.01(.03)	-.01(.03)
Health Behaviors and Access to Care						
Health insurance status (ref: uninsured)						
Only private insurance					.18(.07)*	.19(.07)**
Any public insurance					.12(.10)	.13(.10)
Has a regular doctor					-.03(.07)	-.04(.07)
Number of routine doctor's visits in past year					-.02(.01)*	-.02(.01)*
Smoking status (ref: Never smoked)						
Current smoker					-.02(.09)	-.03(.09)
Former smoker					-.15(.08)*	-.15(.08)
Current heavy drinker					.11(.10)	.12(.10)
Interaction Terms						
Country of Origin*Asian proficiency scale						
Philippines*Asian proficiency						.10(.07)
Vietnam*Asian proficiency						.20(.06)**
Other Asia*Asian proficiency						-.05(.07)
R^2	.14	.12	.15	.19	.22	.23

NOTE: *p ≤ .05, **p ≤ .01, ***p ≤ .001 (two-tailed test). N=1637

Table 2b. Unstandardized Coefficients and (Standard Errors) from OLS Regression Models among Foreign-Born Latino Adults, Predicting Self-Rated Physical Health

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Demographic Characteristics						
Female	-.27(.07)***	-.34(.07)***	-.31(.07)***	-.25(.07)***	-.19(.07)**	-.21(.07)**
Age at interview	-.01(.00)***	-.02(.00)***	-.01(.00)***	-.01(.00)***	-.01(.00)***	-.01(.00)***
Country of Origin (ref: Mexico)						
Puerto Rico (Island)	-.06(.11)	.13(.10)	-.06(.10)	-.06(.10)	-.03(.09)	.01(.10)
Cuba	.44(.08)***	.46(.09)***	.37(.08)***	.41(.08)***	.43(.07)***	.41(.10)***
Other Latin American Countries	.23(.09)*	.30(.08)***	.20(.09)*	.20(.10)	.21(.08)**	.15(.10)
Language Measures						
English proficiency scale	.36(.05)***		.34(.05)***	.24(.09)**	.26(.09)**	.27(.12)*
Spanish proficiency scale		.24(.03)***	.22(.03)***	.19(.04)***	.16(.04)***	.16(.04)***
Acculturation Status						
Age at migration 18+				.01(.10)	.01(.11)	.01(.11)
How often visited county of origin				.00(.04)	.01(.04)	.01(.04)
Remits money to relatives				-.06(.10)	-.05(.08)	-.06(.09)
Migrated to U.S. voluntarily				.11(.07)	.09(.07)	.09(.07)
Socioeconomic Status						
Education (ref: < high school)						
High school graduate				.06(.08)	.07(.08)	.07(.08)
Any college				.06(.08)	.07(.08)	.09(.08)
Poor				.02(.08)	.04(.07)	.04(.07)
Relative income				.04(.01)**	.03(.01)*	.04(.01)**
Employed				.23(.08)**	.18(.09)	.17(.10)
Extent doesn't have enough $ to meet needs				-.06(.06)	-.04(.06)	-.04(.06)
Stress and Discrimination						
Acculturative stress					-.02(.02)	-.02(.02)
Frequency of discriminatory experiences					.10(.03)**	.10(.03)**
Frequency of negative treatment					.08(.05)	.08(.05)
Negative social support					-.19(.06)***	-.19(.06)**
Negative family cohesion					.01(.15)	.02(.15)
Social Networks and Support						
Married/Cohabitating					-.03(.07)	-.02(.07)
Number of people in household					.04(.02)*	.04(.02)*
Neighborhood trust					-.02(.06)	-.02(.06)
Positive social support					.15(.04)***	.14(.04)***
Positive family cohesion					.12(.08)	.13(.07)
Attendance at religious services					.04(.03)	.05(.03)
Health Behaviors and Access to Care						
Health insurance status (ref: uninsured)						
Only private insurance					.22(.11)*	.22(.11)*
Any public insurance					.03(.10)	.04(.10)
Has a regular doctor					-.21(.07)**	-.20(.07)**
Number of routine doctor's visits in past year					-.01(.01)	-.01(.01)
Smoking status (ref: Never smoked)						
Current smoker					.09(.08)	.08(.08)
Former smoker					-.02(.09)	-.02(.09)
Current heavy drinker					.01(.09)	.03(.09)
Interaction Terms						
Country of Origin*English proficiency scale						
Puerto Rico*English proficiency						.41(.12)***
Cuba*English proficiency						-.03(.12)
Other Latin America*English proficiency						-.17(.12)
R^2	.11	.10	.13	.15	.19	.20

NOTE: *p ≤ .05, **p ≤ .01, ***p ≤ .001 (two-tailed test). N=1627.

Table 3a. Unstandardized Coefficients and (Standard Errors) from OLS Regression Models among Foreign-Born Asian Adults, Predicting Self-Rated Mental Health

	Model 1	Model 2	Model 3	Model 4	Model 5
Demographic Characteristics					
Female	-.18(.07)*	-.20(.07)**	-.18(.07)*	-.18(.08)*	-.24(.09)**
Age at interview	-.01(.00)*	-.01(.00)***	-.01(.00)*	-.00(.00)*	-.01(.00)*
Country of Origin (ref: China)					
Philippines	.24(.11)*	.56(.09)***	.16(.10)	.19(.09)*	.08(.12)
Vietnam	.25(.06)***	.08(.06)	.23(.06)***	.21(.07)**	.12(.08)
Other Asian Countries	.39(.08)***	.57(.07)***	.27(.06)***	.34(.07)***	.25(.08)**
Language Measures					
English proficiency scale	.40(.07)***		.48(.06)***	.38(.06)***	.36(.06)***
Asian proficiency scale		.15(.04)***	.22(.03)***	.18(.04)***	.16(.04)***
Acculturation Status					
Age at migration 18+				-.02(.07)	-.04(.07)
How often visited county of origin				-.02(.03)	-.02(.03)
Remits money to relatives				.05(.06)	.02(.06)
Migrated to U.S. voluntarily				.09(.08)	.06(.08)
Socioeconomic Status					
Education (ref: < high school)					
High school graduate				-.08(.12)	-.05(.12)
Any college				-.01(.11)	.00(.11)
Poor				.03(.08)	.06(.08)
Relative income				.06(.02)***	.05(.02)**
Employed				.10(.06)	.08(.06)
Extent doesn't have enough $ to meet needs				-.19(.05)***	-.16(.06)**
Stress and Discrimination					
Acculturative stress					-.03(.02)
Frequency of discriminatory experiences					.00(.03)
Frequency of negative treatment					-.06(.05)
Negative social support					.05(.05)
Negative family cohesion					.04(.08)
Social Networks and Support					
Married/Cohabitating					-.01(.07)
Number of people in household					.01(.02)
Neighborhood trust					.05(.08)
Positive social support					.01(.05)
Positive family cohesion					.28(.08)***
Attendance at religious services					.05(.03)
Health Behaviors and Access to Care					
Health insurance status (ref: uninsured)					
Only private insurance					.17(.11)
Any public insurance					.10(.11)
Has a regular doctor					-.02(.07)
Number of routine doctor's visits in past year					-.01(.01)
Smoking status (ref: Never smoked)					
Current smoker					-.11(.09)
Former smoker					-.18(.09)
Current heavy drinker					-.12(.08)
R^2	.16	.14	.20	.23	.26

NOTE: *p ≤ .05, **p ≤ .01, ***p ≤ .001 (two-tailed test). N=1637.

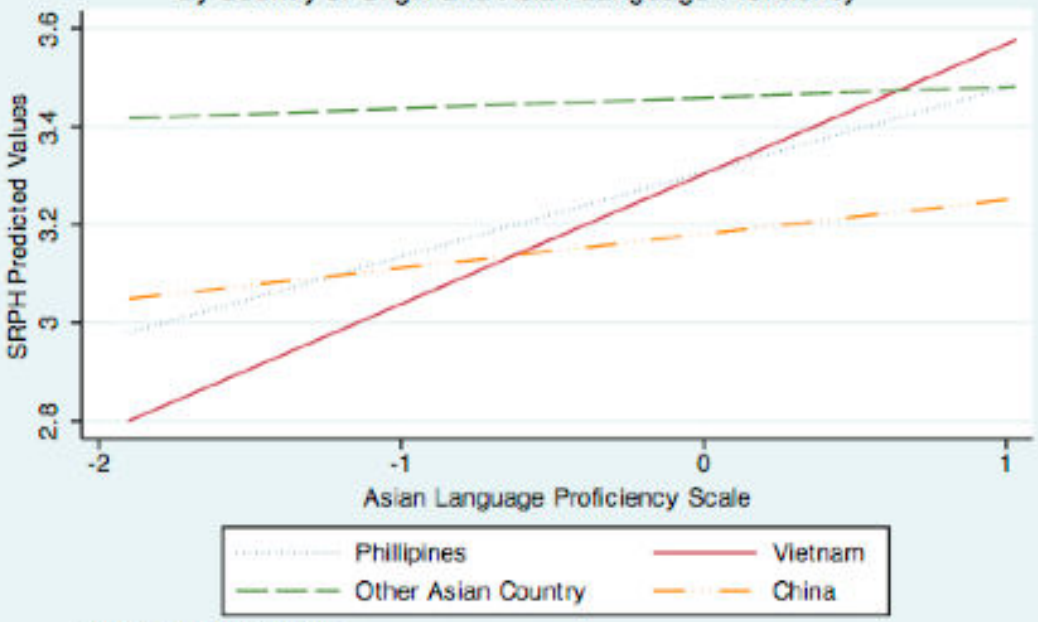
Table 3b. Unstandardized Coefficients and (Standard Errors) from OLS Regression Models among Foreign-Born Latino Adults, Predicting Self-Rated Mental Health

	Model 1	Model 2	Model 3	Model 4	Model 5
Demographic Characteristics					
Female	-.09(.06)	-.19(.07)**	-.15(.07)*	-.11(.07)	-.10(.06)
Age at interview	-.00(.00)	-.00(.00)	-.00(.00)	-.00(.00)	-.00(.00)
Country of Origin (ref: Mexico)					
Puerto Rico (Island)	-.09(.11)	.16(.10)	-.08(.10)	-.09(.09)	-.09(.10)
Cuban	.21(.09)*	.24(.10)*	.13(.08)	.11(.10)	.05(.10)
Other Latin American Countries	.33(.09)***	.42(.08)***	.29(.08)***	.25(.09)**	.21(.08)*
Language Measures					
English proficiency scale	.45(.05)***		.42(.04)***	.41(.05)***	.49(.05)***
Spanish proficiency scale		.31(.05)***	.29(.04)***	.26(.05)***	.24(.04)***
Acculturation Status					
Age at migration 18+				.18(.08)*	.17(.09)
How often visited county of origin				-.01(.03)	-.00(.03)
Remits money to relatives				-.10(.07)	-.09(.06)
Migrated to U.S. voluntarily				.08(.07)	.03(.07)
Socioeconomic Status					
Education (ref: < high school)					
High school graduate				.05(.09)	.05(.09)
Any college				.10(.09)	.11(.09)
Poor				-.01(.06)	-.01(.06)
Relative income				.02(.01)	.01(.01)
Employed				.17(.07)*	.16(.07)*
Extent doesn't have enough $ to meet needs				-.01(.07)	.02(.07)
Stress and Discrimination					
Acculturative stress					.01(.02)
Frequency of discriminatory experiences					.00(.04)
Frequency of negative treatment					-.00(.06)
Negative social support					-.16(.06)*
Negative family cohesion					-.30(.12)*
Social Networks and Support					
Married/Cohabitating					.02(.07)
Number of people in household					.01(.02)
Neighborhood trust					-.08(.05)
Positive social support					.15(.03)***
Positive family cohesion					.10(.08)
Attendance at religious services					.03(.02)
Health Behaviors and Access to Care					
Health insurance status (ref: uninsured)					
Only private insurance					.19(.08)*
Any public insurance					.25(.07)***
Has a regular doctor					-.13(.06)*
Number of routine doctor's visits in past year					-.01(.01)
Smoking status (ref: Never smoked)					
Current smoker					-.01(.11)
Former smoker					-.15(.09)
Current heavy drinker					.01(.10)
R^2	.10	.09	.14	.15	.20

NOTE: *p ≤ .05, **p ≤ .01, ***p ≤ .001 (two-tailed test). N=1627.

Figure 1. SRPH among Asian Adults

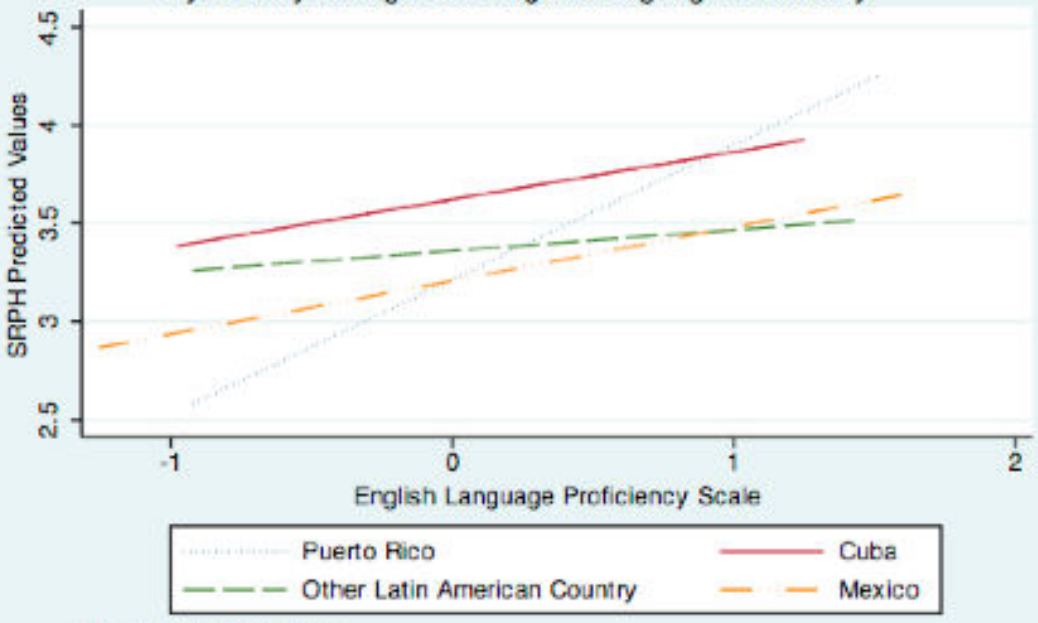
By Country of Origin and Asian Language Proficiency



Based on Model 6, Table 2a

Figure 2. SRPH among Latino Adults

By Country of Origin and English Language Proficiency



Based on Model 6, Table 2b