

English Proficiency and Language Preference: Testing the Equivalence of Two Measures

Gilbert C. Gee, PhD, Katrina M. Walsemann, PhD, MPH, and David T. Takeuchi, PhD

Despite the popularity of language as a correlate of morbidity, no clear consensus exists about its meaning or measurement. Two overlapping perspectives influence research in this area. The first perspective posits that language is a proxy for acculturation.¹ A common assumption is that acculturation represents immigrants' incorporation of the host society's norms, a perspective sometimes known as the unilinear view. For example, Suarez and Pulley argued that "acculturation is the adoption of attitudes, values, and behaviors (including language ability) of the dominant . . . culture."^{2(p44)} In this sense, language reflects a broad concept that signifies a fundamental evolution in one's way of thinking and acting.³ Language clearly plays a key role in how researchers operationalize acculturation. Zane and Mak found that 18 of 21 acculturation scales measured language, yet only 8 measured cultural traditions and only 5 measured cultural values.⁴

According to the second perspective, language may be viewed more narrowly as the ability to communicate, reflecting a skill that may or may not reflect one's culture. For example, English is an official language of the Philippines, Guyana, and England, yet few would argue that these countries share a unified culture. Hence, language may not completely mark cultural adoption, at least not in the ways commonly assumed in the literature.

These dual issues of English language proficiency and language preference are often considered as interchangeable concepts within public health. This is most clearly seen in scales that aggregate items pertaining to proficiency and preference.^{4,5} Yet there are important practical and theoretical reasons to disentangle these concepts. For instance, one person may adamantly prefer Vietnamese but still be highly proficient in English, whereas another person may prefer English but not be very fluent in it.

Further, proficiency and preference may influence health through different mechanisms. Poor English proficiency may restrict one's

employment opportunities, limit social interactions, increase experiences with discrimination, and impede access to services.⁶⁻⁹ Hence, English proficiency relates to one's skill with a tool (i.e., language) that may directly influence access to health care (e.g., communication between client and clinician) and potentially broader social determinants of illness (e.g., socioeconomic position).

Language preference is more ambiguous, reflecting one's underlying cultural values, social networks, political ideology, or construction of social identity.^{1,2,10} Preference for English may be influenced by English ability, but not necessarily. Three main viewpoints arise from the literature. The first contends that preference for English is an indicator of immigrants' adoption of unhealthy "American" lifestyles.^{11,12} For instance, Asian Americans who prefer to use English show higher odds of smoking and drinking than those who prefer Asian languages.¹³ The second viewpoint argues that preference for English marks greater acceptance of health-promoting practices, such as cancer screenings and physical activity.¹⁴⁻¹⁶ Thus, the first viewpoint predicts that greater English proficiency is associated with increased risk of illness

whereas the second predicts the opposite. The third viewpoint posits that English preference does not mark cultural adoption but rather proxies for English proficiency and barriers to access.¹⁷

The measurement of language preference and proficiency also varies across studies. Notably, studies are inconsistent in using language measures: some studies use them as continuous variables and others as categorical variables. Many prefer the categorical approach. For example, 1 study compared those who spoke English most often against those who spoke some other language most often.¹⁸ Another study created 3 categories, distinguishing between those who spoke only English, those who spoke English and another language equally, and those who spoke only another language.¹¹ Yet another study examined 5 categories.¹⁹ An advantage of the categorical approach is that the categories may be easily communicated and interpreted if reasonable cutpoints are used. For instance, the categorical variable "limited English proficiency," often defined as speaking English not well or not at all, conveys a clear and consistent meaning across studies.^{20,21}

Objectives. We examined the association of language proficiency vs language preference with self-rated health among Asian American immigrants. We also examined whether modeling preference or proficiency as continuous or categorical variables changed our inferences.

Methods. Data came from the 2002–2003 National Latino and Asian American Study (n=1639). We focused on participants' proficiency in speaking, reading, and writing English and on their language preference when thinking or speaking with family or friends. We examined the relation between language measures and self-rated health with ordered and binary logistic regression.

Results. All English proficiency measures were associated with self-rated health across all models. By contrast, associations between language preference and self-rated health varied by the model considered.

Conclusions. Although many studies create composite scores aggregated across measures of English proficiency and language preference, this practice may not always be conceptually or empirically warranted. (*Am J Public Health*. 2010;100:563–569. doi:10.2105/AJPH.2008.156976)

However, important information can be lost and statistical power diminished when continuous measures are categorized. These types of issues have been raised in many other contexts (e.g., continuous blood pressure readings vs clinical cutpoints of normal, high, or hypertensive; self-rated health as an ordinal or dichotomous variable).²² Further, single-item measures may be unreliable or inadequately represent all of the dimensions underlying language preference or English proficiency (i.e., low content validity). Some studies therefore prefer to use continuous items and scales.^{4,5,23} Finally, some studies create odd mixtures of continuous and categorical variables. For example, one study dichotomized 5 language items, summed them, and then turned the summed “scale” into 3 categories.²⁴ This heterogeneity raises questions about how researchers should model language items. Because the choice of modeling strategy is often constrained by the items available or the statistical distribution of the items, there should be no singular approach for all situations. However, it would be informative to examine how the choice of modeling may influence the conclusions reached regarding these language measures.

In this study, we investigated 2 major questions: (1) Are there advantages to disaggregating versus aggregating measures of English proficiency and language preference? (2) Do we draw similar conclusions if we use continuous measures versus categorical measures? We first examined individual questions related to English proficiency and language preference. We next created scales of these items. We then evaluated whether these measures performed similarly if we modeled them as continuous measures or as categorical measures. We tested how these language measures correlate with self-rated health. We focused on self-rated health because many studies have examined the relationship of proficiency versus preference with self-rated health^{20,21,24–26} and because self-rated health is often considered a useful marker of one’s overall health appraisal that often correlates with morbidity.^{27–30}

METHODS

We used data from the National Latino and Asian American Study (NLAAS), a multistage, stratified national probability sample of 2095

Asian American adults aged 18 years or older who were living in the United States in 2002 and 2003. A detailed description of the sampling design is available elsewhere.^{31,32} The response rate of the Asian subsample of the NLAAS was 65.6%. Surveys were conducted by trained bilingual interviewers in the participants’ choice of Cantonese, English, Mandarin, Spanish, Tagalog, or Vietnamese. We restricted our analyses to the Asian immigrant subsample (n=1639).

Measures

Self-rated health was measured by the following question: “How would you rate your overall physical health—excellent, very good, good, fair, or poor?” In the regression tables, we used this measure as a binary (0=fair or poor versus 1=excellent, very good, or good) and ordinal variable. Measures of self-rated health predict mortality, even after one accounts for clinical assessments or self-reports of medical conditions, in Asian and other populations.^{27–30}

English proficiency was measured with 3 separate items asking, “How well do you [speak/write/read] English?” Answers ranged from 1=poor to 4=excellent. We used proficiency as both a continuous and binary (0=poor or fair, 1=good or excellent) indicator.

Language preference included 3 items. Two questions asked, “What language do you speak with most of your [family/friends]?” A third question asked, “In what language do you think?” Response categories were 1=[non-English language] all of the time, 2=[non-English language] most of the time, 3=[non-English language] and English equally, 4=English most of the time, and 5=English all of the time. Higher scores indicated greater preference for English. Each item was first used as a continuous variable and then as dummy variables (English all or most of the time; English and another language equally; non-English language all or most of the time).

We also combined these items to create the English Proficiency Scale, the Language Preference Scale, and the Combined Scale, representing respectively the composite of the 3 English proficiency items, the 3 language preference items, and all 6 proficiency and language items. Higher scores indicated greater

English proficiency (range=1–4), greater preference for English (range=1–5), and greater proficiency in and preference for English (range=1–5), respectively. For these 3 scales, Cronbach α was 0.97, 0.89, and 0.92, respectively. An exploratory factor analysis indicated that the 6 items loaded on 2 factors that mirror the proficiency and preference scales.

Control variables were as follows. We included survey language, a binary variable that indicated whether the interview was conducted in English or in some other language. This measure was assessed to account for potential differences between various translations of the survey, such as slight differences in wording between the English and Cantonese versions. We included education because it may influence one’s proficiency with speech, reading, and writing, as well as exposure to other languages. As some participants may be embarrassed to admit they are illiterate even in their own language or because they believe it is prestigious to speak English, we included a 10-item social desirability instrument (0=no bias; 10=most bias) designed to assess biases in reporting that may arise from a desire to present oneself in a favorable manner.³³ Gender was included because of potential differences in communication styles between men and women. Age and number of years in the United States were included because older persons and those with more time in the country may have greater proficiency and preference for English. Asian ethnicity (Chinese, Filipino, Vietnamese, other Asian) was included because Asian countries differ in their use of English (e.g., Philippines versus China) or use of pictographs versus alphabet (e.g., China versus Vietnam). Finally, US region was included because patterns of ethnic settlement and availability of language services vary geographically.

Analyses

Our analyses began by exploring the unweighted correlations between measures to provide an initial examination of the patterns. We then used logistic regression to examine the associations between the language measures and poor self-rated health (0=fair or poor, 1=excellent, very good, or good), while controlling for covariates. We first examined the associations between the individual language measures and self-rated health. These

analyses modeled the language measures as continuous variables. We then replicated these analyses using the categorical variants of these same measures. For example, we first examined spoken English proficiency on the continuum of 1=poor to 4=excellent and then dichotomized this measure (0=fair or poor versus 1=good or excellent). After testing the individual items, we then tested the English Proficiency Scale, the Language Preference Scale, and the Combined Scale. We used sample weights and the SVY commands with Stata version 10.0 (StataCorp LP, College Station, Texas) to account for the complex sampling design of the NLAAS and to allow estimates be nationally representative. Although most studies model self-rated health as a binary variable,^{21,25} some model it as an ordinal variable.²⁶ We replicated the logistic regression analyses using ordered logistic to examine the robustness of our findings.

RESULTS

Table 1 summarizes the characteristics of the sample. Approximately 16% of participants reported fair or poor health. Mean participant age was 42.5 years. About half of participants were female and about 64% lived in the Western United States. Although 43% of respondents had more than 16 years of education, a substantial proportion (19%) had not completed 12 years of schooling. Participants averaged 2.4 on the social desirability scale and had lived in the United States for an average of 16 years.

Most participants reported proficiency in speaking, reading, or writing English. For example, 58.3% felt they had good or excellent proficiency in spoken English; however, 16.7% reported poor spoken English proficiency. Further, most participants preferred to speak an Asian language over English. For example, when speaking with their families, 48% preferred an Asian language all of the time, whereas only 6% preferred English all of the time. These patterns were similar regarding thinking or speaking with friends, although the differences were attenuated. For example, 21% preferred to speak an Asian language with their friends all of the time compared with 11% who preferred to speak English with their friends all of the time.

TABLE 1—Characteristics of Asian Immigrant Participants: National Latino and Asian American Study, 2002–2003

Characteristic	% or Mean (SE)
Fair or poor self-rated health	15.8
Female	53.5
Region	
Northeast	18.8
Midwest	9.0
South	8.5
West	63.6
Asian ethnicity	
Chinese	16.3
Filipino	19.7
Vietnamese	30.4
Other ^a	33.5
Years of education	
< 12	18.7
12–15	38.2
≥16	43.1
Interviewed in English	63.5
Years in United States	16.1 (0.59)
Social desirability	2.4 (0.09)
Age, y	42.5 (0.81)
English proficiency	
Speaking	
Poor	16.7
Fair	25.1
Good	35.1
Excellent	23.2
Reading	
Poor	16.3
Fair	21.9
Good	32.9
Excellent	29.0
Writing	
Poor	20.7
Fair	22.8
Good	30.7
Excellent	25.9
Language preference	
Thinking	
Asian language all the time	39.7
Asian language most of time	14.9
Asian language/English equally	22.8
English most of time	11.3
English all the time	11.3

Continued

TABLE 1—Continued

Speaking with family	
Asian language all the time	48.2
Asian language most of time	20.6
Asian language/English equally	17.1
English most of time	8.0
English all the time	6.1
Speaking with friends	
Asian language all the time	21.2
Asian language most of time	20.1
Asian language/English equally	29.5
English most of time	17.9
English all the time	11.3
Proficiency scales	
English Proficiency Scale	2.7 (0.06)
Language Preference Scale	2.4 (0.06)
Combined (Proficiency + Preference) Scale	2.6 (0.06)

Note. For total sample, n = 1639. Means and percentages are weighted to account for the sampling design and to make the estimates nationally representative. Ranges of scales are as follows: social desirability, 1 = low to 10 = high; English proficiency, 1 = poor to 4 = excellent; language preference, 1 = Asian language all of the time to 5 = English all of the time; combined scale, 1 = least acculturated to 5 = most acculturated.
^aThai, Japanese, and so on.

Table 2 presents unweighted pairwise correlations. The English proficiency measures were highly correlated with one another ($r=0.87-0.92$). The language preference measures were also highly correlated, although to a lesser degree ($r=0.56-0.70$). The proficiency and preference measures were moderately to highly correlated with each other ($r=0.44-0.62$). Among these items, the lowest correlation was between language of preference when speaking with one's family and the 3 proficiency measures ($r=0.44-0.45$).

English proficiency and language preference showed dissimilar patterns with some of the covariates. Education was more strongly correlated with the proficiency measures ($r=0.48-0.52$) than with the preference measures ($r=0.16-0.33$). Years in the United States had low correlation with the English proficiency measures ($r=0.18-0.24$) and low to moderate correlation with the language preference measures ($r=0.22-0.38$). Social desirability showed low correlation with both

TABLE 2—Unweighted Correlations Between Study Language Measures and Other Measures: National Latino and Asian American Study, 2002–2003

	Proficiency in Speaking	Proficiency in Reading	Proficiency in Writing	English Proficiency Scale	Prefer English With Friends	Prefer English With Family	Prefer English in Thinking	Language Preference Scale	Combined Scale	Years In USA	Years Education	Social Desirability	Poor Self-Rated Health
Proficiency in speaking	1.00												
Proficiency in reading	0.89***	1.00											
Proficiency in writing	0.87***	0.92***	1.00										
English Proficiency Scale	0.95***	0.97***	0.97***	1.00									
Prefer English with friends	0.60***	0.61***	0.60***	0.63***	1.00								
Prefer English with family	0.45***	0.45***	0.44***	0.46***	0.56***	1.00							
Prefer English in thinking	0.62***	0.61***	0.60***	0.63***	0.70***	0.63***	1.00						
Language Preference Scale	0.64***	0.65***	0.63***	0.66***	0.87***	0.83***	0.90***	1.00					
Combined Scale	0.87***	0.88***	0.87***	0.91***	0.83***	0.72***	0.85***	0.92***	1.00				
Years in USA	0.25***	0.18***	0.18***	0.21***	0.21***	0.38***	0.32***	0.34***	0.31***	1.00			
Years education	0.48***	0.52***	0.49***	0.52***	0.33***	0.16***	0.31***	0.31***	0.45***	0.03	1.00		
Social desirability	-0.19***	-0.23***	-0.21***	-0.22***	-0.20***	-0.14***	-0.16***	-0.19***	-0.22***	-0.04	-0.24***	1.00	
Poor self-rated health	-0.34***	-0.34***	-0.33***	-0.35***	-0.24***	-0.13***	-0.24***	-0.23***	-0.32***	0.00	-0.16***	0.08	1.00

****P* < .001; tests of significance are adjusted for multiple comparisons with the Sidak method.

the proficiency ($r = -0.19$ to -0.23) and preference ($r = -0.14$ to -0.20) measures. Finally, the correlations with self-rated health were stronger with the proficiency items ($r = -0.33$ to -0.34) than with the preference items ($r = -0.13$ to -0.24). The English Proficiency, Language Preference, and Combined Scales were associated with other covariates in the same direction as the items comprising these scales; for instance, the English Proficiency Scale was positively associated with years in the United States and education and negatively associated with social desirability and self-rated health. All correlations described were statistically significant (Sidak adjusted³⁴ for multiple comparisons).

Table 3 shows the weighted regression analyses of associations between language measures and self-rated health. Each language measure was estimated independently of the other language measures, but all estimates controlled for covariates (e.g., education). The English proficiency measures—whether modeled as single continuous items, as dichotomous items, or in a continuous scale—were all associated with decreased chance of poor self-rated health. For example, a 1-unit increase in proficiency with spoken English was significantly associated with a lower log-odds ($b = -0.55$; $P < .001$) of reporting fair or poor self-rated health.

Similarly, compared with fair or poor spoken English proficiency, good or excellent English proficiency was associated with lower log-odds ($b = -1.13$; $P < .001$) of fair or poor self-rated health. These same relations were found for reading and writing English proficiency. These findings held when self-rated health was modeled as a dichotomous or ordinal variable.

In contrast, none of the language preference measures were consistently associated with self-rated health. The continuous measure of language spoken with family was associated with a significantly higher ($b = 0.191$; $P < .05$) log-odds of fair or poor self-rated health, but this measure was not significant when self-rated health was modeled as an ordinal variable ($b = 0.09$; $P > .05$). When language spoken with family was modeled as a categorical variable (prefers Asian language, both languages, or English), there was no association with self-rated health (verified with likelihood ratio tests).

Estimates for language preferences when thinking and when speaking with friends were also inconsistent. When modeled as continuous variables, neither measure was significantly related to self-rated health. When modeled as a categorical variable, preference for thinking in both English and an Asian language, compared with thinking in an Asian language

only, was associated with a lower log-odds of poor self-rated health as an ordinal variable, but this finding did not hold when self-rated health was modeled as a dichotomous variable. Similarly, individuals who preferred to use both English and an Asian language to speak with friends were more likely to have poorer self-rated health than those who preferred to speak an Asian language only. This finding held regardless of whether self-rated health was modeled as a dichotomous or ordinal variable.

Not surprisingly, the 3 scales were associated with self-rated health in the same way as the individual items that comprised the scales. The English Proficiency Scale was associated with self-rated health, but the Language Preference Scale was not. Further, the Combined Scale was associated with self-rated health, but only when self-rated health was modeled as an ordinal variable.

We performed several additional modeling checks. First, we examined potential collinearity between survey language and language preference, but collinearity did not influence our findings. Second, our final models excluded years in the United States as a covariate to avoid overcontrolling our models, but results of supplemental analyses that included years in the United States as a covariate were similar to those presented here. Third, the SVY commands do

TABLE 3—Weighted Regression Analyses of Associations Between Language Measures and Self-Rated Health Among Asian Immigrants: National Latino and Asian American Study, 2002–2003

	Dichotomous Self-Rated Health, ^a b (SE)	Ordinal Self-Rated Health, ^b b (SE)
Continuous measures		
English proficiency ^c		
Speaking	-0.550*** (0.135)	-0.460*** (0.075)
Reading	-0.530** (0.160)	-0.475*** (0.093)
Writing	-0.468** (0.141)	-0.358*** (0.079)
Language preference ^d		
When thinking	0.071 (0.090)	-0.031 (0.055)
With family	0.191* (0.090)	0.088 (0.070)
With friends	-0.094 (0.096)	-0.074 (0.063)
English Proficiency Scale ^e	-0.625*** (0.157)	-0.512*** (0.088)
Language Preference Scale ^e	0.086 (0.110)	-0.002 (0.073)
Combined Scale ^f	-0.32 (0.164)	-0.313** (0.087)
Categorical measures		
English proficiency ^g		
Speaking	-1.130*** (0.267)	-0.824*** (0.183)
Reading	-1.165*** (0.288)	-0.919*** (0.223)
Writing	-0.994*** (0.264)	-0.720*** (0.148)
Language preference when thinking		
Asian language (Ref)	1.00	1.00
Both languages	-0.199 (0.239)	-0.321* (0.147)
English	0.327 (0.253)	-0.015 (0.173)
Language preference when speaking with family		
Asian language (Ref)	1.00	1.00
Both languages	0.004 (0.253)	-0.388 (0.198)
English	0.562 (0.339)	0.334 (0.225)
Language preference when speaking with friends		
Asian language (Ref)	1.00	1.00
Both languages	-0.574* (0.213)	-0.337* (0.152)
English	-0.108 (0.261)	-0.178 (0.155)

Note. For total sample, n = 1639. Each estimate controls for covariates (age, gender, region, Asian ethnicity, language of survey, and social desirability) but does not simultaneously control for other language measures. For example, the estimates for language preference when thinking do not control for language preference with family. Reference indicates the reference category for categorical variables. Estimates are weighted to account for the sampling design and to make the estimates nationally representative.

^aLogistic regression. Self-rated health scored 0 = good, very good or excellent or 1 = fair or poor.

^bOrdinal logistic regression. Self-rated health scored 1 = excellent to 5 = poor.

^cScored 1 = poor to 4 = excellent.

^dScored 1 = Asian language to 5 = English.

^eScored 1 = Asian all the time to 5 = English all the time.

^fScored 1 = less acculturated to 5 = most acculturated.

^gScored 0 = fair or poor vs 1 = good/excellent.

*P < .05; **P < .01; ***P < .001.

not permit a test of the parallel regression assumption inherent in ordered logistic. Reanalysis with the stereotype logistic model that relaxes this assumption yielded similar findings.

DISCUSSION

Language is a concept often taken for granted in public health; a common assumption

is that English proficiency and language preference are conceptually and empirically equivalent.⁴ Our analyses, using a nationally representative sample of Asian American immigrants, suggest that this assumption is not always defensible. Our data show that although measures of proficiency and preference were statistically related, they did not show similar associations with self-rated health in multivariate analyses. Language preference was not consistently related to self-rated health; however, higher English proficiency was consistently related to improved self-rated health.

A common practice is to create a composite indicator of acculturation based on proficiency and preference.^{4,5} On the surface, this appears sensible because our individual proficiency and preference items were highly correlated with one another, and a scale that incorporated these items showed high internal-consistency reliability. Our data, however, suggest several reasons why a combined indicator is not always desirable. Our combined scale was associated with self-rated health, but disaggregating the scale into its components revealed that this association was driven by English proficiency and not language preference. Accordingly, studies that aggregate both proficiency and preference measures may obfuscate 2 conceptually distinct constructs, and potentially increase the risk of spurious null findings (type-II error).

Regarding language preference, participants who felt equally at ease using both English and an Asian language with friends appeared to have lower risk of poor self-rated health than those preferring to use just one language. This finding does not support the unilinear view of acculturation, which would predict that the “both language” group would be intermediate between the Asian and English languages. Moreover, language preference (and proficiency) showed low correlations with years in the United States, another commonly used marker of unilinear acculturation. One interpretation is that bilingualism may be protective because it allows individuals to operate in multiple worlds. Alternatively, this finding may reflect an unmeasured variable. For instance, fluency with multiple languages may signify a diverse network of Asian and non-Asian friends who can provide complementary dimensions of social support.

Nevertheless, we caution against making too much of this finding. Our analyses indicate that

measures of language preference are sensitive to model specification. The association between the preference measures and self-rated health were most often null, but specific associations emerged or disappeared on the basis of how we specified the measurement of self-rated health or language preference. For example, language preference with family was associated with self-rated health only when preference was modeled as a continuous (not categorical) variable and when self-rated health was modeled as a binary (not ordinal) variable.

It is unclear why language preference appears unreliable, but perhaps part of the reason is that language is as much a political concept as it is a cultural one. The popularization of English in many countries (e.g., the Philippines) stemmed from colonization and forcible occupation. Many have argued that the English language was used as a weapon to erode Native American culture and sovereignty.^{35,36} In a different vein, some Asian monolingual speakers report that they prefer to speak English on surveys, even when they cannot, because they would *like* to speak English (Marjorie Kagawa-Singer, PhD, University of California, Los Angeles, oral communication, July 9, 2008). Hence, there may be great heterogeneity in how individuals interpret the questions related to language preference.

By contrast, measures of English proficiency were robust, showing that greater fluency was related to improved self-rated health. We did not find meaningful differences in the association between self-rated health and speaking, reading, or writing proficiency. Indeed, the 3 items were very highly correlated. It may therefore be reasonable to use these proficiency measures as a scale. Our analyses also suggest that researchers may not lose a great deal of information if they use a single proficiency item.

Our findings buttress studies reporting that language barriers may impede access to health services.^{6,17,21,37} Further, we found sizable correlations between education and English proficiency, suggesting that proficiency may be related not only to use of services but also to broader determinants of health such as human capital.^{7,8} Indeed, it would be interesting for future studies to examine whether English proficiency relates to neighborhood characteristics

(e.g., residential segregation), impediments to human capital (e.g., glass ceilings, employability), and other social determinants.

Our study should be viewed in light of several limitations. First, our data are cross-sectional and hence we are not able to evaluate causal relationships. However, the cross-sectional design does not necessarily invalidate the claim that language preference and English proficiency may differ. Second, our data are based on self-reports, and individuals may inaccurately gauge their English proficiency or may overstate their proficiency. Controls to account for social desirability biases temper these concerns, but it would be useful to evaluate whether these commonly used measures reflect more objective assessments. For example, one may use a test of writing proficiency in lieu of self-report.¹⁰ It would be instructive to examine how these objective measures may be related to health outcomes. Third, we caution that self-rated health is a global marker of well-being, and some debate exists as to its cross-cultural applicability.³⁸ Although self-rated health is related to mortality among Asian American and other populations, it should not be interpreted as a marker of actual health status.^{22,27–29} That said, this measure is included in many studies and may provide a useful point for comparison in future research. Fourth, it would be important to validate our results in other populations.

Although we do not attempt to reconcile the disparate findings related to acculturation in the literature, we are sympathetic to arguments that acculturation research is hampered by untested assumptions and inconsistent measures.^{39–41} Our research found that English proficiency and language preference are correlated, but not necessarily empirically and conceptually related. Further, our investigation indicates that of these 2 measures, English proficiency may be more robustly related to self-rated health. These findings suggest that language barriers may be a more relevant risk factor for self-rated health than language preference. Future work should continue to study the theoretical mechanisms whereby language may be related to health outcomes and to carefully specify the dimensions of language that are of import for a given health problem. ■

About the Authors

Gilbert C. Gee is with the Department of Community Health Sciences, School of Public Health, University of California, Los Angeles. Katrina M. Walsemann is with the Department of Health Promotion, Education, and Behavior, Arnold School of Public Health, University of South Carolina, Columbia. David T. Takeuchi is with the School of Social Work and Department of Sociology, University of Washington, Seattle.

Correspondence should be sent to Gilbert C. Gee, PhD, UCLA School of Public Health, Department of Community Health Sciences, 650 Charles E. Young Drive South, Los Angeles, CA 90095-1772 (e-mail: gilgee@ucla.edu). Reprints can be ordered at <http://www.ajph.org> by clicking the "Reprints/Eprints" link.

This article was accepted January 6, 2009.

Contributors

G. C. Gee conceptualized the study and led the writing and analysis. K. M. Walsemann assisted with the analysis, conceptualization, and writing. D. T. Takeuchi assisted with the writing and is also a principal investigator of the National Latino and Asian American Study.

Acknowledgments

This research is supported by National Institutes of Health (grants MH62207, MH62209, 1050MH073511, and RWJ DA018715), and by generous support from the Substance Abuse and Mental Health Services Administration and the Office of Behavioral and Social Sciences Research.

Human Participant Protection

The University of Washington provided approval for data collection for the National Latino and Asian American Study. As the data are now in the public domain, the current analyses were provided exempt status at the University of California, Los Angeles.

References

1. Lara M, Gamboa C, Kahramanian MI, Morales LS, Bautista DE. Acculturation and Latino health in the United States: a review of the literature and its sociopolitical context. *Annu Rev Public Health*. 2005;26:367–397.
2. Suarez L, Pulley L. Comparing acculturation scales and their relationship to cancer screening among older Mexican-American women. *J Natl Cancer Inst Monogr*. 1995;18:41–47.
3. Mouw T, Xie Y. Bilingualism and the academic achievement of first- and second-generation Asian Americans: accommodation with or without assimilation? *Am Sociol Rev*. 1999;64(2):232–252.
4. Zane N, Mak W. Major approaches to the measurement of acculturation among ethnic minority populations: a content analysis and an alternative empirical strategy. In: Chun KM, Organista PB, Marin G, eds. *Acculturation: Advances in Theory, Measurement, and Applied Research*. Washington, DC: American Psychological Association; 2003:39–60.
5. Wilkinson AV, Spitz MR, Strom SS, et al. Effects of nativity, age at migration, and acculturation on smoking among adult Houston residents of Mexican descent. *Am J Public Health*. 2005;95(6):1043–1049.

6. Ponce NA, Ku L, Cunningham WE, Brown ER. Language barriers to health care access among Medicare beneficiaries. *Inquiry*. 2006;43(1):66–76.
7. Parker SW, Rubalcava L. Schooling inequality and language barriers. *Econ Dev Cult Change*. 2005;54:71–94.
8. Bleakley H, Chin A. Language skills and earnings: evidence from childhood immigrants. *Rev Econ Stat*. 2004;86(2):481–496.
9. Jacobs E, Chen AH, Karliner LS, Agger-Gupta N, Mutha S. The need for more research on language barriers in health care: a proposed research agenda. *Milbank Q*. 2006;84(1):111–133.
10. Jia G, Aaronson D. A longitudinal study of Chinese children and adolescents learning English in the United States. *Appl Psycholinguist*. 2003;24:131–161.
11. Detjen MG, Nieto FJ, Trentham-Dietz A, Fleming M, Chasan-Taber L. Acculturation and cigarette smoking among pregnant Hispanic women residing in the United States. *Am J Public Health*. 2007;97(11):2040–2047.
12. Marsiglia FF, Waller M. Language preference and drug use among southwestern Mexican American middle school students. *Children and Schools*. 2002;24(3):145–158.
13. Gomez SL, Kelsey JL, Glaser SL, Lee MM, Sidney S. Immigration and acculturation in relation to health and health-related risk factors among specific Asian subgroups in a health maintenance organization. *Am J Public Health*. 2004;94(11):1977–1984.
14. Ponce NA, Chawla N, Babey SH, et al. Is there a language divide in Pap test use? *Med Care*. 2006;44(11):998–1004.
15. Stein JA, Fox SA. Language preference as an indicator of mammography use among Hispanic women. *J Natl Cancer Inst*. 1990;82(21):1715–1716.
16. Crespo CJ, Smit E, Carter-Pokras O, Andersen R. Acculturation and leisure-time physical inactivity in Mexican American adults: results from NHANES III, 1988–1994. *Am J Public Health*. 2001;91(8):1254–1257.
17. Solis JM, Marks G, Garcia M, Shelton D. Acculturation, access to care, and use of preventive services by Hispanics: findings from HHANES 1982–84. *Am J Public Health*. 1990;80:11–19.
18. Menec VH, Shoostari S, Lambert P. Ethnic differences in self-rated health among older adults: a cross-sectional and longitudinal analysis. *J Aging Health*. 2007;19(1):62–86.
19. Unger JB, Cruz TB, Ribisl KM, et al. English language use as a risk factor for smoking initiation among Hispanic and Asian American adolescents: evidence for mediation by tobacco-related beliefs and social norms. *Health Psychol*. 2000;19(5):403–410.
20. Kandula NR, Lauderdale DS, Baker DW. Differences in self-reported health among Asians, Latinos, and non-Hispanic whites: the role of language and nativity. *Ann Epidemiol*. 2007;17(3):191–198.
21. Ponce NA, Hays RD, Cunningham WE. Linguistic disparities in health care access and health status among older adults. *J Gen Intern Med*. 2006;21(7):786–791.
22. Manor O, Matthews S, Power C. Dichotomous or categorical response? Analysing self-rated health and lifetime social class. *Int J Epidemiol*. 2000;29(1):149–157.
23. Arcia E, Skinner M, Bailey D, Correa V. Models of acculturation and health behaviors among Latino immigrants to the US. *Soc Sci Med*. 2001;53(1):41–53.
24. Wiking E, Johansson SE, Sundquist J. Ethnicity, acculturation, and self reported health. A population based study among immigrants from Poland, Turkey, and Iran in Sweden. *J Epidemiol Community Health*. 2004;58(7):574–582.
25. Finch BK, Vega WA. Acculturation stress, social support, and self-rated health among Latinos in California. *J Immigr Health*. 2003;5(3):109–117.
26. Franzini L, Fernandez-Esquer ME. Socioeconomic, cultural, and personal influences on health outcomes in low income Mexican-origin individuals in Texas. *Soc Sci Med*. 2004;59(8):1629–1646.
27. Idler EL, Benyamini Y. Self-reported health and mortality: a review of twenty-seven community studies. *J Health Soc Behav*. 1997;38:21–37.
28. Idler EL, Hudson SV, Leventhal H. The meanings of self-ratings of health. *Res Aging*. 1999;21:458–476.
29. McGee DL, Liao Y, Cao G, Cooper RS. Self-reported health status and mortality in a multiethnic US cohort. *Am J Epidemiol*. 1999;149(1):41–46.
30. Yu ESH, Kean YM, Slymen DJ, Liu WT, Zhang M, Katzman R. Self-perceived health and 5-year mortality risks among the elderly in Shanghai, China. *Am J Epidemiol*. 1998;147(9):880–890.
31. Alegria M, Takeuchi DT, Canino G, Duan N, Shrout P, Meng X. Considering context, place, and culture: the National Latino and Asian American study. *Int J Methods Psychiatr Res*. 2004;13(4):208–220.
32. Heeringa S, Warner J, Torres M, Duan N, Adams T, Berglund P. Sample designs and sampling methods for the Collaborative Psychiatric Epidemiology Studies (CPES). *Int J Methods Psychiatr Res*. 2004;13(4):221–240.
33. Zuckerman M. *Psychology of Personality*. Cambridge, England: Cambridge University Press; 1991.
34. Sidak F. Rectangular confidence regions for the means of multivariate normal distributions. *J Am Stat Assoc*. 1967; 62:626–633.
35. Whitbeck LB, Adams GW, Hoyt DR, Chen X. Conceptualizing and measuring historical trauma among American Indian people. *Am J Community Psychol*. 2004;33(3–4):119–130.
36. Brave Heart M, DeBruyn LM. The American Indian holocaust: healing historical unresolved grief. *Am Indian Alsk Native Ment Health Res*. 1998;8(2):60–82.
37. Yu SM, Huang ZJ, Schwalberg RH, Nyman RM. Parental English proficiency and children's health services access. *Am J Public Health*. 2006;96(8):1449–1455.
38. Finch BK, Hummer RA, Reindl M, Vega WA. Validity of self-rated health among Latino(a)s. *Am J Epidemiol*. 2002;155(8):755–759.
39. Hunt LM, Schneider S, Comer B. Should “acculturation” be a variable in health research? A critical review of research on US Hispanics. *Soc Sci Med*. 2004;59(5): 973–986.
40. Salant T, Lauderdale DS. Measuring culture: a critical review of acculturation and health in Asian immigrant populations. *Soc Sci Med*. 2003;57(1):71–90.
41. Abraido-Lanza AF, Armbrister AN, Florez KR, Aguirre AN. Toward a theory-driven model of acculturation in public health research. *Am J Public Health*. 2006;96(8):1342–1346.