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Measuring the Wage Costs of Limited English

Issues With Using Interviewer Versus Self-Reports in Determining Latino Wages

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Scholars have found that poor English proficiency is negatively associated with wages using self-reported measures. However, these estimates may suffer from misclassification bias. Interviewer ratings are likely to more accurately proxy employer assessment of worker language ability. Using self-reported and interviewer ratings from the Multi-City Study of Urban Inequality, the authors estimate the impact of English proficiency on wages for men ($n = 267$) and women ($n = 178$) with Mexican ancestry residing in the Los Angeles metropolitan area. Use of interviewer proficiency ratings suggests a larger and more gradational language penalty as fluency falls, and women face a stronger penalty than their male counterparts. Moreover, controlling for worker accent and skin shade does little to alter these effects.

Keywords: *wages; English fluency; Latino workers; skin shade; accent; earnings*

The low earnings of immigrant and nonimmigrant Latinos residing in the United States relative to native-born Whites (Anglos) even with comparable levels of schooling and demographic characteristics is well known (Borjas, 1994; Trejo, 1997). Poor English fluency has been offered (Borjas, 1994; McManus, 1985) as an explanation for the relatively low

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wages of Latinos, especially those who are immigrants. There is now an extensive literature of empirical studies (for recent reviews see Chiswick & Miller, 1999; Fry & Lowell, 2003; Gonzales, 2000; Hellerstein & Neumark, 2002) providing evidence that Latino employees with limited English speaking skills suffer an earnings penalty. This article explores how misclassification of language ability may lead to biased estimates of the connection between spoken English proficiency and wages.

Self-reported English-speaking ability measures are available in a number of data sets including the Survey of Income and Education, National Adult Literacy Survey, National Chicano Survey, U.S. Census Public Use Microdata Sample, and U.S. Census Current Population Survey. Self-reported measures of English fluency are used in virtually all studies attempting to determine the link between English proficiency and wages. Trejo (1997), Kossoudji (1988), and McManus (1985) report evidence of an English language proficiency gradient for Hispanic men—the wage penalty rises as the fluency level falls. However, a number of investigators (Bleakley & Chin, 2004; Dustman & van Soest, 2001; Fry & Lowell, 2003; Shields & Wheatley Price, 2002) believe that wage studies using self-reported measures of English proficiency may be biased as a result of individuals misclassifying their English fluency. One of their concerns is that individuals with objectively comparable skills may rate themselves differently. Moreover, an additional source of misclassification may extend from employers, coworkers, and customers (i.e., “others”), who may rate individual employees differently than they rate themselves.

Hellerstein and Neumark (2002) and Gonzales (2000) note that a common way of addressing misclassification error in the literature (Davila, Bohara, & Saenz, 1993; Fry & Lowell, 2003; Grenier, 1984) is to construct a binary measure of English proficiency. Although fewer categories may reduce the potential of bias from multiple categories, the collapsing of categories increases the potential for aggregation bias. Appendix Table A1 provides a summary of the previous economic literature on the impact of English proficiency on wages for Latino workers. The table includes the data source, the manner in which fluency is measured, and the study findings.

We use the Multi-City Study of Urban Inequality (MCSUI 1992-1994) to estimate the extent of the bias associated with using self-reported measures to examine the impact of English proficiency on wages for Latinos with Mexican ancestry who are working and residing in the Los Angeles metropolitan area. An appealing feature of the MCSUI is its provision of both self-reported and interviewer assessment of the respondent's English language proficiency. This allows us to compare and contrast the differential

returns to wages that result from self- versus interviewer- (i.e., “others”) appraised language proficiency.

If interviewer-assessed measures of English proficiency are more accurate proxies of employers’, coworkers’, and customers’ interpretations of respondent language ability, then we can estimate the bias associated with using self-reported language ability measures in wage equations. In addition, evaluations of language ability from trained surveyors may be more anchored than individual self-reports of English skills, thereby mitigating bias associated with differing interindividual interpretations of language proficiency (Bleakley & Chin, 2004; Dustman & van Soest, 2001; Fry & Lowell, 2003; Shields & Wheatley Price, 2002). Thus, we offer and compare estimates of the impact of English fluency on wages for Latino workers with Mexican ancestry using both self-reported and interviewer-reported measures of English proficiency.¹ In addition, we compare this bias of using self-reports as opposed to interviewer reports of language proficiency with both binary and gradational measures of English fluency.

Two additional desirable features of the MCSUI are that it provides measures of interviewer interpretations of both respondent accent and skin shade. Trejo (1997) argues that speaking English with a non-American accent may be related to earnings and English fluency.² In addition, Telles and Murguía (1990) find that Mexican Americans with darker complexions earn significantly less than their lighter skinned counterparts.³ Using the MCSUI we are able to account for this possible source of omitted variable bias exhibited in other studies.

Data and Methodology

Data

The MCSUI was a cross-sectional survey conducted in the metropolitan areas of Los Angeles, Boston, Atlanta, and Detroit beginning in 1992. Respondents self-reported their ethnicity and ancestry. Less than 5% of the MCSUI respondents who self-identified as Latino lived in Atlanta or Detroit combined. Most Latino respondents in the MCSUI reside in Los Angeles, and close to 70% of Latino respondents in Los Angeles are Mexican or of Mexican descent. The Latino respondents from Boston generally have ancestral roots in the Dominican Republic and Puerto Rico. Previous studies (Friedberg, 2000; Fry & Lowell, 2003; Grenier, 1984) find that heterogeneity based on country of origin for Latinos living in the United States

leads to differences in outcomes that are difficult to explain. Thus, we restrict the MCSUI sample to self-identified Latinos with Mexican ancestry living in Los Angeles—one of the two largest Latino enclave counties in the United States, with the other being Miami-Dade.

The MCSUI provides information on a rich array of socioeconomic and demographic factors as well as English proficiency. We confine the analysis to persons ages 19 to 65 who were working, were not self-employed, and self-reported wage information. In addition, workers who report an hourly wage below \$2 or above \$100 are considered outliers and are excluded. In the MCSUI, observations that report hourly wages in excess of \$50, but whose occupation is inconsistent with such a high wage, are flagged and these observations are excluded as well. Finally, observations are excluded from our sample if they did not report information on the full set of continuous variables used in the wage equations we estimate. As a result, the number of observations used to conduct our summary statistics is reduced to 267 men and 178 women.

Table 1 reports summary statistics for men and women for key variables used in our analysis. Variable definitions are presented in Appendix Table A2. The average man in our sample earns \$9.48 per hour and is 34 years old, and 68% of the men are married. Forty-eight percent failed to complete high school, and 38% ended their formal schooling with a high school diploma/GED. Typical men in the data we analyze have been with their current employers for almost 5 years, 21% are union members, and 12% are employed part-time. Interviewers rated 34% of the male sample as speaking with a non-American accent. In addition, they rated 18% as having a light skin complexion, 14% dark, and 68% medium. The typical woman in our sample earns \$7.68 per hour and is 35 years old. Fifty-six percent of the women are married. Forty-six percent did not complete high school, and 33% completed their formal schooling with a GED or high school diploma. The average women in our sample have been with their current employers for somewhat more than 5 years, 15% are union members, and 20% are employed part-time. Interviewers rated 40% of the female sample as speaking with a non-American accent, and they rated 32% of the women as having a light skin complexion, 10% dark, and 58% medium.

Measuring language fluency: Self-reports and interviewer reports. The MCSUI question on English speaking proficiency is preceded by a streaming question: “Is any language other than English used in your home?” Those who answer affirmatively are asked how proficiently they speak English, with possible responses of *very well*, *well*, *just fair*, *a little*, and *not*

Table 1
Summary Statistics for Selected Variables Used in
Econometric Analysis: MCSUI Data

Variables	Men		Women	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Panel A: Self-reported English speaking proficiency				
Speaks only English	0.15		0.20	
Very well	0.23		0.18	
Well	0.10		0.08	
Fair	0.26		0.20	
Little	0.26		0.34	
Fair or better	0.74		0.66	
Better than fair	0.48		0.46	
Panel B: Interviewer-reported English speaking proficiency and skin shade				
Excellent	0.15		0.21	
Very good	0.19		0.19	
Good	0.25		0.18	
Fair	0.16		0.21	
Poor	0.07		0.07	
Skip	0.17		0.14	
Missing	0.01		0.00	
Fair or better	0.75		0.79	
Better than fair	0.59		0.58	
Accent	0.34		0.40	
Light	0.18		0.32	
Medium	0.68		0.58	
Dark	0.14		0.10	
Panel C: Wages and human capital				
Hourly wage	9.48	(5.04)	7.68	(3.73)
High school (HS) dropout	0.48		0.46	
HS	0.38		0.33	
Community college	0.06		0.12	
Attend college	0.07		0.07	
College	0.00		0.02	
Poor HS performance	0.25		0.20	
Tenure	4.84	(4.81)	5.20	(6.41)
Disability	0.08	(0.27)	0.11	(0.32)
Panel D: Demographic characteristics				
Age	34.12	(9.74)	35.41	(10.77)
Married	0.68		0.56	
Number of dependents	1.43	(1.45)	1.72	(1.30)
Foreign resident at 16	0.62		0.60	

(continued)

Table 1 (continued)

Variables	Men		Women	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Panel E: Family background				
Mother HS graduate	0.22		0.17	
Father HS graduate	0.20		0.17	
Both parents raised	0.79		0.71	
Panel F: Workplace characteristics				
Union	0.21		0.15	
Work part-time	0.12		0.20	
Firm size .001*	0.10	(0.28)	0.26	(0.96)
Panel G: Occupation of employment				
Manager/professional	0.09	(0.29)	0.11	(0.31)
Production	0.20	(0.40)	0.10	(0.31)
Services	0.14	(0.35)	0.23	(0.42)
Craft	0.13	(0.34)	0.31	(0.46)
Laborers	0.42	(0.49)	0.24	(0.43)
Government	0.07	(0.26)	0.15	(0.36)
Supervisor Latino	0.38	(0.49)	0.42	(0.49)
Most coworkers Latino	0.74	(0.44)	0.69	(0.47)
Observations	267		178	

Note: Weighted means are reported with standard errors in parentheses for continuous variables. Source: Data are from the Multi-City Survey of Urban Inequality (MCSUI 1992-1994).

at all. Following Chiswick and Miller (1995), Trejo (1997), Berman, Lang, and Siniver (2003), and Bleakley and Chin (2004), those who speak only English at home are placed in the most proficient group (*very well*).⁴ Moreover, it is likely that those who claim they do not speak any English speak some words or phrases, so we combine them with those who self-report only *a little* English. This ultimately results in self-reported English fluency being measured on a 4-point scale.

Interviewers categorized respondents based on their observations of respondents' English proficiency into five categories: *excellent*, *very good*, *good*, *fair*, and *poor*. We combined the *excellent* and *very good* categories, which allows for greater comparability with our self-reported English fluency measure. Ranging from high to low, the four categories of our self- (and interviewer-) reported English fluency measures are *very well* (*excellent or very good*), *well* (*good*), *just fair* (*fair*), and *a little or not at all* (*poor*). In addition, because the scales share a common category, *fair*, we are able to construct two binary indicators of English proficiency. The first measure,

fair or better, establishes a lower threshold for proficiency, and the second measure, *better than fair*, establishes a higher threshold for proficiency. Virtually all of the studies examining the link between English skills and wages for Latinos consider only men. Women are typically excluded to minimize biases arising from selective labor force participation.⁵

Comparisons of self-reports versus interviewer reports of English fluency. Inspection of Table 1 reveals that 74% of the male respondents claim to speak English *fair or better* and 48% claim to speak *better than fair*, the more stringent proficiency criteria. In contrast, interviewers rate 75% of the men as speaking English *fair or better* and determine that 59% speak *better than fair*. Sixty-six percent of the female respondents assert that they speak English *fair or better* and 46% claim to speak *better than fair*. In contrast, interviewers determine that 79% of the women speak *fair or better* and 58% *better than fair*. Based on the binary comparisons, there are not large differences between self-assessments and interviewer assessments of English proficiency; however, when using a gradational measure, there are indeed substantial differences between the two types of measures.

Table 2 is a concordance table that compares self- versus interviewer-reported measures of English fluency for the full range of categories we define. Interviewer-assessed language proficiency is arrayed in the columns of Table 2 while self-reports are presented in the rows. If respondents' ratings of their spoken English perfectly corresponded to perceptions of the interviewers, then 100% of the observations would fall into the cells along the diagonal of the 4 × 4 concordance table.

Panel A of Table 2 presents findings for the male subsample while the female findings are presented in Panel B. Inspection of Panel A reveals that respondents tend to underreport their language ability relative to interviewer reports. For instance, when interviewers evaluated men as having *good* English proficiency, 15% of the respondents self-reported an analogous English proficiency of *well*, whereas 58% rated their proficiency below *well* (*fair or little*), and 27% reported proficiency above *well*. Hence, according to the interviewers, 58% of the respondents who speak *good* English underreport their English proficiency, while 27% overreport.

The story for women is slightly nuanced. When interviewers rated respondents as having *good* English proficiency, there was a tendency for women to slightly overreport their proficiency (36% over vs. 26% under). However, when interviewers rated respondents as having *fair* English proficiency, there was a larger tendency for women to underreport their English proficiency (12% over vs. 54% under). Overall, Table 2 indicates

Table 2
Concordance of Interviewer- and Self-Reported English Speaking Proficiency for Men and Women

Self-Reported English Proficiency	Interviewer-Reported English Proficiency (Percentage of Column Total)			
	Very Good or Excellent (<i>n</i> = 69)	Good (<i>n</i> = 52)	Fair (<i>n</i> = 44)	Poor (<i>n</i> = 22)
Panel A: Men				
Very well or better	50 (72)	14 (27)	5 (11)	0 (0)
Well	11 (16)	8 (15)	2 (5)	0 (0)
Fair	6 (9)	28 (54)	17 (39)	1 (5)
Little	2 (3)	2 (4)	20 (45)	21 (95)
% self overreport	—	27	16	5
% self underreport	28	58	45	—
	Very Good or Excellent (<i>n</i> = 54)	Good (<i>n</i> = 25)	Fair (<i>n</i> = 35)	Poor (<i>n</i> = 19)
Panel B: Women				
Very well or better	40 (74)	9 (36)	2 (6)	0 (0)
Well	4 (7)	10 (40)	2 (6)	0 (0)
Fair	4 (7)	5 (20)	12 (34)	1 (5)
Little	6 (12)	1 (4)	19 (54)	18 (95)
% self overreport	—	36	12	5
% self underreport	26	24	54	—

Note: Interviewer and self-reports of English speaking proficiency are each coded on a 5-point scale, but the rating levels have different names for four of the five skill levels. We operate under the assumption that there is equivalence between *good* and *well*, *poor* and *little*, and *very good or excellent* and *very well or better*. Observations with missing information on self- or interviewer-reported English proficiency are dropped.

Source: Data are from the Multi-City Survey of Urban Inequality (1992-1994).

that there was a general tendency for both men and women to underreport their English proficiency relative to interviewers.

If interviewer rather than self-assessments of respondent English proficiency are more consistent with how employers, coworkers, and customers view respondent proficiency, then studies that measure proficiency based on interviewer as opposed to self-reports may be more indicative of the actual wage penalty associated with lower levels of English proficiency.⁶ In short, social assessment of English proficiency, as measured by MCSUI

interviewers, is likely to be a better predictor of worker wages than personal assessment of English proficiency, as determined by MCSUI respondents.

Methodology

Our goal is to estimate the effect of English proficiency on wages using self-reported English proficiency, the standard in the literature, in comparison to interviewer-reported proficiency, perhaps a more accurate measure. We estimate using ordinary least squares the following reduced-form equation to analyze the impact of English language proficiency on wage:

$$\ln w_i = \alpha + \beta(\text{English}_i) + \delta(\text{accent}_i) + \gamma(\text{skin shade}_i) + \lambda(X_i) + \varepsilon_i, \quad (1)$$

where $\ln w$ is the log of the wage a worker receives at his or her job, *accent* is a binary variable that indicates if the interviewer rated the respondent to speak English with a non-American accent, and *skin shade* is a vector containing two binary variables indicating if the respondent's skin shade is rated by the interviewer as light or dark with medium as the reference category.⁷ The vector *English* contains a set of indicator variables that measures the respondent's English fluency.

We estimate a number of different versions of Equation 1 based primarily on how *English* is measured. We begin by estimating a pair of threshold proficiency models. The fundamental idea behind these models is that employers offer lower rewards to those who do not speak English proficiently. However, different minimum standards for proficiency might be adopted, and we consider two alternative definitions of threshold proficiency. We start with a binary indicator in which English proficiency is assigned to those with English proficiency that is rated *fair or better*, while those with skills falling short of this level are considered to lack English proficiency. Then we estimate another model based on a binary indicator with a higher threshold, in which English proficiency is allotted only to those with *better than fair* English fluency. Finally, we estimate a gradational model with multiple indicator variables detailing alternative levels of English proficiency. Both the binary and the multiple indicators models will be estimated, respectively, with self-measures and interviewer measures of English proficiency.

The vector *X* contains all other determinants of respondents' wage rates including level of schooling completed, years of tenure with current employer, health status, age, marital status, presence of dependents in the home, parental education, a self-reported measure of high school average grades, and if the respondent resided in the United States as a youth.⁸ In

addition, the vector X includes a great deal of workplace information such as union membership, part-time work, and firm size.

Finally, it is possible that Latino and Anglo interviewers assess English proficiency differently. To account for this potential bias, we control for interviewer ethnicity. Likewise, we account for the gender of the interviewer with a similar control.

Results

English Proficiency: Binary Approach

Table 3 summarizes our regression results of the impact of English proficiency on log hourly wage using two different binary measures.⁹ In the first set of results, English proficiency is defined as *fair or better*, and more stringent criteria, *better than fair*, is used in the second. In order to compare estimates of the wage returns resulting from different measures of English fluency, findings using interview reports are presented alongside self-reports. Panel A includes results for men, while Panel B includes results for women.

Based on self-reports, men of Mexican ancestry who speak English *fair or better* earn 19.1% more than comparable men of Mexican ancestry who lack English proficiency (i.e., *less than fair*—the reference group).¹⁰ The penalty for lacking English proficiency falls to 16.1% (column 3) when interviewer-assessed English fluency is measured. In contrast, when using the *better than fair* proficiency criteria, the wage penalty resulting from lack of proficient English is 12.4% based on self-reports and 11.8% based on interviewer reports. Regardless of whether the *fair or better* or *better than fair* criteria are used, the wage penalty is lower based on interviewer reports versus self-reports of proficiency.¹¹ Thus, the penalty is greater using self-reports as opposed to interviewer reports when adopting a binary measure of English proficiency.¹²

Among Latinas, those self-reporting low levels of English proficiency (*less than fair*) earn 23.8% less than those with high proficiency. Moreover, the penalty for self-reported English proficiency is higher than interviewer reports (21.1%). Using more stringent proficiency criteria, *better than fair*, reveals a 26.1% wage disadvantage for those lacking English fluency when English proficiency is self-reported. However, in this case the disadvantage for lacking English fluency using self-reports is lower than when using interviewer reports (36.9%).

Table 3
Impact of Bivariate Measures of English Proficiency
on In Wages: Summary Table

	Self-Reported	Interviewer Reported	Self-Reported	Interviewer Reported
Panel A: Men				
English-Speaking Proficiency				
Fair or better	.191* (.058)	.161*** (.097)		
Better than fair			.124*** (.075)	.118 (.073)
Accent	.067 (.053)	.046 (.062)	.072 (.054)	.059 (.063)
Skin shade				
Light	-.037 (.060)	-.023 (.060)	-.037 (.061)	-.028 (.063)
Dark	.064 (.071)	.099 (.075)	.082 (.072)	.102 (.075)
Adjusted R^2	.33	.31	.31	.31
Observations	267	262	267	262
Panel B: Women				
English-Speaking Proficiency				
Fair or better	.238* (.071)	.211** (.094)		
Better than fair			.261* (.094)	.369* (.077)
Accent	-.127** (.060)	-.130*** (.068)	-.077 (.060)	-.071 (.065)
Skin shade				
Light	.005 (.061)	.025 (.062)	.036 (.061)	.059 (.059)
Dark	-.134 (.108)	-.198*** (.110)	-.154 (.109)	-.168 (.104)
Adjusted R^2	.52	.50	.51	.55
Observations	178	177	178	177

Note: Coefficient estimates using ordinary least squares are reported, and standard errors are shown in parentheses. Models include controls for human capital, demographics, firm characteristics, and race/ethnicity of the Multi-City Study of Urban Inequality interviewer. Variables are described in Table A2.

* $p < .1$. ** $p < .05$. *** $p < .01$.

Based on our binary measures of proficiency, women clearly face a larger wage penalty than men regardless of the standard for fluency and whether fluency is measured by the interviewer or self-reported. In addition, across both proficiency standards for men and the less stringent proficiency standard for women, we find a larger wage penalty for lack of English proficiency when using self-reports as opposed to interviewer reports of proficiency. When a less stringent standard for proficiency is adopted, the difference associated with using self-reported rather than interviewer-reported

English proficiency is 3 percentage points for men and 2.7 percentage points for women. However, when implementing a more stringent standard for fluency, the difference is 10.8 percentage points for women, whereas it is only 0.6 percentage points for men. Moreover, using interviewer- as opposed to self-reported measures leads to a larger penalty for lack of proficiency, whereas self-reports generated a slightly larger penalty than interviewer reports for men.

The practice of pooling individuals across language skill levels into a binary classification may be problematic as a result of aggregation bias. To explore this concern, in the next section we examine the impact of English proficiency using a gradational measure of proficiency.

English Proficiency: Gradational Approach

Table 4 is a summary table that presents our estimates of the impact of English fluency on wages using a gradational representation for both men (Panel A) and women (Panel B). Column 2 presents our findings using self-reported language skills, and our estimates using interviewer reports are listed in Column 3.

Male findings. There is no evidence of a gradational decline in Mexican male wages as English proficiency declines from *very well or better* (the reference category) to lower categories of proficiency when self-reported measures are used. Nonetheless, men with *little* English fluency earn wages that are 15.7% less than those in the reference category, and this difference is close to, but not quite, statistically significant ($p = .125$).¹³ In contrast, the pattern of results changes when interviewer reports are used, which may be more representative of the perceptions of employers, coworkers, and customers.

The reference group using interviewer ratings of respondent English fluency is *very good or excellent*. Relative to this standard, those with *poor* fluency face a 25.2% wage penalty, and the difference is statistically significant. Those men with somewhat stronger English fluency, *fair*, face a smaller wage penalty of 13.6%, while those with *good* English fluency earn only 8.1% less than if their fluency is *very good or excellent*. Although the latter two differences (i.e., *fair* or *good*) are not statistically significant, these findings display a pattern of the wage penalty rising as English fluency falls.¹⁴

Moreover, comparing across self-rated and interviewer-rated fluency categories (such as *well* to *good*, *fair* to *fair*, and *little* to *poor*) reveals that self-reported measures offer substantially lower estimates, which are measured with less precision, of the wage penalty associated with being in that

Table 4
Impact of Gradational Measures of English Proficiency
on In Wages: Summary Table

Variables	Panel A: Men		Panel B: Women	
	Self-Reported	Interviewer Reported	Self-Reported	Interviewer Reported
English proficiency level: self- (interviewer) report				
Little (Poor)	-.157 (.107)	-.252** (.117)	-.347* (.116)	-.422* (.111)
Fair (Fair)	.018 (.103)	-.136 (.097)	-.160 (.119)	-.383* (.100)
Well (Good)	.104 (.108)	-.081 (.085)	-.005 (.102)	-.051 (.092)
Accent	.062 (.053)	.069 (.064)	-.109* (.063)	-.058 (.071)
Skin shade				
Light	-.040 (.061)	-.022 (.063)	.010 (.061)	.062 (.061)
Dark	.071 (.072)	.105 (.075)	-.129 (.108)	-.176*** (.105)
Adjusted R^2	.33	.31	.52	.55
Observations	267	262	178	177

Note: Coefficient estimates using ordinary least squares are reported, and standard errors are shown in parentheses. Models include controls for human capital, demographics, firm characteristics, and race/ethnicity of the Multi-City Study of Urban Inequality interviewer. Language reference group is English spoken at least *very well* for self-reported spoken English fluency (at least *very good* for interviewer-reported spoken English fluency). Variables are described in Table A2.

* $p < .1$. ** $p < .05$. *** $p < .01$.

category relative to the high-proficiency reference category.¹⁵ Thus, for the Mexican men in our sample a different picture of the link between wages and English proficiency emerges when interviewer judgments of English fluency are used rather than self-reports.

Female findings. Mexican women face a gradient with regard to the returns on wages from English fluency when self-reports are used. In comparison to those who speak English *very well or better*, having *little* English proficiency is associated with a statistically significant 34.7% lower wage, while having *fair* English proficiency is associated with a 16% lower wage. However, this latter finding is not statistically significant. There is virtually no difference between those who speak *well* and *very well or better*.

A similar pattern—the wage penalty rises as fluency falls—emerges when interviewer-assessed English skills are used; however, the effects are larger and measured with more precision. This is especially true when comparing

interviewer-assessed *fair* proficiency to *very well or better*, where we find a 38.3% wage penalty based on interviewer reports and a 16% penalty based on self-reports. Moreover, the difference for interviewer reports is statistically significant, whereas the difference is not significant based on self-reports.

For both the male and female multicategory findings, we find that using interviewer reports of English proficiency is associated with a larger wage penalty measured with greater precision than using self-reports. Furthermore, using the interviewer reports indicates a more monotonic relationship between proficiency and wages.¹⁶

Accent and Skin Shade Results

Both Tables 3 and 4 include coefficient estimates that measure the impact of interviewer-assessed non-American accent and skin shade on respondent wage. In all of our models we find that male wages are not significantly affected by having a non-American accent. For women, half of the models that we estimate generate a statistically significant coefficient on the accent variable, and in all of the models the coefficient is negative as anticipated. The estimates range from about a 6% to an 11% wage penalty associated with speaking English with a non-American accent.

Similar to the results for accent, none of the coefficients on interviewer-measured skin shade are found to significantly affect male wages. For women, although all models generated skin shade estimates that have the expected sign (i.e., light-skinned women earn higher and dark-skinned women earn lower wages than their medium-skinned counterparts), only two of the models yielded statistically significant results. In the model that includes a binary indicator of interviewer-assessed *fair or better* English proficiency, Mexican women with dark skin had about a statistically significant 20% lower wage than their medium-skinned counterparts. And in the model that includes a gradational measure of interviewer-assessed English proficiency, dark-skinned Mexican women suffered about a statistically significant 18% wage penalty.¹⁷

Discussion

Given the trends in the United States toward an increasingly Latino workforce, this research is particularly useful for policy makers with concerns about labor market equality, treatment, and productivity. Accurate

measures of the effect of English proficiency on the wages of Latino workers are essential for policy makers when determining appropriate forms of labor market intervention. Although virtually all studies in the literature find a link between English ability and wages for Latino workers, there is no consistent approach on how this ability is measured. For example, some studies have used binary measures while others have opted for multicategorical measures. Moreover, previous studies have generally relied on self-reported measures, which are acknowledged to lead to misclassification bias (Bleakley & Chin, 2004; Dustman & van Soest, 2001; Fry & Lowell, 2003; Shields & Wheatley Price, 2002). We contend that interviewer-reported measures are more likely to be aligned with the perceptions formed by employers, coworkers, customers, and society at large concerning worker ability to speak English. Indeed, we find substantially different estimates of the link between English ability and wages when using interviewer reports as opposed to self-reports.

One way that researchers have attempted to mitigate misclassification bias is to create binary as opposed to multicategorical measures (e.g., see Davila et al., 1993; Fry & Lowell, 2003; Grenier, 1984). Of course, the risk of collapsing categories is aggregation bias because nuanced categorical effects may be masked. This type of bias is not so evident when using self-reported measures of fluency but is quite evident when using interviewer-reported indicators.

In general, use of interviewer-reported English proficiency suggests a larger and more gradational language penalty for Mexican descendants residing in Los Angeles. In addition, we find that women face even stronger wage penalties than their male counterparts. Hence, researchers should be cognizant of using binary indicators that mask gradational effects, underestimating the impact of the language penalty by using self-reported measures of proficiency, and the extent of language penalties faced by Latinas.

Thus, our work indicates that the construction of measures of language ability has important implications for policy makers concerned with the relationship between English ability and wages. Policy makers relying on self-reported measures may be inclined to focus on those with little to no English ability, while ignoring those with more moderate levels of ability. Moreover, the urgency of policy intervention may be mitigated by the smaller estimated wage penalties that result from self- as opposed to interviewer-measured English proficiency. Last, policy makers should pay close attention to Latinas when designing interventions aimed at addressing the relationship between language ability and wages.

Appendix

Table A1
Studies of the Impact of English Speaking Proficiency on Wages for Latinos Working in the United States: Data Set, Measurement of Language Proficiency, and Key Findings

Study	Data Source (Gender)	Language Skill Measures (Reference Group)	Findings
Davila, Bohara, and Saenz (1993)	1979 National Chicano Survey (NCS); Public Use Microdata Sample (PUMS; 1980) (Men: Hispanic; Women: Hispanic—pooled)	<i>Poor</i> (<i>Well</i> and <i>very well</i>)	12% penalty for poor English with PUMS (1979); insignificant at 10% level with NCS
Fry and Lowell (2003)	National Adult Literary Survey (Men: Hispanic, Anglo, Asian, and Pacific Islanders)	<i>Very well</i> (<i>Not very well</i>)	Compare people with Mexican ethnicity to Anglo English-speaking monolinguals and find a 14% penalty if English is not spoken at least <i>very well</i>
Grenier (1984)	1976 Survey of Income and Education (SIE) (Men: Hispanic and Anglo)	<i>Not very well</i> (<i>Very well</i>)	Latino men who do not speak English <i>very well</i> suffer a significant 14.5% wage penalty
Hellerstein and Neumark (2002)	Decennial Employer–Employee Dataset (Men: Hispanic and Anglo)	<i>Well, poorly, not at all</i> (<i>Very well</i>)	Hispanic men face a wage penalty that rises as their English fluency declines; relative to those who speak <i>very well</i> , the penalty for those who speak <i>well</i> , <i>poorly</i> , or <i>not at all</i> is 5.7%, 16.5%, and 24.9%, respectively
Kossoudji (1988)	1976 SIE (Men: foreign born, Hispanic, and native-born White)	<i>OK, not at all</i> (<i>Speaks fluently</i>)	Hispanic men experience a 21% decline in earning if they do not speak English relative to those who speak English fluently; the

(continued)

Table A1 (continued)

Study	Data Source (Gender)	Language Skill Measures (Reference Group)	Findings
McManus (1985)	1976 SIE (Men: Hispanic)	<i>Not well, well, very well (Speaks only English)</i>	penalty is 9.5% if they speak English <i>OK</i> Among Hispanic men, those who speak English <i>not well</i> earn weekly wages that are 21%, 32%, and 46% less than those who speak <i>well, very well, and only English</i> , respectively
McManus (1990)	U.S. Census of the Population (1980) (Men: Hispanic)	Index of English Speaking Fluency	Wage return to better spoken English fluency falls as the share of the county of residence that is Hispanic rises
McManus, Gould, and Welch (1983)	1976 SIE (Men: Hispanic and Anglo)	Index of English Speaking Fluency	Among Hispanic men, those who do not speak English earn 66% less than those who speak only English
Mora (1998)	PUMS (1980, 1990; two enclaves: Los Angeles and Miami) (Men: Hispanic and Anglo)	Index of English Speaking Fluency	Hispanic men who have poor English speaking proficiency suffer a 19.9% penalty in both 1980 and 1990
Mora and Davila (1998)	PUMS (1980, 1990) (Men: Hispanic and Anglo; Women: Hispanic)	Index of English Speaking Fluency	Penalty for poor English fluency is smaller for Hispanic women than for Hispanic men
Tainer (1988)	1976 SIE (Men: foreign born, Hispanic, European, and Asian)	Index of English Speaking Fluency	For a one-category decline in English fluency, Hispanic men realize a 17% reduction in annual earnings
Trejo (1997)	Current Population Survey (1979, 1989) (Men: Hispanic, White, and Black)	<i>Not at all, not well, well, very well (Speaks only English)</i>	Penalty gradient is steeper for 1989 data; 37% penalty for <i>not at all</i> , 27% for <i>not well</i> , 14% for <i>well</i> , and 9% for <i>very well</i>

Table A2
Definition of Variables From the Multi-City Survey of Urban Inequality

Variable	Variable Definitions	Variable	Variable Definitions
W	Respondent's hourly wage at survey date	Interviewer male	1 if interviewer is male, 0 otherwise
Fair or better	1 if respondent or interviewer reports English fluency fair or better, 0 otherwise	Interviewer female	1 if interviewer is female, 0 otherwise
Better than fair	1 if respondent or interviewer reports English fluency is better than fair, 0 otherwise	Interviewer White	1 if interviewer is White, 0 otherwise
Accent	1 if interviewer reports respondent speaks English with a non-American accent, 0 otherwise	Interviewer Black	1 if interviewer is Black, 0 otherwise
Little	1 if respondent reports English fluency is little, 0 otherwise	Interviewer Asian	1 if interviewer is Asian, 0 otherwise
Self-fair	1 if respondent reports English fluency is fair, 0 otherwise	Interviewer Other	1 if interviewer is not White, Black, or Asian, 0 otherwise
Well	1 if respondent reports English fluency is well, 0 otherwise	Age	Respondent's age at survey date
Very well	1 if respondent reports English fluency is very well, 0 otherwise	Age squared	Respondent's age at survey date, squared
Poor	1 if interviewer reports English fluency is poor, 0 otherwise	Tenure	Number of years employed by current employer at survey date
Inter-fair	1 if interviewer reports English fluency is fair, 0 otherwise	High school (HS) dropout	1 if respondent failed to complete HS, 0 otherwise
Good	1 if interviewer reports English fluency is good, 0 otherwise	HS	1 if respondent's highest level of schooling is completion of HS, 0 otherwise
Excellent	1 if interviewer reports English fluency is excellent, 0 otherwise	Light	1 if respondent's skin shade is rated by interviewer as light, 0 otherwise
Int EngSkip	1 if interviewer fails to report a respondent's English fluency, 0 otherwise	Dark	1 if respondent's skin shade is rated by interviewer as dark, 0 otherwise

(continued)

Table A2 (continued)

Variable	Variable Definitions	Variable	Variable Definitions
Community college	1 if respondent's highest level of schooling is completion of community college, 0 otherwise	Union	1 if respondent is a union member, 0 otherwise
Attend college	1 if respondent's highest level of schooling was attending college, 0 otherwise	Work part-time	1 if respondent works part-time, 0 otherwise
College	1 if respondent completed college, 0 otherwise	Firm size	Number of workers at respondent's firm per 1,000 workers
Did not complete HS by age 19	1 if respondent did not complete HS by age 19, 0 otherwise	Manager or professional	1 if respondent is in a managerial or professional occupation, 0 otherwise
Self-reported poor HS performance	1 if respondent is <35 and average HS grade is C or poorer or never attended HS, 0 otherwise	Production	1 if respondent is in a precision production, craft, or repair occupation, 0 otherwise
Disability	1 if respondent has a work-limiting health condition, 0 otherwise	Services	1 if respondent is in a service occupation, 0 otherwise
Mother education	1 if respondent's mother completed at least 12 years of formal schooling, 0 otherwise	Craft	1 if respondent is in a craft occupation, 0 otherwise
Father education	1 if respondent's father completed at least 12 years of formal schooling, 0 otherwise	Laborers	1 if respondent is in a laborer occupation, 0 otherwise
Both parents raised	1 if lived with mother and father to age 16, 0 otherwise	Government	1 if respondent is a public employee, 0 otherwise
Foreign resident at 16 years of age	1 if respondent was primarily a foreign resident before age 16, 0 otherwise	1994	1 if respondent was interviewed in 1994, 0 otherwise
Married	1 if respondent is married or living with a partner, 0 otherwise	Supervisor Latino	1 if respondent's direct supervisor is Latino, 0 otherwise
Number of dependents	Number of dependents in the household	Coworkers Latino	1 if respondent's coworkers are mostly Latino, 0 otherwise

Source: Multi-City Survey of Urban Inequality (1992-1994).

Notes

1. Shields and Wheatley Price (2002) use data from the National Survey of Ethnic Minorities (NSEM) collected in 1994, the only other data set we are aware of that provides interviewer scoring of English proficiency on the part of ethnic immigrants working in the United States, to estimate the wage return to English proficiency. However, the NSEM data do not provide self-reports, so they are unable to offer estimates of measurement bias due to self-reported language proficiency.

2. Davila, Bohara, and Saenz (1993), using data from the 1979 National Chicano Survey, is the only study to our knowledge that offers an estimate of the impact of speaking English with a non-American accent on the wages of Latinos in the United States.

3. Hersch (2008) finds that among legal immigrants wages were higher for those with lighter skin. Moreover, using U.S. Census data, Darity, Hamilton, and Dietrich (2002) find that among Latinos, disaggregated by ancestral origin, those who self-identified as racially Black (i.e., darker skin) earn less than their non-Black counterparts. Also, using the Multi-City Study of Urban Inequality (MCSUI 1992-1994), Goldsmith, Hamilton, and Darity (2007) report that lighter skinned Blacks earn more than their darker skinned counterparts.

4. Nine percent of the men and women in our sample report speaking only English in their homes. Of these respondents, the interviewers rated 95% as speaking English *good or better*.

5. The lone exception among studies using Hispanic workers is Mora and Davila (1998), who analyzed Latina and Latino subsamples drawn from the Public Use Microdata Samples (PUMS) in 1980 and 1990. Davila et al. (1993) pool men and women in their study. Dustman and van Soest (2002) present findings for women, based on the same model specification as for men, in their investigation of the connection between spoken German skills and wages for immigrants to West Germany.

6. We are agnostic about whether employer, coworker, or customer interpretations of worker English proficiency are indicators of productivity, cues for discriminatory treatment, or some combination of the two. Nevertheless, we expect workers with lower English proficiency as determined by employers, coworkers, or customers to have lower wages than those with higher proficiency.

7. In conducting the MCSUI, attempts were made to race match, by assigning interviewers of a certain race or ethnicity to respondents of that same race/ethnicity. MCSUI interviewers graded respondents on a salient phenotypical dimension, skin shade, using a Likert scale. Prior to conducting interviews, the orientation of interviewers included training to establish consistency in the coding of respondent skin shade.

8. Borjas (1994) and more recently Berman, Lang, and Siniver (2003) point out that English proficiency and wages might be correlated because higher skilled workers are more likely to speak English effectively and as a result earn higher wages. We attempt to control for ability and academic achievement beyond simply the highest degree attained using a self-reported recollection of average high school grades. In the MCSUI respondents younger than 35—the age below which survey designers believed labor market skills not captured by the highest degree attained were especially important—were asked to recall their average high school grade on a multipoint scale. We use information from that question to create a variable that identifies individuals under the age of 35 reporting a C grade point average or lower, or who did not attend high school at all, as having poor labor market skills. We also include an indicator to control for our respondents who are at least 35 years of age or who had missing information with regard to their recollection of their high school grades.

9. The full set of results is available from the authors by request. The findings are consistent with the literature on wage determination. For instance, wages rise with age, tenure, additional schooling, and union membership, while residing outside the United States as a youth and working part-time reduce hourly pay.

10. These findings are similar to the binary results using a standard of proficiency as *better than poor* (Davila et al., 1993) or better than *not very well* (Fry & Lowell, 2003; Grenier, 1984).

11. The penalty we report using binary measures and self-reported English proficiency is similar to those reported in the literature for Latino men. Davila et al. (1993) find that those with *poor* English fluency earn 12% less, while Fry and Lowell (2003) and Grenier (1984) report that those who judge their spoken English fluency to be *not very well* earn about 14% less per hour.

12. We do not find a statistically significant effect of accent on wages, and eliminating the accent control has virtually no impact on the estimated coefficient of English proficiency. Thus, our findings suggest that not controlling for accent in the literature does not seem to generate much of an omitted variable bias as it relates to male wages. In a subsequent section of this article, we provide a fuller discussion of the impact of both worker accent and skin shade on wages.

13. A table presenting coefficient estimates for all of the variables in the wage-gradient model for men and for women is available from the authors by request.

14. The lack of statistical significance may be due to a small sample size, 267 observations using self-reported language proficiency, and hence a lack of precision in parameter estimates. To examine this possibility, we expand the sample to include all Latino male respondents residing in Los Angeles and add an additional control to our model for Mexican ancestry. This generated a new sample of 367 observations. This exercise left the pattern of our results based on self-reported proficiency unchanged. However, now the results based on interviewer reports were found to be statistically significantly different from the *very good and excellent* category for the *good and fair* as well as the *poor* categories. Thus, if we were to expand our sample of Mexican men to include all Latinos in Los Angeles, not only do we replicate our pattern of a gradational penalty associated with lower levels of proficiency, this penalty is also statistically significant at all levels of proficiency.

15. There is ample evidence of misclassification (measurement) error resulting from self-reported measures of language proficiency in non-Latino samples. For instance, Bleakley and Chin (2004) using PUMS data on immigrants to the U.S. report a downward bias in ordinary least squares estimates of the language wage penalty due to misclassification error based on self-reports. Similarly, Dustman and van Soest (2001) using data on male immigrants to West Germany from Turkey, Yugoslavia, Italy, Greece, and Spain demonstrate that misclassification error resulting from self-reported language proficiency measures is extensive. They report that "neglecting this error leads to a substantial downward bias of the impact of speaking fluency on earnings" (p. 673). Also, Bleakley and Chin conduct an interesting exercise based on a 45-minute literacy test found in the 1992 National Adult Literacy Survey. They use respondents' literacy test scores to instrument for their self-reported language skills and find that uninstrumented self-reported measures of English fluency lead to estimates that are approximately half of the comparable wage penalty from when English fluency is instrumented based on literacy test scores.

16. In a recent study, Hellerstein and Neumark (2002) offer evidence indicating that workplaces with high concentrations of Latino workers are associated with lower wages for Latino workers. The MCSUI data set contains information on ethnic composition of work site. However, the inclusion of ethnic composition of work site in a wage equation, due to selection, is likely to lead to endogeneity. Nevertheless, if we ignore these endogeneity concerns and control for whether the respondent's coworkers are mostly Hispanic and/or if their direct

supervisor is Hispanic, using binary indicators, our general conclusions are unaltered. However, the results fall in magnitude and are measured with less precision. These results are available from the authors by request.

17. Our results for men are not consistent with Telles and Murguia (1990); however, it should be noted that the “dark” category in the Telles and Murguia study included Mexican Americans with indigenous American phenotype and is based on a nationally representative sample conducted in 1979, whereas our data is limited to the Los Angeles metropolitan area and was collected after 1991.

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