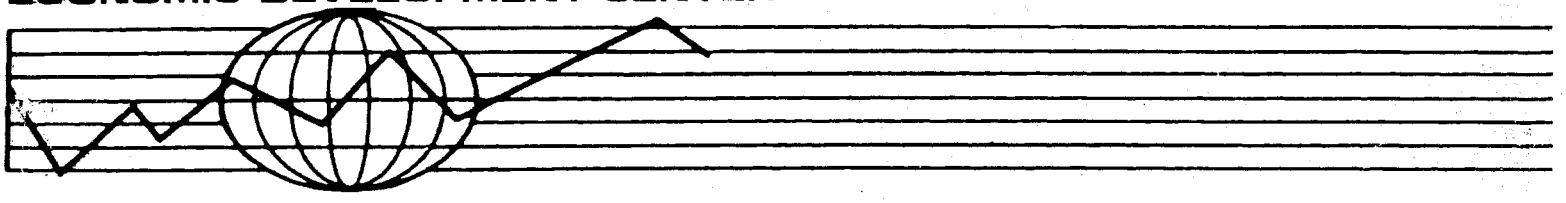
Bulletin Number 87-12

December, 1987

ECONOMIC DEVELOPMENT CENTER



ENGLISH LANGUAGE SKILL ACQUISITION, LOCATIONAL CHOICE AND LABOR MARKET RETURNS AMONG THE MAJOR FOREIGN-BORN LANGUAGE GROUPS IN THE UNITED STATES IN 1900 AND 1980

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November 1987

Support from the Russell Sage Foundation for the research is gratefully acknowledged.

1. Introduction

A common language, like a common currency, facilitates exchange, whether economic, social or political, among interacting individuals in a community. In recent years, concern has been expressed about the possibility of language "bifurcation" in the United States. It is believed by some that as significant numbers of the foreign-born who have a non-English language in common come to the United States, there will be potential for a competing language "currency". Of course, since a common language facilitates exchange, this possibility becomes more likely if the competing non-English language groups are more likely to enter into transactions with each other than with those individuals speaking English within the United States. The settlement patterns of the common-language groups, to the extent that proximity correlates with the number of "own"-language transactions, thus may be an important factor in determining the potential for the viability of a second language in the United States.

Is the possibility of English being displaced by another language in certain parts of the United States more probable today than in previous periods of U.S. history? Table 1 compares the language-relevant characteristics of the 1980 and 1900 foreign-born populations, based on the Public Use Tapes of the respective population Censuses of those years. A striking feature of this table is that in 1900, when the proportion of the total population born outside of the United States was twice what it was in 1980, a higher proportion of the foreign-born could not speak English, by almost a factor of two to one. Moreover, the dominant, non-English common-language groups in both periods represented a similar proportion of the total foreign-born population--26 percent of the foreign-born in 1980 came from Spanish-speaking-countries, 29 percent in 1900 came from countries in

Table 1

Language Characteristics of Foreign-Born Populations
Aged 20-64 in 1980 and 1900

Characteristic	1980 Males	1980 Females	1900 Males	1900 Females
Percent from English-speaking countries	23.1	27.1	29.6	37.3
Highest Percent from countries with common non-English language	31.6[a]	29.1[a]	29.3[b]	29.4[b]
Percent cannot speak English	5.6	8.5	11.9	15.6
Percent speak English not well	15.4	15.2	n.a.	n.a.
Mean years in U.S.	14.7	16.3	18.7	19.9
Mean age	38.0	39.7	39.3	40.1

a. Spanish-speaking countries: South America, excluding Brazil; Central America, excluding Belize and French Guyana; Spain.

b. German-speaking: Germany, Prussia, Austria.

which German was the common language (Germany, Prussia, Austria). And the average number of years and age of the foreign-born populations in 1900 are quite similar. Yet, German (or another language) did not overtake English.

Table 2 compares the characteristics of the German and Spanish-language foreign-born in 1900 and 1980, respectively. It reveals that while the proportions of the German-language foreign-born and Spanish-language foreign-born in the total foreign-born populations were approximately the same across the two Census years, the Spanish-language foreign-born were almost 40 percent less likely to be able to speak any English in 1980 compared to the German-language foreign-born in 1900. However, in part this may be due to the higher fraction of new entrants among the Spanish-language foreign-born--from 21 to 23 percent of the Spanish-language foreign-born had been in the United States less than five years in 1980 as compared to less than seven percent of the German-speaking foreign-born.

The most important difference between the two dominant non-English-speaking language groups in 1900 and 1980 appears to be in the degree of geographical concentration of the two groups. The first three columns of Table 3 provide a listing of the top ten U.S. localities--urban areas with a population size of 25,000 or more in 1900 and county groups in 1980--by the proportions of their populations composed of the respective common-language groups. While the proportions in 1900 for the German-speaking foreign-born ranged from 5.6 to 11.5 percent in the top ten localities, the proportions of the Spanish-language foreign-born begin at 22.8 percent (in Cameron County, Texas) and reach as high as 69.4 percent (in Hialeah, Dade County, Florida). Moreover, while eight states appear among the top ten localities ranked by common-language group concentration, inclusive of four in the

Table 2

Language Characteristics of Major Common-Language Groups in 1980 (Spanish) and 1900 (German): Foreign-Born Aged 20-64

	1980 (Spanish)		1900 (German)	
	Males	Females	Males	Females
Percent No English	13.8	21.2	8.1	15.9
Percent English not well	41.9	45.9	-	-
Mean years in U.S.	14.7	16.3	20.7	20.0
Percent in U.S. less than 5 years	22.7	20.8	6.8	6.3
Mean age at entry	23.4	23.8	20.2	19.1

Table 3

Top Ten Locations by Proportion of Population
Composed of Largest Foreign-Born Common Language Group
and by Proportion Unable to Speak English in 1900 (German) and 1980 (Spanish)

Percent Foreign-Born Common Language Group in Total Population			Percent Unable to Speak English in Foreign-Born Population		
1900					
State	Locality[a]	Percent	State	Locality[b]	Percent
Michigan	Bay City	11.5	Oregon	Portland	41.7
Utah	Salt Lake City	9.1	Mass.	New Bedford	40.0
New Jersey	Bayonne	7.3	Michigan	Grand Rapids	35.7
Mass.	Fitchburg	7.0	New Jersey	Newark	34.4
Ohio	Canton	6.8	Ohio	Dayton	33.3
Iowa	Cedar Rapids	6.7	Mass.	Holyoke	33.3
New Jersey	Atlantic City	5.9	Hawaii	Honolulu	30.0
Iowa	Council Bluffs	5.9	Mass.	Fall River	29.4
Nebraska	South Omaha	5.9	Penn.	Allegeny	27.2
Conn.	New Britain	5.6	Wisconsin	Milwaukee	26.5
1980					
State	Locality[a]	Percent	State	Locality	Percent
Florida	Hialeah City (Dade County)	69.4	Texas	Hidalgo	38.9
Florida	Miami (Dade)	51.7	Texas	Webb	29.9
Florida	Olympia Hts, Sweetwater	41.0	Texas	Cameron	29.3
Texas	Hidalgo	32.6	California	Oxnard	68.4
New Jersey	Lowell (Middlesex)	30.4	Texas	Valverde	28.0
Texas	El Paso	27.7	Texas	McAllen, Edinburgh (Hidalgo)	27.8
Texas	Webb, Zapata, Jim Hogg	25.7	California	Pinellas	27.1
California	Oxnard	23.5	New Mexico	Sierra, Soccoro	27.1
Texas	Valverde	23.4	Texas	Harrison, Gregg	26.5
Texas	Cambron	22.8	California	Fresno	26.4

[a]For 1900, locations are urban areas with a population size of 25,000 or more. For 1980, locations are county groups as defined in the 1980 census.

[b]For 1900, locations with less than 6 foreign-born in the public use sample were excluded. States in the top 10 excluded by this criteria are Pennsylvania, Wisconsin, Illinois and Oregon.

Midwest, in 1900, only four states appear among the top ten in 1980, all but one of which is in the South or Southwest.

The last three columns of Table 3 report the top ten localities ranked by the proportion of the foreign-born population in those localities unable to speak English. While the proportions are similar in the two Census years--ranging from 26.5 percent (Milwaukee, Wisconsin) to 41.7 percent (Portland, Oregon) in the top ten 1900 communities and from 26.4 percent (Fresno, California) to 38.9 percent (in part of Hidalgo County, Texas) in the top ten 1980 communities--only three states are represented in the top ten localities in 1980--Texas, California, New Mexico--while eight states are found among the top ten localities in 1900. Both the communities with high proportions of the dominant non-English common-language group and the communities with high concentrations of the foreign-born unable to speak English were geographically dispersed in 1900; both types of communities are predominantly in Southern border or coastal states in 1980.

Does the high geographical concentration of the Spanish-language foreign-born in 1980, compared to that of the dominant non-English common-language group in 1900, merely reflect the relative newness of such immigrants in 1980? Do the high spatial concentrations of non-English language groups influence the propensity of such groups to acquire English language skills? Is the process of attaining English-language proficiency different in 1980 compared to 1900 among the dominant non-English language groups in those years? Are the children of foreign-born parents who are not able to speak English more or less likely today to be proficient in English? Have the effects of the family environment on a child's English ability changed between 1900 and 1980? In this paper, we explore these issues by examining both the determination of investments in acquiring English-

language skills and the choice of location in the United States by the modal foreign-born language groups in 1900 and 1980 and the determinants of English-language skill acquisition by the children of those foreign-born parents. In Section 2, we set out a simple model of locational choice and language investment to examine the interrelationships among the concentration of common-language groups among localities, investments in English-language skills, and the costs and returns to English proficiency. In Section 3, we use data from the 1900 and 1980 Census Public Use Tapes to test some of the implications of the model by estimating the labor-market returns to English proficiency in both 1900 and 1980 and test for differences in the behavior of the major common-language groups in 1900 and 1980 with respect to their accumulation of English-language skills and their propensity to locate in areas with higher concentrations of persons speaking their own language. Because the perseverance of a competing foreign language depends in part on the transmission of language skills across generations, we estimate in Section 3 the determinants of the propensity of the children of the foreign-born to be proficient in English and evaluate the effects, again in both 1900 and 1980, of the family and community environment on immigrant children's language skills.

The empirical results indicate that there were significant returns to investments in English in 1900 and 1980, as immigrants with greater English proficiency earned higher incomes (1980) or attained greater economic status (1900). However, again in both 1900 and 1980, the foreign-born who lacked English proficiency but who were located in areas with high concentrations of their own language group experienced significantly less shortfalls in income or economic status. While English-language proficiency and the tendency to reside in areas with a lower concentration of own-language

residents increase with length of stay in the United States, comparisons of the 1900 and 1980 common language groups suggest that because of the higher geographical concentrations of such groups in 1980, the Spanish-language foreign-born are less likely to acquire English-language skills as their stay in the U.S. continues and are more likely to remain in locations with higher proportions of persons speaking their own language compared to the German-language populations in 1900. These phenomena in part reflect the proximity of the origin-countries of the Spanish-language foreign-born to the United States. However, the influence of parental English deficiencies on the achievement of English-language proficiency by the children of foreign-born parents, while strongly deleterious to children's acquisition of English skills, does not appear to differ between 1900 and 1980 for the two major non-English-language groups of foreign born.

2. A Model of Investment in Majority-Language Skills and Locational Choice

An immigrant can select both the place of residence in his/her new country and the amount of resources to invest in acquiring proficiency in the "majority" language of the country. If localities within the new country differ in the proportion of transactions that the immigrant engages in with majority language individuals, then locational-choices and language investments may be importantly linked. Consider an immigrant who will spend a proportion θ of his lifetime in an environment (locality) in which there are transactions with majority-language (English-speaking) individuals and the remainder of his/her lifetime $(1-\theta)$ in an environment in which English-language skills are not very useful (say, in the home country or out of the labor force in the new country). For simplicity we take θ as given, but the immigrant can choose (i) the fraction of transactions requiring English (h) by choosing among localities that differ in this respect and (ii) the

resources allocated to English-language skills ℓ. Lifetime income F is thus

(1) $F = w^1 (\theta) + w^2 (1-\theta)$,

where

(2) $w^1 = \alpha(h) + \beta(h)\ell$,

and β = returns to English language skills. Equation (2) relates skills in the majority language ℓ to earnings w^1 in the majority-language sector. The return to such skills β is a function $\beta(h)$ of the proportion of transactions h in the locality chosen by the immigrant that are made in the immigrant's own language (h = 0 when all transactions require English), where $h = h^* + \epsilon$, h^* = location and ϵ = non location-specific components of h. Thus, $\beta'(h) < 0$; returns to skills in the majority language are lower where native-language transactions are more frequent and the immigrant can choose β via his/her choice of locality h^* and thus h.

The immigrant maximizes net lifetime income subject to a production function describing how resources L increase English proficiency ℓ, given by (3):

(3) $\ell = \ell(L)$, $\ell' > 0$, $\ell'' < 0$.

Given a cost c per unit of L and a unit cost D of changing locations (as measured by h), the problem for an immigrant is;

(4) $\max_{L,h^*} F - cL - Dh$

subject to (1), (2), (3) and given θ.

Necessary first-order conditions are given by (5) and (6),

$$(5)\quad \theta\alpha' + \theta\beta'\ell - D = 0$$

$$(6)\quad \theta\beta\ell' - c = 0,$$

These expressions indicate that an increase in h must at the optimum increase the income of a non-English speaking immigrant in the English-language sector. Thus, $\alpha' > 0$, since $\beta' < 0$ by assumption. In other words, being in an area with relatively more own "language transactions" penalizes less those with fewer English language skills, if there is a "solution" to the model.

Total differentiation of the first-order conditions yields the following comparative static results for the effects of a change (i) in the costs c of investing in English language skills, (ii) in the cost D of moving to a more concentrated area in terms of own-language transactions, and (iii) in the proportion of time θ spent in the majority language sector on locality and language skill investments:

$$(7)\quad \frac{dh^*}{dc} = \frac{-\beta'\ell'\theta}{\Phi} > 0$$

$$(8)\quad \frac{dL}{dD} = \frac{-\theta\beta'\ell'}{\Phi} > 0$$

$$(9)\quad \frac{dh^*}{d\theta} = \frac{\beta(\theta\beta'(\ell')^2 - \ell''D)}{\Phi}$$

$$(10)\quad \frac{dL}{d\theta} = \frac{-\ell'\beta(\alpha'' + \beta''\ell) + D\beta'\ell'}{\Phi}$$

where $\Phi = \theta^2[(\alpha'' + \beta''\ell)\ \beta\ell'' - (\ell'\beta')^2] > 0$.

These results indicate that those immigrants facing higher costs of investing in language skills or lower costs of internal mobility will both invest less in English-language skills and locate in areas with more prevalent own-language transactions. Moreover, if costs of internal mobility (D) are low (so that the second terms in the numerator of (9) and (10) are dominated by the first terms), then those immigrants spending (or anticipating spending) less time in the majority sector will also invest less in English-language skills and cluster more heavily in own-language localities.

The model also suggests that attempts to universally lower the returns to majority language skills, by, say, increasing the proportion of transactions in the immigrant's native language uniformly across all localities (through federally-mandated bilingual labels, contracts, signs, etc.) will quite obviously lower investments in English-language skills but may also <u>reduce</u> the geographic concentration of language groups, since the returns to concentration may be smaller. The effects of a change in ϵ, the non location-specific component of own language transactions, on L and h* is given by:

$$(11)\quad \frac{dL}{d\epsilon} = \frac{-\theta^2\ell'\beta'\alpha''}{\Phi} < 0$$

$$(12)\quad \frac{dh^*}{d\epsilon} = \frac{\theta^2\alpha''\ell''\beta}{\Phi} - 1 \lessgtr 0.$$

Investments in English-language skills decline when ϵ increases; immigrants choose less own language intensive localities when $\frac{\theta\alpha''\ell''\beta}{\Phi} < 1$.

In the income maximization model the payoff to residence by an immigrant in a locality where there are more transactions in his/her own language is exclusively in terms of higher net income when majority language proficiency requires resource investments. It is possible, however, that immigrants may simply prefer to be with individuals similar to themselves, that is, their well-being is improved in an environment in which h* is larger even if transaction costs associated with language skills are unaffected. How does this change the preceding results? Consider the welfare-maximizing model:

$$(13)\quad \max_{L,h} U(F - cL - Dh,\ h),\ U_1,\ U_2 > 0,\ U_{ii} < 0,\ i = 1,2$$

First-order condition (6) remains the same for this model, but first-order condition (5) becomes

$$(14)\quad (\theta\alpha' + \theta\beta'\ell - D) = -U_2/U_1.$$

Since U_1 and $U_2 > 0$ (both income and own-language transactions increase the immigrant's welfare), the left-hand side of (14) is algebraically less than the identical left-hand side expression in (5). Thus, if transactions with own language individuals are desired by immigrants for their own sake geographical concentration is increased. Immigrants trade-off higher incomes (for given language skills) for increased proximity to their countrymen.[1]

The predictions of the model pertaining to both language investments and location also have implications for spatial wage differentials. First, gross of English language skills, immigrants living in areas with greater own-language transactions (higher concentrations of persons speaking their language) will earn less than otherwise identical immigrants residing in less-concentrated areas, since low language skill immigrants will tend to

reside in such localities, regardless of whether such localities are desired by such immigrants for their own sake. Second, net of proficiency with English, immigrants of a given language group residing in localities with more transactions in their own language will earn less than their counterparts in other localities only if such residence yields non-pecuniary benefits.

3. Returns to English Language Skills: The U.S. Foreign-Born Modal Language Groups in 1900 and 1980

That decisions concerning English language proficiency and choice of location by immigrants are linked in an important way rests on the assumption, embodied in equation (2), that location can affect the labor-market returns to English-language skills when the frequency of transactions in the immigrant's own language differs across localities. To test this assumption, we employ samples of Hispanic (Spanish-language) foreign-born males aged 20-64 in 1980 and German-language foreign-born males aged 20-64 in 1980 from the Public Use Tapes of the 1980 and 1900 Censuses.[2] Both the 1900 and 1980 Censuses, and no other U.S. Census for which there is a Public Use Tape, elicited information on the ability of the foreign-born to speak English. In 1900, the foreign-born were asked whether or not they could speak English; in 1980 English-language proficiency was coded in four categories--speaking English not at all, not well, well, and very well among persons who reported speaking a language other than English at home. While similar information is available from both Censuses on age, years in the United States, country of origin, and residential location, the 1980 Census provides information on earnings, occupation, schooling attainment and work time, while the 1900 Census provides information only on an

immigrant's occupation and a "prestige" index based on occupational attainment.

We estimate a (log) wage (hourly) function from the 1980 sample and the determinants of the index measuring occupational prestige from the 1900 sample. For comparability across Censuses, we use the dichotomous indicator, whether or not the individual speaks English, as the measure of English-language proficiency. We expect that those foreign-born without the ability to speak English would earn significantly less or would have lower socioeconomic status than those who have acquired such an ability, but this differential should be smaller in local areas where there is a higher proportion of persons in the population speaking the same (non-English) language.

For 1980, we use the county group to define the local area; for 1900 urban areas with 25,000 or more persons are used to define the local area. For each of these areas, we obtained the proportion of the adult population born in countries where either Spanish (1980) or German (1900) was the predominant language.[3] Table 3 provided the top ten areas ranked by these proportions for both Census years.

Also included among the determinants of the log of the hourly wage for 1980 are the number of years since the person completed his schooling and its square, schooling attainment, and years in the United States and its square. For 1900, since schooling attainment is not available, we cannot use this variable nor compute years of post-school experience. Age and its square are employed instead of the experience variables. For comparability, a similar specification is also employed for the 1980 sample.

Table 4 reports the least squares estimates of the log wage and log occupational prestige index determinants. The results across the Census

Table 4

Effects of Inability to Speak English on Economic Status:

Major Language Groups in 1980 and 1900

	1980 Hispanic			1900 German	
	Log of Hourly Wage			Log of Occupational Prestige Index	
	(1)	(2)	(3)	(1)	(2)
Age	-	-	.0492	.0240	.0235
			(7.78)	(1.38)	(1.35)
Age squared ($x10^{-3}$)	-	-	-.549	-3.27	-3.17
			(6.88)	(1.55)	(1.53)
Experience	.0278	.0280	-	-	-
	(9.19)[a]	(9.25)			
Experience squared ($x10^{-3}$)	-.413	-.418	-	-	-
	(7.00)	(7.08)			
Years in United States	.0330	.0328	.0348	.0300	.0299
	(9.25)	(9.18)	(9.52)	(3.28)	(3.26)
Years in U.S. squared ($x10^{-3}$)	-.570	-.564	-.584	-.307	-.310
	(6.15)	(6.08)	(6.13)	(1.79)	(1.81)
Schooling attainment	.0407	.0407	-	-	-
	(15.0)	(15.0)			
No English	-.098	-.163	-.297	-.363	-.436
	(3.09)	(3.89)	(7.18)	(3.19)	(3.32)
No English x proportion of local population speaking same language	-	.497	.466	-	7.14
		(2.37)	(2.19)		(1.09)
Proportion of local population speaking same language	-.297	-.375	-.305	-3.48	-4.16
	(3.81)	(4.44)	(3.55)	(1.31)	(1.52)
Constant	.708	.718	.429	2.13	2.15
	(14.4)	(14.5)	(3.73)	(6.17)	(6.23)
R^2	.116	.117	.088	.131	.132
F	96.3	85.0	70.7	16.4	14.5
n	5137	5137	5137	771	771

a. t-ratio in parentheses.

samples separated by 80 years are remarkably similar--lack of English-language ability reduces significantly the hourly wage in 1980 and the index of occupational prestige in 1900--those male foreign-born in these language groups not speaking English have a 10 percent lower wage (1980) and a 36 percent lower index of occupational prestige (1900) on average. In both years as well, however, the presence of greater numbers of persons in the local area speaking the immigrant's own language reduces the impact of English language deficiency--the English-language ability coefficient and that for its interaction with own-language group concentration are individually and jointly statistically significant at the .01 level for 1980 and jointly significant at the .05 level ($F(2,765) = 5.67$) for 1900.

The point estimates indicate that in 1980, those foreign-born, Spanish language males residing in a local area in which approximately one-third the population is also Spanish-speaking suffer no penalty from not knowing English. We note that Table 3 indicates that Dade County in Florida has a concentration of Spanish-language persons above this level. For given language skills, the results also suggest that the Spanish(German)-language foreign-born receive lower wages (prestige) when they reside in areas characterized by a greater prevalence of Spanish(German)-language persons. There is thus support for the hypothesis that Spanish(German)-language immigrants prefer (preferred), net of the incentives associated with the returns to English-language proficiency, to reside in areas with higher proportions of Spanish-language residents.[4]

Finally, the set of coefficients associated with years in the United States are jointly statistically significant in all specifications for both periods, in contrast with earlier findings on the labor market returns to English-language proficiency in the United States among Hispanics based on

the 1976 Survey of Income and Education, (McManus, et al. 1983).[5] The results here suggest that for the major language groups in 1900 and 1980, earnings growth associated with years in the United States is not due solely to the accumulation of English-language skills, which we will see below grow as time in the United States increases.

4. Determinants of English Language Ability and Locational Choice: Is 1900 Different from 1980?

The preceding empirical results provide support for the assumption embodied in the model of Section 2 that location, in terms of the frequency of transactions in an immigrant's own language, influences the returns to investments in English in both 1900 and 1980 for the major non-English common-language groups in those periods. This finding, in the context of the language-location model, suggest that the foreign-born with less English-language skills will tend to cluster in communities where there are higher proportions of persons speaking their language.

Table 5 presents the mean percentage of German (1900) and Spanish-language (1980) populations in the communities of residence of the German-language and Spanish-language foreign-born in 1900 and 1980, respectively, stratified by their ability to speak English and by sex. In both Census periods, those less able (or unable) to speak English do reside in communities with a higher proportion of persons from countries with the same national language. However, the association in 1980 is stronger; indeed, the hypothesis that there is no association between English language proficiency and location can only be rejected at the one percent level for the Spanish-language foreign-born in 1980. The relevant F-statistics are provided in the bottom row of Table 5.

Table 5

Mean Percent of Population with Same Native Language
in Localities of German-Speaking (1900) and Spanish-Speaking (1980)
Foreign-Born Aged 20-64, by their English-Language Ability

English Ability	1900[a]		1980	
	Men	Women	Men	Women
None	2.5	2.0	13.9	11.0
Not well	-	-	14.8	10.4
Well	-	-	11.1	9.6
Very well	-	-	11.2	9.9
Only English	2.1	1.7	5.6	7.0
Sample size	413	344	664	546
F	1.50	1.38	4.53	4.40

a. Localities with 25,000 or more.

Consideration of the returns to and costs of locational and language choices suggest why the locational clustering by language proficiency exhibited by the Spanish-language foreign-born in 1980 is stronger than that evident among the German-language population in 1900. As indicated in Table 3, the concentrations of the Spanish-language foreign-born among localities in 1980 are far greater than those of the German-language foreign-born in 1900. As a consequence, if we regard for the moment locational distributions of the foreign-born as given, the returns to choosing a "concentrated" locality for a new, Spanish-language immigrant in 1980 were much higher than those for a German-language immigrant in 1900. If we, for additional simplicity, assume that local own-language concentration has the same effect on the returns to English-language proficiency in both 1900 and 1980, we see from Tables 3 and 4 that the most a German-language immigrant can reduce the impact of his English language deficiency is by 18.6 percent (by moving to Bay City, Michigan, where h =.115); while the Spanish-language immigrant can almost eliminate the effects of lack of English-language proficiency (by locating in Dade County, Florida, for example, where h = .52 to .69). Moreover, the communities in which concentrations are high in 1980 are also those communities located for the most part close to where the Spanish-language foreign-born enter the United States (Florida, Texas, California). Costs of moving to and among such communities (D) are lower for the Spanish-language immigrant in 1980 compared to the German-language immigrants in 1900, when such homogenous language communities were significantly more dispersed.

Independent of the differences in the characteristics of the pre-existing set of communities facing newly-arrived Spanish-language and German-language immigrants in their respective historical time periods,

there is another reason why the former group would be less likely to invest in English and more likely to locate in concentrated communities. The proximity of the United States to the major sending countries of the Spanish-language foreign-born means that (i) costs of moving to the United States are relatively low, so that less "committed" immigrants are not screened out (immigration selectivity) and (ii) costs of returning to the origin country are low (emigration selectivity). As a consequence, among immigrants with the same age at entry, those from Spanish-language (proximate) countries may expect to spend less time in the United States on average. They have less incentives therefore to make investments in English, or to invest in search across communities located far from ports of entry.[6] The higher emigration and naturalization rates characterizing immigrants from countries located near the United States (Jasso and Rosenzweig, 1983, 1986) are consistent with these effects of proximity. Of course, the relative attractiveness of the origin country matters--Cuban refugees may not expect (want) to return to Cuba and thus may be more willing to invest in assimilation skills, for example.

We can test whether those foreign-born who (i) entered the United States at older ages, for given years in the United States, and (ii) are from countries located closer to the United States are less likely to have invested in English-language skills and are more likely to reside in areas with own-language groups, since the payoffs to such investments will accrue over a shorter (expected) time period for such immigrants (θ is higher), by estimating the determinants of both language proficiency and location. By controlling for both age at entry and time in the United States, we can thus also ascertain whether the propensity to learn English among the major common-language groups in 1900 and 1980 differ from each other, net of the

effects of entry age and time in the United States, and can test if there are differences in the language and locational behavior of the two common-language groups in 1900 and 1980.

Table 6 presents (i) estimates of the determinants of (lack of) English proficiency and of location, the latter measured by the proportion of the local population speaking the same language as the sample person, and (ii) tests of equality in coefficients, based on a pooled sample of German-language and Spanish-language foreign-born males aged 20-64 in 1900 and 1980, respectively.[7] These results indicate that, first, individuals entering the United States at later ages, for given years in the United States, are both less likely to be able to speak English and more likely to be located in communities where there are greater concentrations of own-language residents, as is predicted by the model. Moreover, years in the United States reduce the incidence of English-language deficiency and the likelihood of location in a concentrated community. Finally, those foreign-born from <u>among</u> the Spanish-language countries located nearer to the United States are both less likely to have acquired English-language skill and more likely to be located in communities with higher proportions of Spanish-language residents. Proximity, age and time in the United States thus jointly influence English language investments and the locational distribution of the foreign-born language groups in both 1900 and 1980.[8]

The estimates in Table 6 also indicate that there are significant differences in the behavior of the two groups. In particular, the German-language foreign born in 1900 were more likely to be able to speak English prior to coming to the United States but were also less likely to locate in a more concentrated own-language community at entry (the intercept dummy for German-language is negative and statistically significant in the language

Table 6

Tests of Equality of Coefficients: Determinants of Inability to Speak English and to Reside in Locality with same Language Group Among Major Language Group Male Foreign Born Aged 20-64 in 1980 (Spanish) and 1900 (German)

	No English		Proportion Same Language in Locality($\times 10^{-2}$)	
Characteristic/ Estimation Procedure	ML Probit	ML Probit	ML Tobit	ML Tobit
Age at entry	.0356	.0331	.0433	.0855
	(6.81)[a]	(4.82)	(1.76)	(3.21)
Years in U.S.	-.0454	-.0302	-0.226	-.0461
	(6.98)	(3.42)	(0.64)	(0.96)
Distance from origin-country ($\times 10^{-3}$)	-.274	-2.79	-.755	-.757
	(3.20)	(3.24)	(2.08)	(2.08)
German (1900)	-.829	-1.02	-9.66	-7.92
	(2.56)	(2.14)	(6.79)	(2.97)
Age at entry x German	-	.00630	-	-.0974
		(0.60		(1.40)
Years in U.S. x German	-	-.0307	-	.0261
		(2.33)		(0.35)
Cuban	-.751	-.765	18.5	18.2
	(3.40)	(3.39)	(25.7)	(25.4)
Constant	-1.32	-1.39	8.24	7.58
	(7.72)	(6.40)	(7.84)	(6.42)
-lnlikelihood	409.6	406.3	568.4	570.3
n	1495	1495	1495	1495
x^2	-	6.6	-	3.8

[a]Asymptotic t-ratios in parentheses.

equation and is negative and significant in the residence equation). More importantly, German-language foreign-born males were significantly more likely to achieve English-language proficiency as their residence in the United States lengthened than were Spanish-language foreign-born males in 1980.[9]

5. English-Language Proficiency Among the Children of the Foreign-Born: Parental and Community Influences in 1900 and 1980

The greater persistence of English-language deficiencies among adult Spanish-language foreign-born males compared to the German-language male foreign-born in 1900 is consistent with the hypothesis that the foreign-born from Spanish-language countries, because of their expectations about their stay in the United States (due to origin-country proximity) and because of the greater concentration of their own-language countrymen in communities proximate to entry points, have less incentives to invest in English language skills. In this section we assess how the characteristics of foreign-born parents influence the English-language proficiency of their children and whether, in particular, deficiencies in English among parents affect their children's English-language abilities. We also assess whether the association between the English-language skills of parents and those of their children has changed between 1900 and 1980.

Table 7 reports the characteristics of the children and parents in sampled households in which the mother is aged 20-44 and foreign born, taken from the 1900 and 1980 Census Public Use Tapes.[10] These statistics indicate that while a much higher proportion of the children of foreign-born mothers were born outside the United States in 1980 compared to 1900 (29 versus 9.5 percent), the proportion of the children unable to speak English in 1900 was more than double that of 1980 (6 percent versus 2.6 percent).

Table 7

Characteristics of Children Present in Households of Married, Spouse-Present Foreign-Born Women Aged 20-64: 1900 and 1980

Characteristic	1900	1980
Mean age	12.0	8.97
Mean maximum age	16.6	11.0
Percent foreign-born	9.53	29.1
Percent no English	5.95	2.61
Percent speak English not well	n.a.	8.15
Percent mother no English	13.8	8.23
Percent mother speaks English not well	n.a.	25.8
Percent father no English	5.95	4.45
Percent father speaks English not well	n.a.	18.2
Percent mother German-speaking (1900), Spanish-speaking (1980)	35.4	31.5
Percent father U.S. born	15.6	35.1
Mean number of children in household	3.96	2.36

In Table 8, estimates are presented of the determinants of the proportion of children who are unable to speak English in households in which the wife is foreign-born. The estimation procedure used, maximum-likelihood two-limit probit, takes into account the fact that the dependent variable--the proportion of children unable to speak English or speak English well in the household--must lie between zero (no children unable to speak English) and one (all children unable to speak English), with concentrations at both of those bounds. The first column reports estimates from the 1900 household sample; the last four columns present estimates from the 1980 household sample, two specifications for each of two measures of children's average English-language ability. The first three independent variables listed in Table 8 control for differences in the age composition and nativity of children across households. The remaining variables characterize the English-language proficiency of the parents, whether or not the mother is German-language (1900) or Spanish-language (1980), and measure household resources--the occupational prestige score of the husband, for the 1900 sample, and husband's earnings, for the 1980 sample.

The results from both the 1900 and 1980 samples indicate that the household environment matters for the accumulation of English-language skills among children. In households where parents are deficient in their English-skills, their children are also significantly more likely to be deficient, for given resources (and maternal schooling). In households with more resources, for given parental language abilities, children are significantly less likely to be unable to speak English. The estimates also suggest that in 1900, children in households in which the mother is German-language were no more likely than other children of foreign-born mothers to be proficient in English; in 1980, however, the children of Spanish-language

Table 8

Maximum Likelihood Two-Limit Probit Estimates: Determinants of English Language Ability of Children Present in Households of Married, Spouse-Present Foreign-Born Women Aged 20-64 in 1900 and 1980

Characteristic	1900	1980			
	No English	No English	No English	English not well	English not well
Mean age of children	-.0632	-.0587	-.0630	-.0204	-.0185
	(3.61)[a]	(1.26)	(1.37)	(0.78)	(0.70)
Maximum age of children	-.0422	-.0840	-.0813	-.0838	-.0843
	(1.76)	(.04)	(1.02)	(2.42)	(2.42)
Proportion children foreign-born	.123	.837	.846	.778	.774
	(0.46)	(3.22)	(3.07)	(5.09)	(5.02)
Mother no English	.963	.631	.589	-	-
	(6.38)	(2.06)	(1.88)		
Mother bad English	-	-	-	.674	.692
				(4.12)	(4.21)
Father no English	.471	.824	.821	-	
	(2.61)	(2.84)	(2.81)		
Father bad English	-	-	-	.854	.861
				(5.33)	(5.35)
Mother German-speaking (1900), Spanish-speaking (1980)	.0580	.591	.544	.150	.163
	(0.44)	(2.32)	(1.98)	(0.89)	(0.94)
Proportion local population German-speaking (1900) or Spanish-speaking (1980) x German (1900), Spanish (1980)	-.141	1.24	1.28	1.35	1.35
	(1.29)	(1.14)	(1.18)	(2.14)	(2.14)
Husband's occupational prestige (1900), earnings (1980)	-.00957	-.252	-.234	-.0521	-.0572
	(2.49)	(2.52)	(2.15)	(1.01)	(1.10)
Wife's schooling	-		-.0158	-	.0071
			(0.66)		(0.46)
Intercept	-.611	-1.91	-1.70	-1.72	-1.82
	(3.19)	(4.16)	(3.35)	(7.72)	(5.85)

a. Asymptotic t-ratio in parentheses. .

foreign-born mothers, given parental schooling, earnings and English-language skills, were significantly less likely to be able to speak English than were the children of other foreign-born mothers. The results thus suggest that the differential language-investment behavior exhibited by the adult Spanish-language foreign-born is transmitted to their children in three ways. First, because adult Spanish-language foreign-born men and women are less likely to be proficient in English than other foreign-born, their children will be less likely to be able to speak English, for given resources. Second, for given household resources and English-language skills, investments in English language skills among children are also evidently lower, most likely for the same reasons that the adult Spanish-language foreign-born invest less in acquiring language skills for themselves compared to other foreign-born groups, as elaborated above. Finally, the lower English-language proficiency of the Spanish-language foreign-born, compared to other foreign-born groups, means that such groups will have lower family resources (earnings), which serve to enhance the likelihood of children's not attaining English proficiency.

The effects of parental characteristics and resources on children's acquisition of English-language proficiency is mediated importantly by children's schooling and by the community environment. It has been hypothesized that the encouragement of English-language proficiency is less strong in contemporary schooling systems compared to prior decades. If so, we would expect that the household and community environment would be more influential today in determining children's English-language abilities than in the past. To test these hypotheses, we pooled the households containing German-language mothers in 1900 with those of Spanish-language mothers from the 1980 sample and reestimated the equations determining English-language

proficiency among children, omitting the measures of household resources and parental schooling (which are not comparable or available, respectively, across the Censuses) but including the measure of own-language concentration in the local area in which each household resides.

The estimates from the pooled sample are reported in Table 9. They provide some support for the hypothesis that where there is a greater proportion of persons speaking the same (non-English) language in the local community, children speaking that language are less likely to be proficient in English, given parental English-language ability--the community environment also matters, although the coefficient is not highly significant statistically. The results also indicate that, net of the parents' ability to speak English, children of German-language foreign-born parents in 1900 were less likely to be proficient in English than were children in households where the mother is foreign-born and Spanish-language in 1980. Table 8 suggests that this differential could be due to differences in total resources between households in 1900 and 1980, but we cannot test this proposition rigorously. The point estimates indicate that in households in which the mother speaks no English, the children are twice as likely not to speak English and are three times more likely not to be able to speak English when neither parent speaks English.

In the second and third columns of Table 9 we report tests of whether the influence of parents' inability to speak English or the community concentration of potential own language transactions on children's English-language proficiency is different in 1900 and 1980. The chi-square statistics associated with the likelihood ratio test indicates that we cannot reject the hypothesis that parent's language ability and the community influence children's English proficiency in a similar way in both

Table 9

Maximum Likelihood Two-Limit Probit Estimates
of the Determinants of Children's Inability to Speak English
in German-Speaking (1900) and Spanish-Speaking (1980) Households

Characteristic	(1)	(2)	(3)
Mean age of children	-.184	-.178	-.182
	(2.82)[a]	(2.59)	(2.81)
Maximum age of children	.0579	.0539	.0567
	(1.27)	(1.13)	(1.25)
Proportion children born abroad	.536	.560	.532
	(1.82)	(1.87)	(1.80)
Mother no English	.935	.722	.936
	(4.14)	(1.92)	(4.18)
Father no English	.427	.639	.449
	(1.54)	(1.70)	(1.63)
Proportion local population from own country	1.15	1.20	1.24
	(1.14)	(1.18)	(1.21)
Sample household from 1900 (German)	.482	.524	.595
	(2.09)	(1.94)	(2.34)
Mother no English x 1900 sample	-	.435	-
		(1.01)	
Father no English x 1900 sample	-	-.473	-
		(0.86)	
Proportion local population from own country x 1900 sample		-9.49	-9.90
		(1.05)	(1.07)
Constant	-1.57	-1.53	-1.58
	(5.00)	(4.64)	(5.02)
-lnlikelihood	287.6	286.3	286.9
Number of pooled households	971	971	971
Number of 1900 households	553	553	553
x^2		2.60	1.4

[a]Asymptotic t-ratios in parentheses.

1900 and 1980. Indeed, the results suggest that despite the higher incidence of English language skill deficiencies among the Hispanic households in 1980 compared to the Germanic households in 1900 (21 versus 13 percent for the mothers, 11 versus 5 percent for fathers), the incidence of English-language deficiencies among children are almost identical in 1900 and 1980 for the modal non-English-speaking foreign-born (5.4 percent in 1980 (Spanish) versus 5.0 percent in 1900 (German)).

6. Conclusion

In this paper we have used Census data from 1900 and 1980 to examine and compare the behavior of the major common-language groups of the foreign-born with respect to their English-language investment behavior and locational choices. Our results indicated that in both 1980 and 1900, when a far larger proportion of the U.S. population was foreign-born and did not speak English, higher economic rewards were associated with knowledge of English, and rewards to English proficiency and location were linked such that costs of lack of English proficiency were smaller in areas with greater concentrations of persons speaking the same non-English native language. In part as a consequence, those foreign-born in 1900 and 1980 who expected to spend less time in the United States were less likely both to acquire English-language skills and to move to locations with lower proportions of individuals speaking the same language. We also found that in both time periods, the English-language proficiency of the children of immigrants appeared to be influenced in similar ways by the English skills of their parents, household resources and the community environment.

The similarity in the qualitative language-investment and location behavior of the foreign-born and the structure of language and locational

incentives within the United States in both 1900 and 1980 does not imply that there are no important differences between the time periods. Indeed, the spatial concentrations of persons speaking a common non-English language (Spanish) in 1980 are of far greater magnitude than they were in 1900 among the common non-English language group (German) in that period. Our results suggest that this differential in residential patterns is due to the significantly closer proximity to the United States of the origin-countries of the 1980 Spanish-language foreign-born, with such immigrants thus having lower incentives to invest in skills specific to the U.S. environment and for whom domestic U.S. distances represent a greater proportion of the total distance associated with immigration. Regardless of the reasons for the present (1980) spatial concentrations (in border areas) of Spanish-language foreign-born, they mean that future Spanish-language immigrants will be more likely to reside in such communities and will be less likely to invest in English. Our results indicated that compared to German-language immigrants in 1900, the Spanish-language foreign-born are significantly less likely to acquire English-language proficiency as their residence in the United States increases.

Since our findings suggest that the spatial clustering of the foreign-born Spanish-language countries is not likely to change absent interventions that reduce spatial differentials in English-skill returns, the survival or growth of an alternative non-English speaking population in the United States will depend on (i) the future number of Spanish-language immigrants, (ii) their fertility and (iii) the acquisition of English-language skills by the children of these immigrants. With respect to the latter, our results suggest that the children of the Spanish-language foreign-born are no less likely to attain English-language proficiency, as of 1980, compared to the

children of parents in the modal foreign-language group in 1900. Moreover, the degree to which parental English deficiencies are transmitted to children, a function in large part of the school system, appears no stronger in 1980 than in 1900. Our results also suggest, however, that household resources, as well as parental English skills, matter in the acquisition of English-language proficiency by children. How immigrants fare in the labor market and/or are supported by income transfer programs thus will influence, directly and indirectly, the persistence of an alternative language in the United States.

Footnotes

1. There is another implication of the utility-maximizing model. If immigrants differ in "ability," and ability both augments earnings directly, in (2), and increases the efficiency of language skill acquisition, in (3), then absent information on ability, the association between English language skill and earnings in the English-language sector may be an underestimate of the true market returns to language skills. This is because income effects could result in lower language investments by the more able foreign-born. In the income-maximizing model, the "ability bias" is always positive. See note 5.

2. The sample of Spanish-speaking foreign-born males is extracted from a 2.5 percent random sample of all households in the United States in 1980 and includes all foreign-born males from South America, excluding Brazil, from Central America, excluding Belize and French Guyana, and from Spain. The sample also excludes persons born in Puerto Rico, for whom there is no information on length of stay in the United States or time of U.S. entry. The sample of German-speaking foreign-born males is extracted from the 1:250 1900 Public Use Sample Tape, and includes all males born in Germany, Prussia and Austria.

3. The proportions of adult Spanish-speaking persons by county group were obtained from the 1:100 A Sample of the 1980 Public Use Tape. The 1900 areal proportions were obtained from the 1900 Public Use Sample Tape.

4. To assess the bias, if any, in the English proficiency coefficient arising from the omission of ability, we also selected a sample of <u>all</u> foreign-born males, and estimated the wage equation using two-stage least squares. A variable indicating whether or not the immigrant was born in a country where English was an official language and that

variable interacted with age at entry and years in the United States were used as identifying instruments. The results suggest that use of least squares, as in Table 4, results in an underestimate of the negative effect of lack of English ability on hourly earnings, by about 20 percent. This bias is consistent with location, measured by own-language clustering, yielding utility directly to the immigrant.

5. In the McManus et al. study, the dependent variable was the log of the weekly wage and the sample included all Hispanic males, regardless of birthplace. A different measure of English proficiency was also used in that study, incorporating the multiple levels of English skill and English use variables available in the SIE. Use of the five categories of English proficiency available from the 1980 Census survey, instead of only the dichotomy employed in Table 4, does not alter the effects of the U.S. residence variables on hourly earnings. Of course, the U.S. residence variables may also reflect immigrant cohort effects and the influence of selective re-migration.

6. That the expected use of English in the U.S. labor market influences investments in English is also discernible in the female-foreign-born populations in 1900 and 1980. In 1900, among foreign-born women aged 20-64, 9.7 percent of those participating in the labor market could not speak English, while 16.8 percent of those not in the labor market could not speak English ($\chi^2(1) = 13.6$, $n = 2166$). In 1980, based on the five English skill categories, the negative association between English skills and labor market participation is also statistically significant for foreign-born women aged 20-64 ($\chi^2(4) = 17.7$, $n = 2295$), based on a ten percent random sample from the 2.5 percent household extract. For this group, 39.3 percent of participants and 53.9 percent

of non-participants could not speak English well or at all. These .pa results are not sensitive to controls for age, years in the United States or schooling attainment.

7. To limit the size of the pooled sample and to have the 1900 and 1980 populations contribute approximately equal weights, a ten percent random sample of the 1980 Spanish-language foreign-born males aged 20-64 from the 2.5 percent household sample extract was used.

8. The results for English skill acquisition are not sensitive to (i) the use of only one English skill category or (ii) the exclusion of schooling attainment (for comparability). In Appendix Table A maximum-likelihood ordered probit and probit estimates of the determinants of English language deficiencies among Spanish-speaking foreign-born males aged 20-64 from the 1980 2.5 percent household sample are presented. The ordered probit estimates make use of the five categories of skill levels available in the 1980 Census survey, but the ordered and dichotomous probit estimates yield similar results. All coefficients but the Cuba dummy coefficient are also robust to the inclusion of schooling attainment, which appears to also contribute significantly to English skill acquisition. The distance coefficient also is not sensitive to the inclusion of other variables characterizing the Spanish-language origin countries, such as per-capita GNP and literacy rates.

9. We may speculate that, English being a Germanic language, it might be easier for a native speaker of German to learn than for a native speaker of a non-Germanic tongue.

10. The 1980 sample is based on a ten percent random sample of all married, foreign-born, spouse-present women aged 20-44 in the 2.5 percent

household extract; the 1900 sample is based on households with married, spouse-present foreign-born women aged 20-44 in the 1900 Public Use Tape sample.

Table A

Maximum Likelihood Ordered Probit and Probit Estimates: Determinants of English Deficiencies and Lack of English Ability Among Foreign-Born Hispanic Males Aged 20-64

Estimation Procedure	ML Ordered Probit		ML Probit (No English)	
Variable	(1)	(2)	(1)	(2)
Age at entry	.0509	.0340	.0351	.0112
	(10.5)[a]	(6.96)	(3.88)	(1.13)
Age at entry squared ($x10^{-2}$)	-.0311	-.0144	-.00484	,0183
	(3.80)	(1.80)	(0.33)	(1.15)
Years in U.S.	-.0545	-.0568	-.0861	-.0971
	(11.2)	(11.4)	(10.9)	(11.5)
Years in U.S. squared ($x10^{-2}$)	.0830	.0796	.175	.188
	(6.61)	(6.17)	(8.12)	(8.09)
Schooling attainment	-	-.116	-	-.122
		(34.3)		(19.1)
Distance ($x10^{-3}$)	-.277	-.141	-.342	-.163
	(21.3)	(10.1)	(11.4)	(5.17)
Cuba	-.457	-.0544	-.438	.0346
	(9.30)	(1.04)	(5.53)	(0.39)
$\mu(1)$	1.29	1.39	-	-
	(43.7)	(45.3)		
$\mu(2)$	2.15	2.35	-	-
	(66.8)	(70.4)		
$\mu(3)$	3.16	3.49	-	-
	(88.8)	(93.5)		
Constant	1.65	3.07	-1.12	.177
	(20.3)	(33.7)	(7.91)	(1.07)
-ln likelihood	7290.1	6794.5	1995.2	1733.6
n	5427	5427	5427	5427

a. Asymptotic t-ratio in parentheses.

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