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Bilingual competency in U.S. occupations: resetting expectations about language in American society

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The current study significantly underscores the need for resetting expectations about language in American society, especially at a time when immigration, economic growth, and public education are major issues in American civic discourse. That learning a foreign language leads to higher wages in U.S. occupations is prevalent in American society. Yet, there is no empirical evidence to support this notion. Using a standardized nationwide data collection of employer ratings indicating English and foreign language importance and level required in the workplace, the current study suggests underlying causes for this lack of empirical evidence. Among the contributions to the literature, the findings indicate that in US occupations, the average English language level required is near the ability to edit a feature article in a local newspaper, while the average foreign language level required is just below the ability to say "please" and "thank you" in a foreign language.

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Introduction

In the United States today, there is a persistent popular belief of businesses needing employees who can serve customers not only in English but in foreign languages as well (see New American Economy, 2017). American companies do, after all, import and export products from and to the rest of the world. In this context, doing business in the language of prospective foreign customers should provide a competitive advantage for US firms operating in the global marketplace. Thus, American companies, marketing products or services to immigrants or people of foreign background residing in the US, should consider employee's foreign language competencies as an important asset.

Such reasoning suggests there also ought to be a wage premium for foreign language competencies in US occupations. Surprisingly, researchers prior to 2001 had done few studies into this line of inquiry, focusing mostly on non-English speaking immigrants' economic returns to learning English (e.g., Chiswick and Miller, 1999; Gonzalez, 2000; Kossoudji, 1988; Mora and Davila, 1998). The findings from these studies indicate the higher the English language skills, the better the job market prospects and earnings for these individuals (see Chiswick, 2008).

Soon after, Fry and Lowell (2003) published a study examining the economic value of bilingualism in the US marketplace and found no higher return to wages from bilingual skills after workers' human capital was held constant. Nonetheless, the authors warned not to discount the possibility of bilingual skills providing a wage premium in certain occupations requiring extensive customer contact, especially in geographic locations where large populations are not fluent in English. Kalist (2005) then followed up with a published study on the value of bilingualism among US nurses, reporting bilingual registered nurses (RN) received wage premiums of up to 7%, depending on the proportion of the population who spoke Spanish in the RN's county of employment. Coombs and Cebula (2010) later replicated this study using more detailed occupational specifications—and found no evidence of a wage premium paid to nurses for second-language skills. In the interim, Chiswick and Miller's (2007a) study of native-born bilingual Americans indicated no statistical support for the notion of bilingualism enhancing earnings in the US. Instead, the findings showed Americans who speak a foreign language earn less than those who at home are monolingual English speakers.

Despite the empirical evidence—or lack thereof—the notion that learning a foreign language leads to higher wages in US occupations is replete in books (e.g., Porras et al., 2014), professional magazines (e.g., Harper, 2016), and peer-review articles (e.g., Cere, 2012). Meanwhile, many American parents are increasingly convinced bilingual competency leads to labor market advantages has led recently to questioning the findings of the prior research (Gándara, 2018). The current study contributes to the academic and popular literature in illuminating these expectations about language in American society by addressing the importance and the level of bilingual competency US occupations demand in the workplace.

Literature review

Prior studies. Researchers in earlier studies (e.g., Chiswick and Miller, 2007a; Fry and Lowell, 2003) used survey data collections where respondents self-reported their English proficiency and affirmed whether they spoke a foreign language at home. Still, other researchers (e.g., Coombs and Cebula, 2010; Kalist, 2005) used survey data collections where respondents indicated if they spoke Spanish fluently or not. This meant the earlier studies looked at language proficiency from a supply perspective defined not by the occupation's employers, but by bilingual employees in the workplace.

The researchers in earlier studies (Chiswick and Miller, 2007a; Coombs and Cebula, 2010; Fry and Lowell, 2003; Kalist, 2005) were also unable to define measurable language levels associated with any findings. This was due to limitations in the data collection surveys, which required respondents to self-report their English language proficiency based on categorical descriptors like *Very Well*, *Well*, *Not Well*, or *Not at All*, and foreign language proficiency as *Fluent* or *Not Fluent*. What these descriptors meant to each respondent during the surveying might have contributed to explaining in more depth the findings from earlier studies.

Current study. The current study differs from prior studies in two important ways. First, the current study uses a standardized nationwide data collection of employer ratings indicating English and foreign language importance in the workplace. Thus, the proposed research looks at bilingual competency from an occupational demand perspective. This difference in the demand- versus supply-perspective is noteworthy to consider. The researchers in earlier studies were estimating the respondents' select language characteristics and assumed these characteristics represented work-based language requirements. In contrast, the current study examines bilingual competency as required in US occupations—despite the workers' language proficiency, native or otherwise. Second, the current study uses standardized English and foreign language benchmarks to describe—in practical, application illustrations—the level of language fluency expected with its importance in the workplace.

Theoretical framework

Jacob Marschak (1965) was the first to introduce the concept of "economics of language" in an article where he proposed the idea of using economics to explore language in terms of its value, utility, costs, and benefits. In this context, he postulated the ability of a language to transfer maximum information with minimum effort determines what characteristics of the language are preserved or discarded over time. These notions emerged because, at the time, Canada's policymakers were trying to solve the country's language problems of a dual-language economy consisting of English and French. This resulted in economists applying econometric analysis to investigate economic-language phenomena, particularly the relationship of ethnicity to the economic status of different language groups (e.g., Boulet, 1980).

Later, other researchers explored the learning of language as an investment in human capital thereby providing theoretical support for Marschak's notions about the economics of language. This resulted in new empirical literature on the relationship between language and earnings, primarily in Canada and the US (e.g., Carliner, 1981; Grenier, 1984). Other empirical studies followed investigating language as human capital and its relationship to earnings (e.g., Chiswick and Miller, 1995; Grin, 1995; McManus, 1985). The consistent finding from these studies showed wages correlated to language fluency. Later studies found similar positive effects on income from specific language skills like listening, reading, and writing (e.g., Carnevale et al., 2001). Thus, the economics of language literature suggests the desire and motivation for language learning take place under economic incentives based on human capital theory (Zhang and Grenier, 2013).

Language as human capital. Chiswick and Miller (2007b) identify three requirements language satisfies as a form of investment in human capital. First, workers' language skills relate to productivity in increasing their earnings in the labor market or in decreasing prices by lowering the costs of communication with

others. When this happens, a portion of the productivity from language augments or complements a worker's productivity from other human capital (Berman et al., 2003; Chiswick and Miller, 2003). Second, a worker embodies language competency, as with other forms of human capital. One can separate workers from equipment, land, or financial assets, but not with language—the workers personify these skills and "rent" their labor resources to employers. Lastly, workers create language competency from their and others' investment in time, expenditures, and resources devoted to language acquisition. For individuals, the costs may be time and effort learning the language in school, and informally watching television or practicing the language with others. For institutions, the costs may be for classroom learning (e.g., teacher wages, classroom space, instructional materials).

From an economic rational perspective, individuals and institutions presumably seek optimal investments in language development where their marginal rate of return from the investment equals the marginal interest cost of the investment funds. An optimal level of language proficiency is the outcome of this investment. Four factors determine the extent of these investments and the resulting proficiency in a foreign language (Chiswick and Miller, 2007b). The first is exposure in terms of time and intensity to the language. For immigrants coming to the US, this factor may be trivial if their home language is English, or otherwise costly if English is not the home language. For US Americans this factor is the exposure at home, school, or community to a foreign language, if any.

The second factor is efficiency, defined as the extent of improvement in language skills per unit of exposure. Here, age, school attainment, and a person's origin language have moderating effects on efficiency in learning a language. Older individuals have far less capacity for learning a new language than younger people (see Service and Craik, 1993). Individuals with higher levels of schooling may have a greater ability to learn school subjects like other languages (Chiswick, 1998).

The efficiency in learning a language may also depend on the "linguistic distance" between an individual's origin language and another language (Chiswick and Miller, 2005). As the linguistic difference between two languages increases, efficiency decreases for learning the other language. A Chinese speaker would therefore have more difficulty in learning English, for example, than a Spanish speaker learning English because the linguistic distance between the Chinese and English languages is greater than the linguistic distance between the languages of Spanish and English.

Economic incentives are the third factor determining the extent of investments and resulting proficiency in a foreign language. These incentives are in the form of incremental wages from foreign language proficiency, and the duration of employment (Chiswick and Miller, 2007b).

The fourth factor is personal wealth often associated with a higher level of schooling and thereby, leading to a greater opportunity to learn school subjects like other languages (Chiswick, 1998).

Higher wages from foreign language human capital. Orhan Agirdag (2014) suggests linguistic human capital transforms into higher wages in direct and indirect ways. Direct transformations occur when monolinguals cannot perform duties bilinguals can do, like interacting with customers who speak a minority language. Under such circumstances, bilinguals may qualify for jobs with higher wages. Indirect transformations occur when bilingualism becomes part of academic qualifications resulting in higher earnings. More so, linguistic human capital may give a person access to objectified cultural capital like books, advertisements, or materials published in a foreign language providing a competitive advantage in the marketplace.

Lastly, linguistic human capital might allow a person access to social networks where a language signals an elite belonging to selective group membership thereby leading to higher-paying jobs or economic opportunities. Thus, the economic value of language as linguistic human capital can be highly dependent on the social contexts where one uses the language.

Figure 1 summarizes the theoretical background presented in a visual timeline. Despite the contributions to the economics of language theory, Agirdag's (2014) conceptual model has assumptions and limitations—which also apply to the current study. First, the model does not consider how a worker uses English or a foreign language in performing a select job task or social networking activity. Second, the model does not distinguish language skills among different occupational contexts, for example, between bilingual workers employed in American versus foreign-owned organizations. Third, the model does not target select foreign languages that occupations demand more than other languages in the workplace.

Such information missing in Agirdag's (2014) model might further explain how bilingual competency transforms into higher wages for bilingual workers compared to monolingual workers. Instead, the model assumes that the same bilingual competency applies to all select job tasks and social networking activities, across the same contexts (e.g., American versus foreign-owned organizations), and for all foreign languages. Despite having similar assumptions and limitations, the current study considers other important aspects of bilingual competency previously not considered in earlier studies.

Guiding research questions. Of the 140.4 million individuals employed in the US labor force reported in the US Census data in 2011, 29.5 million (~21.0%) spoke a language other than English at home (Ryan, 2013, p. 9). Thus, there is an approximate estimate of the *supply* of US workers with bilingual skills employed in US occupations. What has been missing is an estimate of the *demand* for bilingual workers in the workplace. This is important. Earlier studies for the native-born indicated bilingual competency was associated with lower earnings in select US occupations (e.g., Chiswick and Miller, 2007a; Fry and Lowell, 2003). One way this can happen is if the supply far exceeds the demand for bilingual workers. Under this condition, employers would pay lower wages because there is a surplus in the supply of bilingual workers to hire from in the labor pool. Another way this can happen is if employers' requirements for bilingual language skills in the workplace are too rudimentary—so basic they do not value these skills enough to pay a wage premium. These suppositions provide the current study with a context for two research questions:

- To what extent is there demand for English and foreign language skills, as measured by its importance within US occupations?
- To what level do US occupations require English and foreign language proficiency in the workplace, as measured by standardized benchmarks?

Data and methods

The *Occupational Information Network* (O*NET) was the primary data source for the current study (National Center for O*NET Development, 2020a). Developed under the sponsorship of the US Department of Labor's Employment and Training Administration (USDOL/ETA), O*NET provides comprehensive occupational descriptions and data for use by job seekers, workforce development offices, human resources professionals,

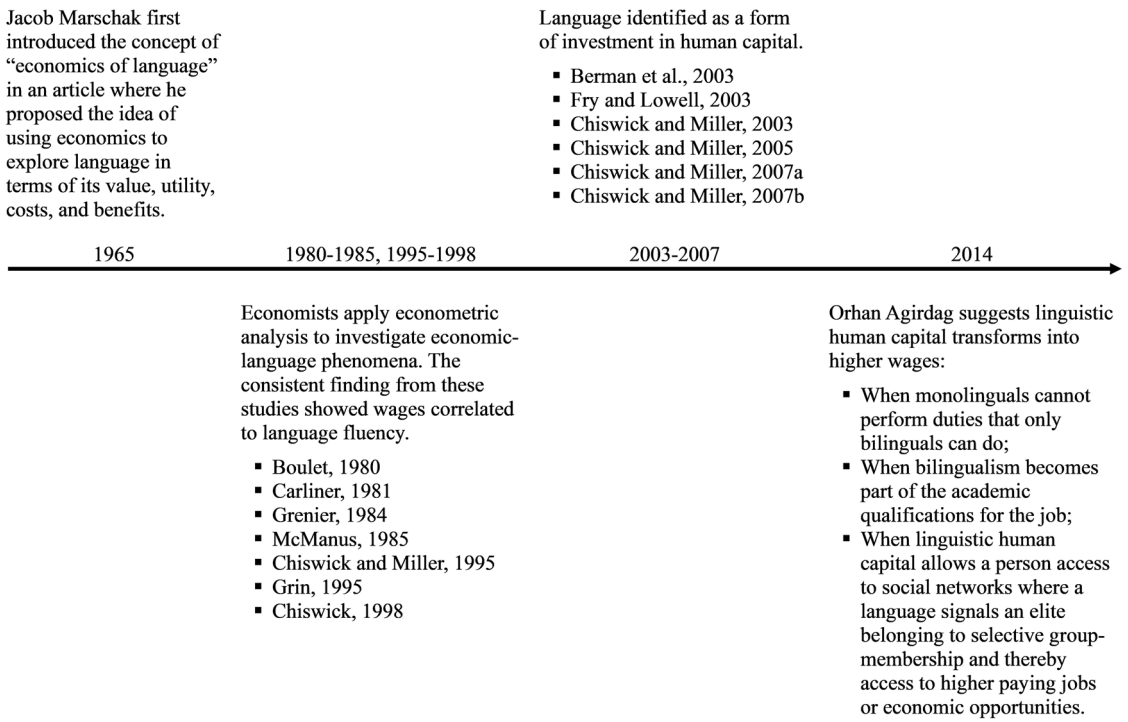

Fig. 1 Economics of language theory timeline. The illustration shows major periods along a timeline that categorize the research literature in the economics of language field since the concept was introduced by Marschak in 1965 through the current perspective proposed by Agirdag in 2014.

and researchers, among others. The O*NET program updates the database through ongoing surveys of each occupation's worker population and occupation experts. O*NET staff then incorporate the survey findings into the database on an ongoing schedule to provide up-to-date information on occupations as they evolve over time.

Available in different formats for electronic download (National Center for O*NET Development, 2020b), the O*NET version 19.0 data collection consisted of two data files available in SAS format: OCCDATA ($n = 1110$) and KNOWLEDGE ($n = 942$). OCCDATA contained the title and a short description of each occupation. KNOWLEDGE contained for each detailed occupation, 32 descriptors representing sets of facts and principles needed to address problems and issues of a job. English and foreign languages were two such descriptors. The two datasets also contained a common variable consisting of an occupation's unique Standard Occupational Classification (SOC) code, a 7-character categorical identifier based on federal statistical standards used by federal agencies to classify workers into occupational categories for collecting, calculating, or disseminating data. Using SAS® 9.4 procedures, a data merge of the two files by SOC code resulted in an O*NET file consisting of 942 occupation records.

The total employed per SOC code came from the *National Occupational Employment and Wage Estimates* available from the Bureau of Labor Statistics (2020) at the US Department of Labor. Using SAS® 9.4 procedures, a data merge of the O*NET and employment files by SOC code produced the final 764 occupation records for the current study.

Measures. From a research design perspective, the current study considers the 7-character categorical SOC code as the independent or explanatory variable because O*NET uniquely defines each identifier as an occupation by its tasks, skills, abilities, and knowledge that employers require of workers for the job (National Center for O*NET Development, 2020b). Based on this construct, the SOC code is nominal data.

In comparison, through ongoing surveys of each occupation's worker population and occupation experts, O*NET collects two categorical outcome measures for the English and foreign language descriptors: (a) its importance to and (b) the required level (i.e., proficiency) for the job. For the importance measure, survey respondents rated the English and foreign languages on a five-point scale: (1) *Not Important*; (2) *Somewhat Important*; (3) *Important*; (4) *Very Important*; and (5) *Extremely Important*. The O*NET database then reported the importance scale average of the responses, and for the current study were rounded into integers to create numerical category values aligned with the original five-point ordinal scale.

For the language level measures, the survey respondents needed only to indicate the English and foreign language proficiency required for the job on a seven-point interval scale (1–7), if they had indicated the language importance was *Somewhat Important* or more to the job. To guide the respondents indicating so, the scale for the English language level contained three benchmark descriptors: 2 = write a thank you note; 4 = edit a feature article in a local newspaper; and 6 = teach a college English class. In comparison, the interval scale for the foreign language level also provided survey respondents with three benchmark descriptors: 1 = say "please" and "thank you" in a foreign language; 3 = ask directions in a foreign city; and 5 = write in English a review of a book written in a foreign language. The O*NET database coded the language level measures a zero for those indicating the language importance was *Not Important* to the job. The O*NET database reported the level scale average, and for the current study were rounded into integers to create numerical category values aligned with the original seven-point discrete scale.

Understanding the difference between the importance and level scales is significant to the current study. While the same skill can be important for different occupations, the level of the skill

needed in those occupations can differ dramatically (National Center for O*NET Development, 2020c). For example, the skill of "speaking" is important for both lawyers and paralegals. However, lawyers are required to have a higher level of speaking skills because they frequently argue cases before judges and juries, while paralegals only need an average level of this skill. Likewise, English and foreign language may have importance to an occupation but require only an average level of these skills. Even so, wages should be a function of the importance and language levels required for an occupation—holding all other human capital constants.

Methods. Because the 7-character SOC code was nominal data, the research design was limited to mostly descriptive statistics to analyze and organize the outcome measures of English and foreign language importance and levels. Inferential statistics consisted of chi-square, which provided supportive insights about the proportional distribution of US occupations by English and foreign language importance and levels. The Pearson correlation test also provided supportive evidence about the strength and direction of the linear relationship between select measures. Basic ratio calculations were performed using select results to supplement the discussion of the findings. Please note, the results reported in the current study come from analysis of the data using SAS® 9.4 procedures.

Results

Table 1 shows descriptive statistics for the English language level by its importance in US occupations. Preliminary analysis of the data found the absence of any occupation where the English language importance was *Not Important*—all US occupations required some level of English language competency. Note how the table indicates a pattern of increasing average English language levels as its importance increases in the workplace. The table then shows the benchmarks based on the nearest scale score to the median English language levels. Further below in the table are the frequency distributions of occupations and employees by English language importance. Univariate analysis of this data indicated a normal distribution with skewness of −0.14 (SE = 0.09) and kurtosis of −0.22 (SE = 0.18).

Of the 764 US occupations, 6.5% ($n = 50$) representing 2.7% ($n = 3{,}621{,}110$) of total employees indicated English was *Somewhat Important* in the workplace, requiring workers only to have the basic ability to write a thank you note. The next 40.1% ($n = 306$) of the occupations representing 48.0% ($n = 63{,}249{,}050$) of total employees indicated English was *Important* in the workplace, requiring workers to have competency between the basic ability and the more intermediate language ability to edit a feature article in a local paper.

Of the remaining occupations, the next 47.3% ($n = 361$) representing 46.3% ($n = 61{,}014{,}860$) of total employees indicated English was *Very Important* in the workplace, requiring workers to have the intermediate ability to edit a feature article in a local paper. The last 6.2% of the occupations representing 2.9% ($n = 3{,}871{,}240$) of total employees indicated English was *Extremely Important* in the workplace, requiring workers to have language competency at the highest benchmark—the ability to teach a college English class. The nearest scale score benchmark to the median English language level for all US occupations ($n = 764$) representing 131,756,260 workers was four—the ability to edit a feature article in a local newspaper.

Table 2 shows descriptive statistics for the foreign language level by its importance in US occupations. The table shows a pattern of increasing average foreign language levels as its importance increased in the workplace. The table then presents the benchmarks based on the nearest scale score to the median foreign language levels. Further below in the table are frequency distributions of occupations and employees by foreign language importance. A chi-square test was performed to determine whether these proportional distributions of US occupations by importance were equal to those found for English (see Table 2). The proportional distribution did differ by importance, $X^2(4, N = 1528) = 1266.9$, $p < 0.0001$. Univariate analysis of the foreign language importance data indicated a non-normal distribution

Table 1 English language level by importance in US occupations.

English language importance	English language level				
	Mean	**SD**	**Min**	**Median**	**Max**
Not Important	0	0	0	0	0
Somewhat Important	1.82	0.48	1.00	2.00	3.00
Important	2.93	0.59	2.00	3.00	5.00
Very Important	4.21	0.69	3.00	4.00	6.00
Extremely Important	5.68	0.52	5.00	6.00	7.00
Total	3.63	1.11	1.00	4.00	7.00
	Nearest scale score benchmark to median				
Not Important	0	n/a			
Somewhat Important	2	Write a thank you note			
Important	3	(Between 2 and 3 benchmark standard)			
Very Important	4	Edit a feature article in a local paper			
Extremely Important	6	Teach a college English class			
Total	4	Edit a feature article in a local paper			

	US occupations				**Employees**			
			Cumulative				**Cumulative**	
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Not Important	0	0	0	0	0	0	0	0
Somewhat Important	50	6.5	50	6.5	3,621,110	2.7	3,621,110	2.7
Important	306	40.1	356	46.6	63,249,050	48.0	66,870,160	50.8
Very Important	361	47.3	717	93.9	61,014,860	46.3	127,885,020	97.1
Extremely Important	47	6.2	764	100	3,871,240	2.9	131,756,260	100
Total	764	100			131,756,260	100		

Percentages (%) may not total 100% due to rounding.

Table 2 Foreign language level by importance in US occupations.

Foreign language importance	Foreign language level							
	Mean	SD	Min		Median		Max	
Not Important	0.00	0.00	0.00		0.00		0.00	
Somewhat Important	1.35	0.48	1.00		1.00		2.00	
Important	3.24	0.44	3.00		3.00		4.00	
Very Important	4.33	0.58	4.00		4.00		5.00	
Extremely Important	6.50	0.71	6.00		6.50		7.00	
Total	0.79	0.91	0.00		1.00		7.00	
wo/Not Important	1.47	0.75	1.00		1.00		7.00	
	Nearest scale score benchmark to median							
Not Important	0	n/a						
Somewhat Important	1	Say "please" and "thank you" in a foreign language						
Important	3	Ask directions in a foreign city						
Very Important	4	(Between 3 and 5 benchmark standard)						
Extremely Important	5	Write in English a review of a book written in a foreign language						
Total	1	Say "please" and "thank you" in a foreign language						
wo/Not Important	1	Say "please" and "thank you" in a foreign language						
	US occupations				**Employees**			
			Cumulative				**Cumulative**	
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Not Important	357	46.7	357	46.7	50,004,660	38.0	50,004,660	38.0
Somewhat Important	385	50.4	742	97.1	79,740,850	60.5	129,745,510	98.5
Important	17	2.2	759	99.3	1,914,210	1.5	131,659,720	99.9
Very Important	3	0.4	762	99.7	16,200	0.01	131,675,920	99.9
Extremely Important	2	0.3	764	100	80,340	0.1	131,756,260	100
Total	764	100			131,756,260	100		
wo/Not Important	407	53.3			81,751,600	62.0		

Percentages (%) may not total 100% due to rounding.

with right skewness of 0.89 (SE = 0.09) and kurtosis of 2.57 (SE = 0.18).

Of the 764 US occupations, 46.7% ($n = 357$) representing 38.0% ($n = 50{,}004{,}660$) of total employees indicated foreign language was *Not Important* and therefore, did not require workers to have any foreign language competency in the workplace. Another 50.4% ($n = 385$) of the occupations representing 60.5% ($n = 79{,}740{,}850$) of total employees indicated foreign language was *Somewhat Important*, requiring workers to have competency at the most rudimentary level—the ability to say "please" and "thank you" in a foreign language. The remaining 2.9% ($n = 22$) occupations representing about 1.6% ($n = 2{,}010{,}750$) of total employees indicated foreign language was *Important* or higher. These occupations required workers to have competency between the intermediate ability to ask directions in a foreign city to the highest benchmark—the ability to write in English a review of a book written in a foreign language—and above in some occupations. Overall, the nearest scale score benchmark to the median foreign language level for all US occupations ($n = 764$) representing 131,756,260 workers was just below the ability to say "please" and "thank you" in a foreign language. Excluding the *Not Important* category ($n = 357$), the average foreign language level required by the remaining 53.3 percent of the US occupations ($n = 407$) representing 62.0% ($n = 81{,}751{,}600$) of total employees was slightly above this rudimentary ability.

Table 3 reorganizes the prior analysis to show the descriptive statistics for U.S. occupations and employees by language level. As previously cited, there were no occupations where the English language level equaled zero—all U.S. occupations required some level of English language competency. Univariate analysis of the data indicated a normal distribution with skewness of 0.18 (SE = 0.09) and kurtosis of −0.31 (SE = 0.18).

Of the 764 US occupations, 47.5% ($n = 363$) representing 55.1% ($n = 72{,}644{,}150$) of total employees required English language competency in the workplace just below the ability to edit a feature article in a local newspaper. The remaining 52.5% of the occupations ($n = 401$) representing 44.9% ($n = 59{,}112{,}110$) of total employees required English language competency at or above this benchmark standard.

In comparison, the foreign language level data revealed dissimilar results. A chi-square test was performed to determine whether these proportional distributions of US occupations by level were equal to those found for English. The proportional distribution did differ by level, $X^2(7,\ N = 1528) = 1174.1$, $p < 0.0001$. Univariate analysis of the data indicated a non-normal distribution with right skewness of 1.49 (SE = 0.09) and kurtosis of 4.44 (SE = 0.18). Of the 764 US occupations, 46.7% ($n = 357$) representing 38.0% ($n = 50{,}004{,}660$) of total employees required no foreign language ability in the workplace. Another 32.9% ($n = 251$) representing 50.8% (n = 66,870,190) of total employees required workers to have competency at the most rudimentary level—the ability to say "please" and "thank you" in a foreign language. The next 17.5% ($n = 134$) of the occupations representing 9.8% ($n = 12{,}870{,}660$) of total employees required a foreign language proficiency just above this rudimentary level. Only the remaining 2.9% ($n = 22$) of the occupations representing about 1.5% ($n = 2{,}010{,}750$) of total employees required a foreign language level at or above the intermediate ability to ask directions in a foreign city. Of these, one occupation required the highest benchmark—the ability to write in English a review of a book in a foreign language, one just above this at level six, and one even higher at level seven.

Lastly, Table 4 lists the 22 US occupations where the foreign language was more important or more in the workplace. A Pearson correlation coefficient was computed to assess the linear relationship among the occupation's Job Zone, required English

Table 3 US occupations and employees by language level.

Scale score—benchmark		US occupations				Employees			
				Cumulative				Cumulative	
		n	%	*n*	%	*n*	%	*n*	%
English language levels									
0	*(English language "Not Important")*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
1		11	1.4	11	1.4	898,150	0.7	898,150	0.7
2	Write a thank you note	100	13.1	111	14.5	16,252,090	12.3	17,150,240	13.0
3		252	33.0	363	47.5	55,493,910	42.1	72,644,150	55.1
4	Edit a feature article in a local newspaper	239	31.3	602	78.8	46,072,730	35.0	118,716,880	90.1
5		122	16.0	724	94.8	10,460,750	7.9	129,177,630	98.0
6	Teach a college English class	39	5.1	763	99.9	2,549,160	1.9	131,726,790	99.9
7		1	0.1	764	100	29,470	0.02	131,756,260	100
Foreign language levels									
0	*(Foreign language "Not Important")*	357	46.7	357	46.7	50,004,660	38.0	50,004,660	38.0
1	Say "please" and "thank you" in a foreign language	251	32.9	608	79.6	66,870,190	50.8	116,874,850	88.7
2		134	17.5	742	97.1	12,870,660	9.8	129,745,510	98.5
3	Ask directions in a foreign city	13	1.7	755	98.8	1,854,680	1.4	131,600,190	99.9
4		6	0.8	761	99.6	66,580	0.1	131,666,770	99.9
5	Write in English a review of a book written in a foreign language	1	0.1	762	99.7	9,150	0.01	131,675,920	99.9
6		1	0.1	763	99.9	30,880	0.02	131,706,800	99.9
7		1	0.1	764	100	49,460	0.04	131,756,260	100

Percentages (%) may not total 100% due to rounding.

Table 4 US occupations where foreign language important or more in the workplace.

Job zone	SOC code	Occupation	Total employed	Language level	
				English	Foreign
2	43-4181	Reservation/Transportation ticket agents/Travel clerks	138,260	4	3
2	47-2061	Construction laborers	852,870	3	3
3	35-1011	Chefs/Head cooks	118,130	3	3
3	53-2031	Flight attendants	98,510	3	3
3	33-3021	Detectives/Crime investigators	108,720	5	3
4	25-3011	Adult Basic/Secondary education/Literacy Teachers/ Instructors	65,990	6	3
5	25-9031	Instructional coordinators	133,780	6	3
5	25-1064	Geography teachers (postsecondary)	4440	6	3
5	29-1127	Speech-language pathologists	126,500	6	3
5	25-1121	Fine arts teachers (postsecondary)	97,500	5	3
5	19-3092	Geographers	1260	5	3
5	25-1065	Political science teachers (postsecondary)	17,050	6	3
5	29-1071	Physician assistants	91,670	4	3
2	13-1074	Farm labor contractors	950	2	4
5	19-3091	Anthropologists/Archeologists	7040	6	4
5	25-1126	Philosophy/Religion teachers (Postsecondary)	23,210	6	4
5	25-1125	History teachers (Postsecondary)	23,640	6	4
5	25-1061	Anthropology/Archeology teachers (PSE)	6100	6	4
5	19-3094	Political Scientists	5640	6	4
5	25-1062	Area, ethnic, cultural studies teachers (postsecondary)	9150	6	5
5	25-1124	Foreign language/literature teachers (postsecondary)	30,880	6	6
4	27-3091	Interpreters/Translators	49,460	6	7

Table entries are sorted by foreign language level and then by occupation's Job Zone, a numerical categorical variable that defines progressive levels of education required for an occupation: 1 = No High School Diploma; 2 = High School Diploma/GED; 3 = Associate; 4 = Bachelor; and 5 = Master's or higher.

level, and required foreign language level. A numerical categorical variable, the Job Zone defines progressive levels of education required for an occupation: 1 = *No High School Diploma*; 2 = *High School Diploma/GED*; 3 = *Associate*; 4 = *Bachelor*; 5=*Master's or higher*. There was a very strong positive correlation between the Job Zone and the required English language level, $r(20) = 0.81$, $p < 0.0001$. In comparison, the correlation between the Job Zone and required foreign language level was positive but moderate: $r(20) = 0.18$, $p = 0.437$. In contrast, the correlation between the required English and foreign language levels was also positive but very weak: $r(20) = 0.32$, $p = 0.142$.

Discussion

No space will be taken to discuss what is self-evident: the US is a monolingual nation based on the English language and as a result,

proficiency in this language is critical for labor market opportunities. Like earlier research, results from the analysis of the O*NET data corroborate this point. Instead, the current study contributes to the literature by illuminating the following insights toward resetting expectations about language in American society.

US occupations are workplaces dominated largely by the demand for workers proficient in the English language—especially at the mid-to-high benchmark levels. Table 3 showed the distribution of US occupations and employees by English language level. As noted earlier, there was an absence of any occupation where the English language level was zero—all US occupations required some level of English language competency. Of the 764 US occupations, 52.5% ($n = 401$) required workers to have intermediate (the ability to edit a feature article in a local newspaper) to superior English language proficiency (the ability to teach a college English class).

US occupations are workplaces where workers' English language levels increase with English language importance for the job. Table 1 showed descriptive statistics for English language levels by their importance in the workplace. In US occupations, the average English language level required was near the ability to edit a feature article in a local newspaper ($M = 3.63$, SD = 1.11). Nonetheless, the table also indicated a consistent pattern of increasing English language levels as its importance increased. These levels ranged from the ability to write a thank you note to the highest benchmark—the ability to teach a college English class.

US occupations are workplaces mostly void of the demand for workers proficient in a foreign language. Table 2 also showed the distribution of US occupations and employees by foreign language importance. Of the 764 US occupations, 46.7% ($n = 357$) indicated foreign language was *Not Important* requiring no foreign language ability in the workplace (level 0). Another 50.4% ($n = 385$) of the occupations indicated foreign language was *Somewhat Important* requiring, on average, a foreign language level of 1.35 (SD = 0.48), just above the ability to say "please" and "thank you" in a foreign language. Most authorities on rating foreign language proficiency do not recognize this ability level as communicating in a foreign language (e.g., American Council on the Teaching of Foreign Languages (2019); Interagency Language Roundtable (2019); U.S. Department of State, 2019). At best, the experts define this ability as "memorized proficiency" (Interagency Language Roundtable, 2019).

These findings may explain the prior research reporting US employers paid lower wages (e.g., Chiswick and Miller, 2007a; Fry and Lowell, 2003) or no wage premium (e.g., Coombs and Cebula, 2010; Fry and Lowell, 2003) for bilingual competency. One way this can happen is if employers' requirements for bilingual language skills in the workplace are too rudimentary—so basic, they do not value these skills enough to pay a wage premium. The evidence presented suggests most occupations require workers to have foreign language proficiency no higher than the ability to say a few complimentary phrases. Under these conditions, foreign language may be *Somewhat Important*, but most plausible not important enough to merit a wage premium in today's workplace. Unfortunately, the current study cannot answer definitively if employers had these low foreign language proficiency requirements, wage practices, and language expectations in the US workplace during the time frame of the prior research to explain without reservation these findings of lower wages or no wage premiums for bilingual competency.

Nonetheless, the current study results can give an estimate of the current void in the demand for workers proficient in a foreign language. Of the 764 US occupations, 97.1% ($n = 742$) required no foreign language or a rudimentary "memorized proficiency" level. The ratio of 129.7 million employees in these occupations to those in occupations where foreign language importance was *Important* or higher ($n = 2{,}010{,}750$) was 64.5-to-1, respectively. Taking the reciprocal of the ratio (i.e., 1/64.5 = 0.0155) indicates a demand of only 15.5 workers employed in foreign language-required occupations for every 1000 workers employed in US occupations where the foreign language was not required or at a rudimentary "memorized proficiency" level (Interagency Language Roundtable, 2019).

Despite the current void in demand, US occupations are workplaces where workers' foreign language levels increase with foreign language importance. Table 2 shows descriptive statistics for foreign language levels by its importance in the workplace. In US occupations, the average foreign language level required was just below the ability to say "please" and "thank you" in a foreign language ($M = 0.79$, SD = 0.91). Even so, the table also indicated a consistent pattern of increasing foreign language levels as its importance increased. These levels ranged from the ability to say "please" and "thank you" in a foreign language to the highest benchmark—the ability to write in English a review of a book written in a foreign language.

Adding to these findings, US occupations are also workplaces with an underutilized sizeable surplus of workers proficient in a foreign language. Of the 140.4 million individuals employed in the US labor force reported in the US Census data in 2011, 29.5 million (~21.0%) spoke a language other than English at home (Ryan, 2013, p. 9). Calculated from Table 3, subtracting the 14.9 million workers employed in occupations where foreign language was required at benchmark level two or above, from the 29.5 bilinguals in the US labor force identified a surplus of 14.6 million workers qualified for foreign language-required jobs. Thus, the ratio of these surplus bilingual workers to those employed in a foreign language-required job was 0.98-to-1, respectively. Taking the reciprocal of the ratio (i.e., 1/0.98 = 1.02) indicated a surplus of about one bilingual worker in the US labor force for every employed bilingual worker where a foreign language is required at benchmark level two or above.

These findings may also explain the prior research reporting US employers paid lower wages (e.g., Chiswick and Miller, 2007a; Fry and Lowell, 2003) or no wage premium (e.g., Coombs and Cebula, 2010; Fry and Lowell, 2003) for bilingual competency. In the current study, the supply of foreign language workers was twice the demand from US occupations. Under this condition, employers would pay lower wages because there was a surplus in the supply of bilingual workers to hire from in the US labor pool. Unfortunately, the current study cannot answer what surplus of bilingual workers existed, if any, in the US workplace during the time frame of the prior research to explain without reservation the findings from these studies.

Resetting expectations about language in American Society. Unlike many other countries, the US does not have an official national language policy (Center for Applied Linguistics, 2021). Furthermore, no national law prohibits states from having one or more official languages, although the majority have designated English as their official language. Some states, for example, like New Mexico have designated both English and Spanish as co-official languages, while the state of Hawaii has two official languages—English and Hawaiian.

The discourse on the need for language policy in the US was framed best in the 1988 amendment to the Title VI of the Higher Education Act, that the security, stability, and economic vitality of the United States in a complex, global era depends upon Americans knowledgeable about world regions, foreign languages, and international affairs (Hegji, 2014; also see Spolsky, 2011).

Within this context, the current study significantly underscores the need for resetting expectations about language in American society, especially at a time when immigration, economic growth, and public education are major issues in American civic discourse.

According to projections from the Pew Research Center (Lopez and Bialik, 2017), immigrants will drive most of the future growth in the US working-age population in the coming decades, adding 18 million working-age adults as the Baby Boom generation continues to retire. Within the current US immigrant population of 40.6 million, aged 5 and older, a US Census survey indicated about 50% of these respondents self-reported they spoke English only or "very well" (Gambino et al., 2014). Recent research has shown a strong correlation between a population's English skills to a country's economic performance (McCormick, 2017). US employers and policymakers must face sooner-or-later the daunting task of how to train the other 50% in English language skills, well enough to compete in the US labor market for living-wage jobs (Duval-Couetil and Mikulecky, 2011).

More so, the findings on foreign language demand and proficiency level in US occupations have the most direct consequences for US public education. In the fall of 2020, there were an estimated 15.5 million students enrolled in grades 9–12 in public high schools (Snyder et al., 2019, p. 73), where they generally require them to complete foreign language courses for high school graduation. Likewise, 16.9 million students attended undergraduate degree-granting postsecondary institutions (Snyder et al., 2019, p. 43), where they too commonly have foreign language requirements for college graduation.

The current study suggests high school and college students would best qualify for higher-wage jobs in the US labor market by developing through select coursework, superior levels of English language skills in writing, speaking, reading, and listening. Interestingly, support for this supposition comes from an unexpected source. As cited earlier, the literature on language and labor market outcomes in the US has focused mostly on non-English-speaking immigrants' returns to learning English (e.g., Chiswick and Miller, 1999; Gonzalez, 2000; Kossoudji, 1988; Mora and Davila, 1998). The findings from these studies indicated the higher the English language skills, the better the job market prospects and earnings for these individuals (see Chiswick, 2008). As in these earlier studies, Chiswick and Miller's (2010) publication on the value of English in the US labor market further validated that earnings increase with the English language level required for the occupation.

If so, the benefits to immigrant non-English speakers to learn English should also apply to US English-native speakers. However, the findings from the current study add another insight American parents need to consider—the likelihood of finding a job in one's chosen occupation. Calculations based on the results shown in Table 3 indicated a worker was 18 times more likely to find an occupation where employers required intermediate and superior English language competency ($n = 401$) than an occupation where employers required intermediate or advanced foreign language ability ($n = 22$). Put another way, English language-centric occupations hire 29.4 times more workers ($n = 59{,}112{,}110$) than employers requiring workers with foreign language ability ($n = 2{,}010{,}750$). Of course, if the goal were to work in a bilingual-required job, one can always select from the 22 occupations found in Table 4 where the foreign language was important or more in the workplace. However, qualifying for these occupations is another matter. As indicated in the table, most of these occupations require only an average level of foreign language competency (i.e., 3 or 4 level = asking for directions in a city), which one could assumably achieve with two to three years of foreign language education in a public school or college. Even so, many of these occupations require a bachelor's or advanced degree (i.e., Job Zone = 4 or 5), as well as very high English competency (i.e., level 6 = teaching a college English class).

Yet, many American parents are increasingly convinced bilingual competency leads to labor market advantages (Gándara, 2018). Perhaps for a good reason. Despite the empirical evidence —or lack thereof—the notion that learning a foreign language leads to higher wages in US occupations is replete in books (e.g., Porras et al., 2014), professional magazines (e.g., Harper, 2016), and peer-review articles (e.g., Cere, 2012). There may be an explanation for this conundrum prevalent in American society. The current study suggested US employers do not require much if any, bilingual competency when hiring workers. But employers may—all else being equal—reject a monolingual and hire a bilingual because of a belief or perception they are getting more "human capital" for the same wage. If true, then workers highly proficient in English or a foreign language in occupations not requiring such language levels are not taking advantage of their inherent skills. Perhaps, the fundamental issue policymakers, educators, and parents need to be concerned about the most is to have workers, students, or children, respectively, well-qualified and ready for a rewarding career—but struggling as an over-qualified employee in an underpaid, low-skill job. Minimizing the likelihood of this occurrence starts with resetting expectations about language in American society, based on the findings from the current study.

Limitations and assumptions. The interpretation of the findings should be considered within the limitations and assumptions of the current study. O*NET defines occupations by cross-job descriptors rather than by job-specific content, making it difficult to determine how a worker uses English or a foreign language in performing a select job-task (National Research Council, 2010). One can only assume the O*NET language scale benchmarks serve as proxies for benchmarks at equivalent proficiency within the context of an occupation's select job-tasks. In the future, new measures of how language is used at the job-level could improve person-job matching and help policy makers estimate future skill needs more accurately.

The descriptive statistics presented do not allow generalization beyond the findings presented limiting the results to other contexts outside US occupations in American society. Thus, the current study's implied lack of association between bilingual competency and economic gains may be oversimplified. A broad range of factors exist that could affect one's economic outcome (e.g., wages or employment status), including race/ethnicity, generation, years of stay in the US, educational attainment levels, immigration status, gender, age, and location (e.g., urban, rural)—as well as the extent of racial bias and prejudice. While a prominent factor, unfortunately, language alone cannot detangle the complicated nature and associations among these factors. The descriptive analysis in the current study, therefore, contains intrinsic limitations and may underestimate the depth and breadth of discussions reported in prior literature. Future research could serve as a basis for rating English and foreign language levels required in other contexts (e.g., social, political, governance, technological).

That the current study did not target specific languages also somewhat limited the findings. More so, the language scales are very general and do not probe specific socio-linguistic and genre-based language skills needed for a particular occupation. Some occupations may require, for example, language proficiency in using a more technical vocabulary, or higher competency in oracy than in reading or writing. Finally, while the findings do not

support the wide demand for bilingual competency in US occupations does not imply such demand does not exist in other countries seeking to do business in the global economy. Here again, future research could determine the importance and level in the workplace for English and foreign languages—especially those of international wider use like Mandarin Chinese or Spanish.

Lastly, the current study was void of any analysis about wages related to English and foreign language proficiency. This was intentional to focus the current research on language importance and level as required in US occupations, which had not received attention in prior studies. Research on the economic returns to English and foreign language would consist of the current data regressed on wage data (Bureau of Labor Statistics, 2020) in a regression model, after statistically controlling for proficiency levels of the other 31 O*NET descriptors representing sets of facts and principles needed to address problems and issues of a job. Such research is underway with the intent of contributing to the current study and prior research.

Conclusions

Despite the findings of the current study within the context of its limitations and assumptions, there are other viewpoints to consider. When researchers speak of the returns to bilingualism, they imply economic returns in the form of higher wages, however, there are non-economic returns to bilingualism in the form of mental health, social and private benefits. Mental health research shows bilingualism has a somewhat muted effect in adulthood but a larger role in older age, protecting against cognitive decline, a concept known as "cognitive reserve" (see Bialystok et al., 2012). Social benefits include those enjoyed by bilinguals in society, in addition to any positive externalities transmitted to each other and to the rest of society because of their language skills. Private benefits include non-pecuniary rewards, such as exposure to cultural experiences and social advantages derived from speaking a second language with other people. As central Europeans often say, *"the more languages you speak, the more times you are a human being"* (Chorney, 1997, p. 181). While difficult to measure empirically, the extent of these private non-pecuniary rewards is likely to be considerable (Breton, 1978). Thus, while the current study does not support the prevalent popular belief of learning a foreign language for higher wages in US occupations, it does not suggest learning a foreign language is not important. If for any reason, the returns to mental health, social and private benefits in American society.

Data availability

The O*NET occupational datasets are openly available for public access at https://www.onetcenter.org/db_releases.html; and the wage/employee data file is openly available for public access at https://www.bls.gov/oes/tables.htm.

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Author contributions

All contributions to the manuscript were made by the sole author of the manuscript.

Competing interests

The author declares no competing interests.

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This article does not contain any studies requiring ethical approval.

Informed consent

This article does not contain any studies with human participants performed by the author.

Additional information

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