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ABSTRACT

The determinants of English language fluency among immigrants and the effects of fluency on earnings are examined, using a unique data set and a sample of more than 800 illegal aliens apprehended in Los Angeles, California. Analysis of the data show the importance of certain variables not previously available, speaking fluency at migration and English reading fluency. English speaking and reading fluency both increase with the time in the United States, and the increase with time is greater for those who are younger at the time of migration, who have had more schooling, and who are not Hispanic. It is shown that reading fluency is more important than speaking fluency as a determinant of earnings. It is also suggested that future surveys of immigrants should include questions on English language proficiency at arrival as well as at the time of interview. The report is divided into four sections: a review of the literature on language and earnings in the labor market for immigrants; data used for this study; a multiple regression analysis of the determinants of fluency in speaking and reading English, including longitudinal changes in speaking skills; and a regression analysis of earnings that focuses on the roles of fluency in speaking and reading English. (LB)

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"Speaking, Reading and Earnings Among Low-Skilled Immigrants"

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Abstract

"Speaking, Reading and Earnings Among Low-Skilled Immigrants"

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This paper is concerned with the determinants of English language fluency among immigrants and the effects of fluency on earnings. Using special survey data on a sample of over 800 aliens, the analysis shows the importance of certain variables not previously available, speaking fluency at migration and English reading fluency. English speaking and reading fluency both increase with the duration in the United States and the increase with duration is greater for those with more schooling and who are not Hispanic. The paper shows that reading fluency is more important than speaking fluency as a determinant of earnings.

(100 words)

August 1990

"Speaking, Reading and Earnings Among Low-Skilled Immigrants"

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Introduction

The growing literature on the economic adjustment or economic assimilation of immigrants has focused on the human capital that is embodied in them, the relevance of this human capital to the destination labor market, and post-migration human capital investments. One important aspect of human capital is "language capital", that is, the speaking, reading and writing skills in one or more languages.

Language capital, particularly spoken language, is partially developed during the course of a child's maturation, for example, the development of speaking fluency in one's "mother tongue." Important investments are made in school and elsewhere in developing further one's language capital in the mother tongue. For most immigrants, however, their mother tongue is not the majority or dominant language spoken in the destination. An immigrant who does not know the dominant language might find a language-minority enclave within which mother-tongue skills can be fruitfully used. A language-minority enclave may, however, limit training opportunities and job mobility, whether it is geographic, occupational, or employer mobility, and thereby limit earnings opportunities. Furthermore, greater dominant language

skills would enhance productivity in the enclave and the non-enclave labor market by increasing efficiency in job search and through greater productivity on the job. There is, therefore, a labor market incentive to acquire dominant language skills. Whether, and under what circumstances, this incentive is worth the cost is of keen interest.

This paper is concerned with both the determinants of fluency in dominant language skills and how these skills are translated into labor market earnings. A unique data set, a sample of illegal aliens apprehended in the Los Angeles area, is used to study the issue.[1]

Section I briefly reviews the literature on the nexus between language and earnings in the labor market for immigrants. It indicates the strengths and limitations of this literature. The data used for this study are described in Section II. Section III is a multiple regression analysis of the determinants of fluency in speaking and reading English. This includes longitudinal changes in speaking skills. Section IV is a regression analysis of the determinants of earnings focusing on the roles of fluency in speaking and reading English. The paper

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[1]The importance of dominant language skills, even for low-skilled workers, has been explicitly recognized in the amnesty program in the 1986 Immigration Reform and Control Act. To change their status from "temporary resident alien" to "permanent resident alien" within the one-year grace period those granted amnesty need to demonstrate a minimal command of English or enroll in at least 40 hours of English language instruction in an approved program (See Chiswick, 1988a).

closes (Section V) with a summary and conclusion, including suggestions for the collection of data on immigrant populations.

I. Language and Earnings

Ever since its recent development, the literature on the economic status of immigrants has been concerned with the "Americanization" or adjustment of immigrants (Chiswick, 1978). One of the important interpretations of the variable for duration in the destination has been the acquisition of destination-specific skills, including labor market information and language skills. The earliest research, using the 1970 Census of Population, was limited by the absence of data on language skills, except for what could be inferred from country of birth.[2]

Substantial progress on the role of language in immigrant adjustment could not be made until the 1976 Survey of Income and Education (SIE) became available. The SIE asked a battery of questions about languages spoken and the use of these languages.[3] The 1980 Census furthered research on language and

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[2]The person's "mother tongue", the language other than or in addition to English spoken in the home when the person was a child, was asked in the 1970 Census questionnaire administered to 15 percent of the population, but a key variable, duration in the United States, was asked only on the questionnaire administered to a non-overlapping 5 percent of the population.

[3]The SIE also included a question on reading: "How often does (the respondent) read an English language newspaper?", with "most days", "occasionally" and "(almost) never" as the acceptable responses. While it is not clear what the reading question does measure, it is clearly not a satisfactory measure of English

earnings by including a self-reported question on fluency in spoken English at the time of the Census, as well as a question on languages currently spoken in the home other than English, a pattern repeated in the 1990 Census questions.

Two data deficiencies in the SIE and the 1980 Census are corrected in the survey data studied in this paper. First, the survey asked for self-reported fluency in English at the time of first arrival in the United States, as well as the SIE/Census question on fluency at the time of interview.[4] Second, the survey included a question on self-reported fluency in reading English at the time of interview. Furthermore, the survey methodology included a bilingual interviewer and both English and Spanish versions of the survey instrument. This methodology should reduce reporting errors and non-response on the part of those least fluent in English.

Most of the American studies of English language fluency have focused on Hispanics. The earliest study was by McManus and his colleagues, and concluded that once language skills are taken into account "the differentials in wages which are associated

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reading fluency.

[4]The logitudinal data on a skill relevant in the labor market can be used to address the critique of Borjas (1985) that the improvement in earnings with duration in the destination observed in cross-sectional data is due to declining cohort quality, with no change in the skills relevant for the U.S. labor market as duration of residence increases. Although re-estimations using the Borjas data and technique do find "assimilation" effects (see, for example, Chiswick (1986) and LaLonda and Topel, (1990), the logitudinal data in this study provide a more direct test.

with Hispanic ethnicity, U.S. nativity, schooling abroad and time in the United States are no longer statistically significant" (See McManus, Gould and Welch (1983), p. 121, See also Gould, McManus and Welch (1982)). They then indicate that the interpretation is not that these factors are unimportant but rather that "their effects are mediated through" measured English language skills. These findings, however, are the result of a specification error.[5]

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[5]McManus, et al. (1983) used a two-step procedure (p. 121). First, standard earnings functions were computed "to identify important interactions and to identify important questions." Three language questions that had the highest explanatory power for earnings were retained. They then write: "Using interactive responses to these questions we identified seven groups that captured most of the information about wages in the SIE language questionnaire and that, at the same time, are arguably well ordered in terms of proficiency in English. By design, they are ordered in terms of wage predictions after the common variables [e.g., region, marital status, schooling, and experience] are taken into account." Thus, the seven English language proficiency groups used in the McManus, et al. earnings analysis are proxies for earnings intervals or categories.

Predictable results emerge. They find that their seven dichotomous English fluency variables are very highly statistically significant--far more so than in other studies. They also find that the effects of other determinants of earnings are reduced and that Hispanic ethnicity loses its statistical significance. The statistical methodology has insured that the partial effects of the variables other than language are biased downward.

McManus, et al also analyze the determinants of their English language proficiency variable (p. 119-120). They combine the seven categories into a single index to serve as a dependent variable. Weights are obtained from the earnings function with the dichotomous language variables on the right hand side. They find that U.S. schooling and U.S. experience raise English language proficiency, but that foreign schooling and foreign experience lower it. What is less clear, however, is whether the analysis is reflecting the effects of the explanatory variables on the language categories or on the earnings weights.

Other studies have used the SIE and the 1980 Census for the United States and 1971 and 1981 Canadian census data to analyze the effect of dominant and minority language proficiency at time of interview on the earnings or occupational status immigrants.[6] In general, the studies find that dominant language fluency, entered directly or using an instrumental variables approach, explains some (perhaps one-third) of the observed immigrant-native earnings differential, other variables the same, and accounts for some of the effect of duration in the destination on earnings.

Veltman (1988, p. 545-546) notes that "no comprehensive account of the language shift process has as yet been produced for immigrants, although several relevant variables have been suggested." He cites only age at migration and length of time in the destination. Using the 1976 SIE data on Hispanics and univariate analysis, he confirms findings also found elsewhere that the propensity to speak English decreases with age at migration and increases with duration in the United States. He did not use the SIE data on schooling or other variables, and, of course, did not have data on English fluency at migration. Chiswick and Miller (in press) used the 1980 U.S. and the 1981

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[6]For the United States these studies include Rivera-Batiz (1989), Chiswick (1987), Chiswick and Miller (in press), Grenier (1984), Kossoudji (1988), Reimers (1983), and Tainer (1988). For studies of the determinants of language fluency and the impact of language fluency on earnings in Canada, where promoting English-French bilingualism is official policy, see, for example, Carliner (1981), Chiswick and Miller (1988, in press), and Grenier and Vaillancourt (1983). One of the few studies of language proficiency among women is in Boyd (in press).

Canadian Censuses to analyze dominant language fluency as a function of demographic, human capital, household characteristic and minority language concentration variables. They also analyzed the effect of dominant language fluency on earnings, and the endogeneity of language skills. Their analyses were, of course, limited by the variables available in the censuses.

Research on the role of language in the labor market has been limited by the absence of data on English speaking ability at immigration. Furthermore, the research has not been able to resolve the issue as to whether speaking ability is sufficient, or whether the speaking variable is reflecting some of the effects of an important unmeasured variable with which it is correlated, fluency in reading English. The analysis in this paper addresses both issues.

II. The Survey Data

The data for this study are from a survey of illegal aliens apprehended by the Los Angeles District Office of the Immigration and Naturalization Service (INS) during the twelve month period starting October 1986.[7] The survey instrument was administered to all illegal aliens detained and processed during this period who satisfied the following criteria: age 15 and over, in the

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[7]A detailed discussion of the survey procedures, an analysis of the survey methodology, and discussion of the randomness of the sample and the characteristics of the population can be found in Chiswick (1989, Appendix A). Chiswick (1989) also provides an extensive analysis of these data.

United States for at least four days during the current stay, were not violent, and not held for felony prosecution. The interviewer was fully bilingual in English and Spanish, and the survey instrument was available in both languages. The interviewer was clearly identified as not being an employee or agent of INS and the interviews were conducted in private.

The questionnaire was designed to elicit information on the income, employment and household structure of the illegal alien population of the United States who would not be eligible for legalization under the Immigration Reform and Control Act of 1986.[8] In addition to standard demographic, skill and labor market questions the survey included the following language questions:

(1) What languages did you usually speak at home as a child? (Circle all that apply.) Spanish, English, Other (specify).

(2) How well did you speak English when you first came to the United States? Would you say: Very well, Well, Not well (a little bit), or Not at all?

(3) Currently how well do you speak English? Would you say: Very well, Well, Not well (a little bit), or Not at all?

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[8]For an analysis of the provisions of the 1986 Act and its implications for the characteristics of aliens not eligible for legalization, see Chiswick (1988a).

(4) Currently how well do you read English? For example, an English language newspaper. Would you say: Very well, Well, Not well (a little bit), or Not at all?

Self-assessment of language skills is always problematical. Test of English language competency that may be more reliable would be very costly to implement for a large sample. The procedure adopted here also has the advantage of comparability to questions asked by the U.S. Bureau of the Census on English speaking fluency. Reliability should be enhanced by the survey procedure of having a bilingual interviewer and English and Spanish versions of the questionnaire. Furthermore, there is no reason to believe the procedure generates systematic biases in the interpretation of the findings.

The survey resulted in 836 completed interviews for males. There were only 14 refusals, for an interview refusal rate of only 1.6 percent. The item non-response rates were also very low. The average length of the interview was 36 minutes, and did not differ between Mexican and non-Mexican men. Among the 836 men, 94 percent of the interviews were conducted in Spanish, 4 percent in English (primarily for men from Canada and the Eastern Hemisphere) and 2 percent in English and Spanish. In only 2 instances was it not possible to conduct the interview because a translator fluent in a third language was not available.

The sample demonstrates characteristics typical of illegal aliens in the Los Angeles labor market (Chiswick (1984, 1988b and 1989), Kossoudji and Ranney (1984) and Massey (1987)). In the

sample, 84 percent of the men were from Mexico, 11 percent from Central America, 2 percent from South America and 3 percent from Canada and the Eastern Hemisphere. Half of the Mexican men were born in the northern part of the Central Plateau, the home of 22 percent of the population of Mexico.

The mean age of the sample was young, only 23 years. The average for the Mexican men was 22 years and about 28 years for the others. They had a relatively short mean duration in the United States during their current stay, 1.5 years overall, 1.4 years for the Mexicans and 2.2 years for the others. However, the Mexican men were more likely to have had previous stays or episodes; 28 percent for the Mexicans, only 15 percent for the others.

The schooling levels in this population are very low. The mean level of schooling outside the United States was 7.1 years overall, and 7.0 years for both the Mexican and other Latin American aliens. It was 8.3 years for the Canadian/European men and 13.2 years for the other Eastern Hemisphere men. This generally low educational attainment was not substantially augmented by schooling in the United States. Among the Mexican men 77 percent had no schooling in the U.S., and another 14 percent had less than one year. Among the non-Mexican men, 61 percent had no U.S. schooling, and another 20 percent had less than one year. Among the small number currently enrolled in school, about half reported enrollment in an "English-as-a-second-language" program for both the Mexican and other aliens.

Reflecting the languages spoken in their countries of origin, nearly all of the Mexican and other Latin American aliens reported that only Spanish was spoken in the home when they were a child. Among the 18 Asian, African and Middle Eastern aliens, all reported a language other than English, but nearly 40 percent also reported English was spoken in the home when they were a child.

III. Speaking and Reading English

This section analyzes the English language speaking and reading skills of the sample of aliens. Although several studies have included analyses of current English language proficiency, this study is unique in being able to analyze speaking fluency at immigration and fluency in both speaking and reading English at the time of interview. This section first analyzes the speaking skills of the aliens. It closes with the analysis of English reading skills.

A. Speaking English

The aliens came to the United States with very poor English language skills. Among the Mexican men, nearly 80 percent reported that they could not speak English at all, another 20 percent reported that they spoke "not well," only 1 percent reported speaking "well," and none said "very well." For the men from other countries, English language skills at migration were only slightly higher: 70 percent spoke "not at all", nearly 20

percent reported "not well," 8 percent spoke "well," and only 5 percent (primarily from Canada and the United Kingdom) spoke "very well."

Language skills increased by the time of the interview, in spite of the short duration in the United States. Among the Mexican migrants, the proportion reporting that they spoke English "not at all" fell by half from four-fifths to two-fifths.[9] Those reporting "not well" increased from one-fifth to over one-half. And 6 percent reported speaking "well" or "very well," in contrast with the 1 percent prior to coming to the United States.

The male aliens from other countries experienced greater improvements in their speaking skills.[10] Less than 30 percent

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[9]English speaking fluency of Mexican men

	At Time of Interview					
When First Came to U.S.	Very Well	Well	Not Well	Not at All	Total	Percent
Very Well	0	0	0	0	0	0.0
Well	2	3	1	0	6	0.8
Not Well	1	15	119	1	136	19.3
Not at All	2	19	252	291	564	79.9
Total	5	37	372	292	706[a]	-----
Percent	0.7	5.2	52.7	41.4	----	100.0

[a]One non-respondent to both questions.

[10]English speaking fluency of non-Mexican men

	At Time of Interview					
When First Came to U.S.	Very Well	Well	Not Well	Not at All	Total	Percent
Very Well	6	0	0	0	6	4.7
Well	2	8	0	0	10	7.8
Not Well	1	10	13	0	24	18.6
Not at All	2	8	44	35	89	69.0
Total	11	26	57	35	129	----
Percent	8.5	20.2	44.2	27.1	---	100.0

reported that they spoke English "not at all," a decline from nearly 70 percent at arrival. And nearly 30 percent reported speaking "well" or "very well," more than doubling the 13 percent at arrival.

The data on English language proficiency prior to first coming to the United States and at the time of interview permit a multivariate analysis of the determinants of increased fluency in English. It is hypothesized that, controlling for language skills at arrival, the longer aliens are in the United States the greater their fluency in English. It is also hypothesized that due to the complementarity of schooling and language fluency, in a low fluency population those with higher levels of schooling would have a greater increase in English language fluency. Furthermore, the effect of a higher level of schooling would be greater the longer the duration of residence. That is, controlling for initial speaking ability, education would have no separate effect at arrival but would have an increasing effect with duration of residence. Finally, it is hypothesized that the greater extent of temporary migration of Mexican aliens, because of the low cost of to-and-from migration, and the existing Spanish-speaking Mexican-origin enclave in the Los Angeles area would retard their investments in developing English fluency.[11]

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[11]Chiswick and Miller (in press) show that in the U.S. and in Canada residence in an area in which many others speak the same minority language has a significant negative effect on the acquisition of the dominant language. It is not possible to explicitly test the minority language concentration effect on language fluency in the survey under study which is limited to the Los Angeles area.

The variables used in the econometric analysis of speaking English (and the analyses below for reading English and for earnings) are defined in Table 1.[12] The multiple regression analysis of speaking English is reported in Table 2. The dichotomous dependent variable SPEKWELL takes the value of 1 if the respondent reports speaking English "well" or "very well" at the time of interview; otherwise it is 0.[13] The equations are computed overall, and separately for Mexican and other Latin American men, using OLS and logit analysis.[14]

The first two columns in Table 2 report the simple linear regression for speaking well or very well (SPEKWELL) both with and without the statistical control variables for initial English speaking ability. The explanatory power of the equation is increased significantly (from 34 percent to 39 percent) when speaking skills at arrival are held constant. Perhaps most important, the partial effects of education and Canadian/Eastern Hemisphere origin are biased upward when speaking skills at arrival are not held constant. That is, part of the greater fluency of those with more schooling and from Canada/Eastern Hemisphere is due to their greater English fluency at arrival. There is little substantive difference between the results of the

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[12]The means and standard deviations of the variables are reported in Chiswick (1989).

[13]Tests indicate this is the most efficacious dichotomization of the four-category language variable for analyses of spoken language fluency.

[14]Essentially the same results emerge from the OLS and logit analyses.

OLS specification and the logit specification (compare Table 2 columns 2 and 6).

Controlling for speaking skills at arrival, there is a highly significant positive relationship between the ability to speak English well or very well and variables for duration in the United States, schooling and a non-Mexican origin (Table 2). Overall, an extra year in the United States during the current stay is associated with a 3 percentage point higher probability of speaking well or very well, but the effect differs by country of origin. It is only 2 percentage points for Mexican aliens and 7 percentage points from other Latin American aliens, and the difference is statistically significant (Table 2, columns 4 and 5).

An additional year of schooling is also associated with a higher probability of speaking well or very well. Overall the effect is 1.3 percentage points per year of schooling. However, it is 1.0 percentage point for Mexican aliens and 2.4 percentage points for other Latin American aliens. Again the difference is statistically significant.

Table 2, column 3 analyses SPEKWELL by including interaction variables. As hypothesized, differences in schooling at immigration have no effect on language skills when initial speaking skills are held constant. However, the effect of a higher level of schooling increases with duration in the United States. At 3 years in the United States, an extra year of schooling raises the proportion speaking well or very well by 2.0

percentage points overall. Separate regressions by origin indicate the effect is 1.7 percentage points for Mexicans and 3.2 percentage points for other Latin American men.

The analysis indicates that older migrants have more difficulty adapting to English. As hypothesized, at arrival there is no effect of age on English skills, but the age-duration interaction variable indicates that the improvement in English language skills with duration is significantly slower for older migrants, other variables the same. It is slower by 1.3 percentage points for each year difference in age.

The level and improvement in language skills also varies by country of origin. Although in Table 2, column (3) other Latin American aliens have a poorer fluency at arrival than Mexican aliens (coefficient -0.055, t=-1.65), their skills increase more sharply with duration (coefficient 0.037, t=3.3) and they surpass the Mexican aliens after 18 months.[15]

The small sample of other aliens (Canadian and Eastern Hemisphere = OTHER) initially have much greater proficiency in English (Table 2, column 3, coefficient=0.667, t=6.927). However, the interaction term indicates the difference narrows with duration (coefficient= -0.087, t=-2.497).

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[15]There is also a large and highly significant difference in the effect of duration on English-speaking fluency between Mexican and other Latin American men when the equations are computed separately by origin, where the effect is larger for the latter group.

The primary purpose of the SPOKE variables in Table 2 is to control for initial conditions.[16] The coefficients indicate the not surprising result that those who had greater English speaking fluency at arrival were more likely to have greater fluency at the time of interview.

In summary, controlling for English speaking ability at immigration, spoken English fluency improves with duration in the United States after immigration. This improvement is steeper for those with higher levels of schooling, who are younger at immigration, and who came from Latin American countries other than Mexico. Those with greater speaking fluency at arrival also have greater fluency at the time of interview.

B. Reading English

It is unfortunate that questions on English literacy no longer appear in most surveys and censuses that have been used to study immigrant labor. Believing that this is still an important issue, especially for low-skilled immigrants, the survey instrument included a question on the self-reported ability to read English at the time of interview. The responses could fall into one of four categories: "very well," "well," "not well," or "not at all."

The Mexicans reported very low skills in reading English. Nearly two-thirds of the Mexican men reported "not at all," and

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[16]The statistical control for fluency at arrival may also control for individual differences in self-assessment of the same "objective" level of fluency.

one-third reported "not well." For other nationals, the situation was somewhat better. Nearly half reported "not at all," over a third reported "not well," and nearly one-quarter reported "well" or "very well." Aliens who had been in the United States for three or more years during their current stay had a higher level of reading ability than more recent arrivals.[17] Yet, only 11 percent of the Mexicans and 37 percent of other nationals in the United States for three or more years read English "well" or "very well."

It is to be expected that English speaking fluency would be an important determinant of English reading skills. Those more fluent in speaking English would be more adept at learning how to read and at increasing their fluency. Therefore, the determinants of speaking skills discussed above are also determinants of reading skills. Yet the inquiry here is whether reading fluency is related to demographic and human capital variables after controlling for speaking fluency.

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[17] Ability to read English at the time of interview by country of origin and duration in the United States.

Reads	MEXICO[a]		OTHER COUNTRIES		TOTAL
	Less Than 3 Years	3 or More Years	Less Than 3 Years	3 or More Years	
Very Well	2	1	5	6	14
Well	15	13	5	13	46
Not Well	162	67	21	22	272
Not at All	392	51	46	11	500
TOTAL	571	132	77	52	832

[a]Duration not reported for three Mexican males and reading ability not reported for a fourth.

The acquisition of reading skills is a form of investment in human capital. The accumulated stock of reading capital would increase with greater exposure to the United States, even when speaking skills are held constant. This implies that reading skills would increase with the duration of the current residence in the United States. It also implies that for aliens from countries where multiple stays in the United States are not uncommon (such as Mexico), reading skills would increase with age when duration of the current stay is held constant.

Because of the complementarity among types of human capital the costs involved in acquiring English reading skills would be smaller for those with more schooling, while the benefits from doing so would be larger. The effect of schooling, however, is expected to increase with the length of time in the United States.

The regression equations are reported in Table 3 for the dichotomous dependent variable, READWELL, which is unity for those who read "well" or "very well", using both OLS and logit analysis.[18] The simplest functional forms are presented in Table 3 columns (1) to (3) which examine the effects of adding speaking fluency to a reading skills equation. As indicated in column (1) English reading skills are significantly greater among those with more schooling, who have been in the United States a longer period of time and who are of Canadian/Eastern Hemispheric

[18]Tests indicate this is the most efficacious dichotomization of the four-category variable. Similar results emerge when "not at all" is compared to all other reading categories.

origin. The addition of English speaking skills at immigration (STSPWELL) significantly increases the explanatory power of the equation (adjusted R^2 increases from 0.32 to 0.45). The inclusion of STSPWELL reduces by about one-quarter the partial effects on reading skills of schooling and duration, and reduces by almost two-thirds the coefficient on Canada/Eastern Hemisphere, but these explanatory variables remain highly significant. Controlling for speaking skills at immigration, each extra year of schooling increases the probability of reading English well or very well by 1.3 percentage points, while each extra year in the U.S. raises it by 2.3 percentage points. Furthermore, as would be expected, those who spoke English well or very well at immigration had greater reading ability in English at the time of interview.

In column (3) of Table 3, the variable for English speaking skills at migration is replaced by the same variable at the time of the interview (SPEKWELL). Presumably because similar processes enhance speaking and reading skills this substitution increases the explanatory power of the equation (adjusted R^2 increases from 0.45 to 0.57). Since current speaking skills have been shown above to increase with schooling level and duration in the U.S., substituting current for initial speaking fluency lowers the partial effects of these variables. However, even after controlling for current English speaking skills, current reading ability is significantly greater for those with more schooling, in the U.S. a longer period of time, from

Canada/Eastern Hemisphere, and for those who immigrated at an older age.

The logit equation in Table 3 column (5) demonstrates the statistical importance of the same variables as in the OLS analysis, schooling, duration,English speaking skills and country of origin (compare Table 3, columns (3) and (5)).

Interaction variables are added to the equation in Table 3, column (4), and regressions were also computed separately by country of origin. Controlling for speaking skills at migration, an extra year of schooling increase English reading skills, with the partial effect increasing with the duration of residence. At three years of residence an extra year of schooling increases the probability of reading well or very well by 1.9 percentage points. The partial effect is 1.3 percentage points per year of schooling overall, but it is smaller for Mexican immigrants, 1.0 percentage point, compared to 2.1 percentage points for other Latin Americans. Age, however, shows no statistically significant effect on reading skills when initial speaking skills are held constant.

The partial effect of duration of residence is a highly statistically significant 2.3 percentage points per year in this sample controlling for initial speaking fluency. This effect varies with schooling level, it is larger for those with more schooling (Table 3, column (4)). It also varies by country of origin, being larger for the other Latin American migrants than for the Mexicans.

In summary, the analysis indicates that English reading ability among low-skilled immigrants is related to their overall skill level. Reading fluency is significantly greater for those with more schooling, in the U.S. a longer period of time, more fluent in speaking English at immigration, and from Canada/Eastern Hemisphere countries. Duration in the U.S. has a larger positive impact for those with more schooling and for Latin American men other than Mexicans.

IV. Earnings

This section reports the results of the multiple regression analysis of earnings for the sample of illegal aliens. Two dependent variables are considered: the usual weekly earnings during the current stay and the most recent hourly wage in the current stay. Because of missing values for one or more of the variables in the analysis, particularly the earnings variables, the analysis of usual weekly earnings is for about 380 observations and the analysis for hourly wages is for 605 observations.[19]

Following standard practice, the natural logarithm of earnings is regressed on demographic and human capital

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[19]The average usual weekly earnings during the current stay for the 398 adult men who responded to this question was $174. The earnings were lower for the Mexican men ($172) than for the men from other Latin America ($182) or other countries ($180).

variables.[20] It is hypothesized that earnings increase with the level of schooling attainment (EDUC), labor market experience in the current stay (DURNOW*), and total labor market experience (T), and that earnings are lower for those who are not currently married (SPOUSEAB). It is also hypothesized that earnings are greater for those more fluent in English (SPEKWELL and READWELL).

The regression analysis of usual weekly earnings is presented in Table 4 with a statistical control for the natural logarithm of usual hours of work per week (LNHOURS/WK) in Columns 1 and 2 but not in Columns 3 and 4. When hours per week are held constant the coefficients of the other variables in the equation measure their effects on usual earnings per hour worked. Columns 2 and 4 include the speaking and reading variables (SPEKWELL and READWELL). The regression analysis for the most recent hourly wage is reported in Table 5 for the full sample and separately by country of origin, where the regressions in each table differ by the inclusion of the language variables.

As has been shown elsewhere, schooling has a highly significant effect on the earnings of the illegal alien (see, for example, Chiswick (1984, 1988b), Kossoudji and Ranney (1984), and Massey (1987)). In these data, weekly or hourly earnings rise by about 2 percent and 3 percent, respectively, for each additional year of schooling. The effect is somewhat larger, 3.5 to 4 percent, for the aliens from other Latin American countries.

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[20]For previous applications to illegal aliens, see Chiswick (1984 or 1988b), Kossoudji and Ranney (1984) and Massey (1987).

These partial effects are comparable to coefficients found in other analyses for illegal aliens, although they are lower than what is found in studies of legal immigrants (Chiswick, 1984 or 1988b).

Labor market experience in the United States during the most recent stay (DURNOW*) has a significant effect on usual weekly earnings (Table 4). When hours of work are not held constant and there are no controls for language fluency (Table 4, Column 3), the partial effect of duration in the United States during the current stay is 3.8 percent per year, with a t-ratio of 3.9. The statistical control for usual hours of work lowers the partial effect of current U.S. experience to 2.0 percent (t=2.4), because usual hours worked per week increases with duration. The partial effect of duration on usual weekly earnings is reduced from 3.8 percent to 3.3 percent (or when hours are held constant, from 2.0 percent to 1.4 percent) when the language variables are held constant.

When the most recent hourly wage is the dependent variable, the coefficient of the duration variable is smaller and is less significant (Table 5). Indeed when the language variables are included in the hourly wage equation duration in the U.S. is not statistically significant. Controlling for language skills reduces the effect of duration in the United States on the hourly wage because, as was shown above, English language fluency itself increases with duration.

The coefficients of the variables for total labor market experience (T) and its square (TSQ), and marital status (SPOUSAB) are not sensitive to the inclusion of language variables. In Table 4, those who are not married have lower usual weekly earnings (by about 13 percent). About one-third of this differential arises because they work fewer hours and two-thirds because they earn less even when hours worked are held constant (about 8 percent lower earnings). In the analysis of hourly wages, however, there is generally no significant marital status effect.

Other variables the same, there is no difference in usual weekly earnings or hourly wages between Mexican and other Latin American aliens, and no effect of adding statistical controls for language fluency. By way of contrast, although the coefficient is always negative, Canadian and Eastern Hemisphere aliens (OTHER) show no significant weekly earnings or hourly wage difference from the Mexican men when language variables are not included in the equation.[21] When English language fluency is held constant, however, the usual weekly earnings of the

[21]The only exception is the large and marginally significant effect (coefficient-0.23, t=1.8) when hours are not held constant. Mexican men have a longer work week, 40.7 hours in contrast to the 37.7 hours for the Canadian and Eastern Hemisphere men.

Canadian/Eastern Hemisphere men (OTHER) are significantly lower than the earnings of Mexican men.[22]

Lastly, consider the coefficients of the English language fluency variables, SPEKWELL and READWELL. Alternative specifications, the most informative of which are presented in Tables 4 and 5, indicate that the variable for reading English consistently has a larger coefficient and a higher t-ratio than the variable for speaking. In the analysis for weekly earnings with a control for hours worked per week (Table 4, column 2), reading well or very well increases earnings by a highly statistically significant 31 percent (converting the coefficient of 0.27 to a percent increase), while the speaking coefficient is very small and not significant (coefficient of -3 percent, t=-0.3). In the analysis of hourly wages (Table 5, column 3), reading well or very well increases wages by a highly statistically significant 30 percent (converting the coefficient of 0.26 to a percent increase). Comparable findings appear when separate analyses are performed for Mexican and other Latin American aliens--speaking fluency has no separate effect and

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[22]The coefficient for Canada/Eastern Hemisphere (OTHER) is -0.40 (t=-2.5) but declines to -0.26 (t=-2.0) when hours worked per week are held constant. These represent earnings that are lower by 33 percent and 23 percent, respectively. When the hourly wage is the dependent variable, the coefficient of OTHER becomes more negative but remains insignificant when the language variables are added to the equation. Many of the Eastern Hemisphere illegal aliens were students in the United States who had violated a condition of their visa, usually by working. Their low hourly wage may reflect the adverse effects on job opportunities of dovetailing work with schooling (Lazear, 1977).

reading well or very well increases wages by a statistically significant 37 percent and 42 percent, respectively, for the Mexican and other Latin American men.

Thus, reading skills dominate speaking skills in the analysis of the effect of English language fluency on earnings. Furthermore, the inclusion of language fluency variables reduce, but do not eliminate, the measured effect on earnings of experience in the United States labor market. Finally, the inclusion of language variables alters the relative differences in earnings by country of origin. The relative earnings of Hispanic aliens is enhanced when there is an adjustment for their lower level of fluency in English.

V. Summary and Conclusion

This paper is concerned with the determinants of English language fluency and the effects of English language fluency on the earnings of a sample of low-skilled aliens. Using special survey data on over 800 illegal aliens, the analysis shows the importance of certain variables that are not available in the Census Bureau data that have been used previously to study immigrant labor market activities. These variables are English speaking fluency at migration and English reading fluency.

Using longitudinal data from self-reported responses to questions on English speaking fluency at arrival in the United States and at the time of interview it is shown that English-speaking fluency improves with duration in the United States.

The improvement is greater for those with higher levels of schooling, presumably because of the complementarity of schooling and language acquisition and utilization. The improvement with duration is also greater for those who came to the United States at a younger age, reflecting the greater ease of language acquisition for younger people. The improvement with duration is slower for Mexican aliens. This may reflect the greater temporary nature of their stays and the adverse effects on English language acquisition of living in a language-minority enclave. Furthermore, tests indicate that analyses of English speaking fluency result in upward biased estimated effects of schooling and non-Mexican origin if fluency at arrival is not held constant.

The men in the sample reported very poor English reading skills, particularly the Mexican nationals. The regression analysis of English reading ability demonstrates the large and highly significant effect of English speaking skills at migration and at the time of interview. Yet, even after controlling for speaking skills there are important effects on reading of demographic and human capital variables. Reading skills increase with schooling level and duration in the United States, and the increase with duration is greater for those with more schooling. This presumably reflects the complementarity of various types of human capital. Age at immigration apparently has no independent effect on reading fluency when speaking fluency at immigration is held constant, but it has a postive effect when speaking fluency

at the time of the interview is held constant. Hispanic aliens reported poorer English reading skills than those from Canada/Eastern Hemisphere, even when other variables are the same. This may be reflecting adverse impacts on the acquisition of English reading skills of living in a language-minority enclave.

The analyses of the usual weekly earnings and most recent hourly wages of the illegal aliens show patterns consistent with other studies. Earnings increase with level of schooling, total labor market experience, and experience in the United States labor market. Adding variables for English language fluency (speaking and reading) reduces, but does not eliminate, the partial effect of duration in the United States on earnings. The coefficients of the schooling, marital status and total experience variables are not affected.

In the analyses of weekly earnings and hourly wages the variable measuring English reading proficiency dominates the variable measuring English speaking skills. That is, measures of reading skills are more important statistically for understanding labor market outcomes than merely measures of speaking English.

These findings indicate the importance of English language proficiency, especially reading and writing skills, for the labor market success of immigrants. They also suggest that future surveys of immigrants should include questions on English proficiency at arrival as well as at the time of interview, and that questions on reading skills may be more useful than merely

asking the respondent's fluency in spoken English. Furthermore, tests designed by the immigration authorities to evaluate the applicant's likely adjustment to the United States labor market for purposes of legalization, immigration or naturalization would be more effective if they also measure English reading skills.

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Table 1

List of Variables Used in Statistical Analysis

Variable	Code	Description
Language Skills	SPEKWELL, READWELL	Dichotomous variable, equal to unity if speak English or read English well or very well; zero otherwise.
SPOKE3	SPOKE1 SPOKE2 SPOKE4	English speaking ability when came to the United States for the first time: 1 = very well, 2 = well, 3 = not well, 4 = not at all
	STSPWELL	Dichotonous variable equal to unit if SPOKE1 or SPOKE2 are unity; otherwise zero.
Earnings	LNWKEARN, LNWAGENW	The natural logarithm of the usual weekly earnings, current stay or of the most recent hourly wage, current stay.
Schooling	EDUC	Total years of schooling.
Age and Experience	AGE	Age in years.
	T	Years of labor market experience. (Age-schooling-5, or years since age 15, for those with 10 or fewer year of schooling).
Marital Status	SPOUSAB	Dichotomous variable, equal to unity if divorced, widowed, or never married; zero otherwise.
Duration in United States	DURNOW*	Years in the United States, current stay. DURNOW* = (year and month of interview) minus (year and month last entered)
Hours of work	LNHOUR/WK	The natural logarithm of hours worked per week, current stay.
Country of Birth[a]	MEXICO, OTHLATIN, OTHER	Dichotomous variable, equal to unity if born in Mexico, another Latin American country, or another country.

[a]OTHLATIN includes Belize, Colombia, Chile, Costa Rica, El Salvador, Equador, Guatemala, Honduras, Nicaragua, Peru, and Venezuela. OTHER includes Canada, India, Iraq, Israel, Italy, Korea, Lebanon, Morocco, Nigeria, Pakistan, Philippines, Syria, Taiwan, and United Kingdom.

Table 2
Analysis of Fluency in Speaking English (SPEKWELL)
by Country of Origin, OLS and Logit

	OLS					Logit[b]
Variable	All	All	All	Mexico	Other Latin Amer	All
AGE	-0.0003 (-0.216)	-0.0007 (0.592)	0.0018 (1.376)	0.0003 (0.199)	0.0004 (0.128)	-0.0374 (-1.21)
EDUC	0.0178 (6.405)	0.0135 (4.891)	0.0049 (1.548)	0.0105 (3.595)	0.0243 (3.151)	0.2984 (4.86)
DURNOW*	0.0317 (8.401)	0.0292 (8.004)	0.0243 (1.776)	0.0212 (5.602)	0.0706 (5.862)	0.3372 (6.09)
SPOKE1	(a)	0.4199 (3.458)	0.3896 (3.290)	(a)	0.6282 (2.419)	21.675 (.0006)
SPOKE2	(a)	0.4195 (6.239)	0.4141 (6.316)	0.6446 (7.278)	0.3430 (1.328)	3.7311 (2.97)
SPOKE4	(a)	-0.0745 (-3.639)	-0.0694 (-3.473)	-0.0602 (-2.870)	-0.0700 (-0.979)	-1.0672 (-3.01)
OTHLATIN	0.0423 (1.651)	0.0452 (1.835)	-0.0552 (1.649)	(a)	(a)	0.6307 (1.42)
OTHER	0.7576 (13.492)	0.5905 (7.621)	0.6671 (6.927)	(a)	(a)	3.3483 (2.99)
(EDUC)(DURNOW*)	(a)	(a)	0.0051 (4.587)	(a)	(a)	(a)
(AGE)(DURNOW*)	(a)	(a)	-0.0013 (-2.920)	(a)	(a)	(a)
(OTHLAT)(DURNOW*)	(a)	(a)	0.0366 (3.328)	(a)	(a)	(a)
(OTHER)(DURNOW*)	(a)	(a)	-0.0878 (-2.497)	(a)	(a)	(a)
CONSTANT	-0.1101 (-3.028)	0.0101 (-0.248)	0.0095 (-0.212)	-0.0115	-0.1506	-4.5837 (-5.36)
R^2	0.3438	0.3947	0.4339	0.1732	0.4940	--
Adj R^2	0.3397	0.3886	0.4263	0.1671	0.4621	--
Sample Size	802	802	802	680	102	802

Note: Men who spoke only some English (SPOKE 3) before coming to the United States are the benchmark in columns (2) to (5). In the pooled equation Mexican men are also the benchmark. t-ratios in parentheses.

*Variable not included.
[b]Logit analysis final value of log likelihood ratio -134.7. Very few observations in the SPOKE1 category.

TABLE 3

Regression Analysis of Fluency in Reading English Well or Very Well (READWELL), OLS and Logit

	OLS				Logit[b]
Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
AGE	0.0018 (1.66)	0.0010 (1.08)	0.0019 (2.25)	0.0009 (0.79)	0.0654 (1.94)
EDUC	0.0168 (6.78)	0.0131 (5.82)	0.0072 (3.56)	0.0060 (2.27)	0.2433 (3.01)
DURNOW*	0.0266 (7.92)	0.0229 (7.52)	0.0095 (3.41)	-0.0155 (-1.33)	0.1852 (2.49)
STSPWELL	(a)	0.7051 (13.43)	(a)	0.7319 (11.01)	(a)
SPEKWELL	(a)	(a)	0.5390 (21.42)	(a)	4.4105 (8.36)
OTHLATIN	0.0096 (0.42)	0.0105 (0.51)	-0.0132 (-0.72)	-0.0495 (-1.77)	-0.6697 (-1.01)
OTHER	0.6177 (12.35)	0.2326 (4.34)	0.2093 (4.74)	0.3742 (4.47)	0.3472 (0.44)
(AGE) (DURNOW*)	(a)	(a)	(a)	0.0003 (0.76)	(a)
(EDUC) (DURNOW*)	(a)	(a)	(a)	0.0043 (4.54)	(a)
(OTHLAT) (DURNOW*)	(a)	(a)	(a)	0.0228 (2.46)	(a)
(OTHER) (DURNOW*)		(a)	(a)	(a) (-2.47)	-0.0743 (a)
(STSPWELL) (DURNOW*)	(a)	(a)	(a)	-0.0149 (-1.18)	(a)
CONSTANT	-0.1551 (-4.79)	-0.1139 (-3.87)	-0.0958 (-3.69)	-0.0577 (-1.72)	-8.4380 (-6.88)
R^2	0.3277	0.4519	0.5738	0.4804	--------
AdjR^2	0.3234	0.4478	0.5705	0.4732	--------
Sample Size	802	802	802	802	802

Note: Mexican men are the benchmark.
t-ratios in parentheses.
[a]Variable not included
[b]Logit analysis, final value of log-likelihood function -72.1

Table 4

Regression Analysis of the Natural Logarithm of the Usual Weekly Earnings During the Current Stay (Dependent Variable: LNWKEARN)

Variable	(1)	(2)	(3)	(4)
EDUC	0.01906 (2.500)	0.01447 (1.858)	0.02370 (2.599)	0.01967 (2.102)
T	0.01122 (1.655)	0.01055 (1.566)	0.01339 (1.641)	0.01263 (1.548)
TSQ	-0.00024 (-1.429)	-0.00024 (-1.439)	-0.00038 (-1.920)	-0.00038 (-1.894)
DURNOW*	0.01961 (2.405)	0.01441 (1.678)	0.03779 (3.895)	0.03276 (3.254)
SPOUSAB	-0.08312 (-1.644)	-0.08742 (-1.736)	-0.13167 (-2.177)	-0.13818 (-2.283)
LNHOURS/WK	0.72461 (12.804)	0.73138 (12.972)	(a)	(a)
SPEKWELL	(a)	-0.02862 (-0.320)	(a)	0.05836 (0.538)
READWELL	(a)	0.26992 (2.467)	(a)	0.16031 (1.209)
OTHWHEM	-0.03722 (-0.730)	-0.04660 (-0.914)	-0.05654 (-0.923)	-0.06784 (-1.102)
OTHER	-0.07369 (-0.671)	-0.25913 (-1.955)	-0.23439 (-1.779)	-0.40360 (-2.516)
CONSTANT	2.26849	2.29021	4.87120	4.91345
R^2	0.3686	0.3811	0.0912	0.0993
Adj R^2	0.3550	0.3644	0.0743	0.0777
Sample Size	380	380	385	385

Note: Mexican men are the benchmark.
t-ratios are in parentheses.

*Variable not included.

Table 5

Regression Analysis of the Natural Logarithm
of the Most Recent Hourly Wage
During the Current Stay
(Dependent Variable: LNWAGENW)

	All Countries			Mexico	Other Latin Amer.
Variable	(1)	(2)	(3)	(4)	(5)
EDUC	0.02962 (4.065)	0.02814 (3.778)	0.02587 (3.456)	0.02266 (2.630)	0.03434 (2.304)
T	0.02226 (3.389)	0.02183 (3.315)	0.02153 (3.281)	0.01846 (2.443)	0.03405 (2.401)
TSQ	-0.00036 (-2.223)	-0.00035 (-2.169)	-0.00035 (-2.179)	-0.00029 (-1.590)	-0.00060 (-1.674)
DURNOW*	0.01370 (1.726)	0.01153 (1.398)	0.00927 (1.120)	0.01445 (1.560)	-0.03593 (-1.770)
SPOUSAB	-0.04835 (-0.941)	-0.05039 (-0.980)	-0.04908 (-1.958)	-0.02105 (-0.338)	-0.10868 (-1.135)
SPEKWELL	(a)	0.07669 (0.969)	-0.04529 (-0.478)	-0.07627 (-0.684)	0.06082 (0.318)
READWELL	(a)	(a)	0.25881 (2.326)	0.31667 (2.320)	0.35649 (1.623)
OTHLATIN	-0.04827 (-0.951)	-0.05247 (-1.030)	-0.05277 (-1.039)	(a)	(a)
OTHER	-0.00520 (-0.046)	-0.06365 (-0.49[illegible])	-0.15758 (-1.169)	(a)	(a)
CONSTANT	1.09180	1.10725	1.12692	1.13753	1.03475
R^2	0.0672	0.0687	0.0771	0.0580	0.2692
Adj. R2	0.0563	0.05[illegible]2	0.0631	0.0447	0.2044
Sample Size 87		605	605	605	502

Note: Mexican men who are the benchmark in the pooled equations.
t-ratios are in parentheses.
(a) Variable not included.