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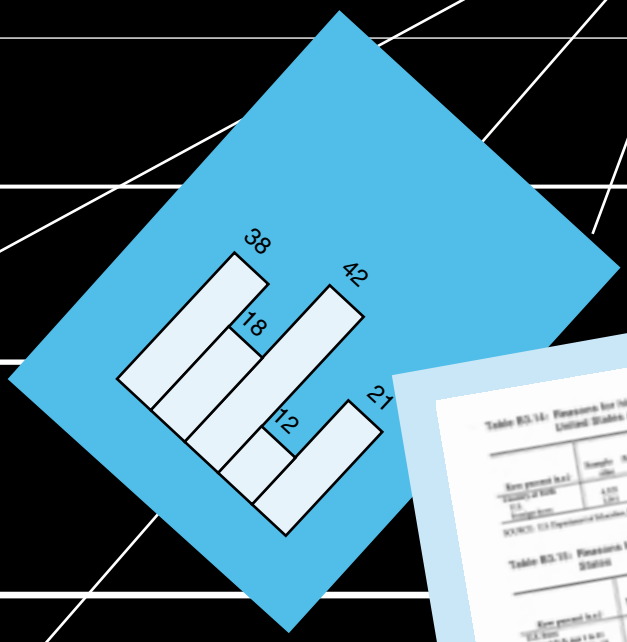
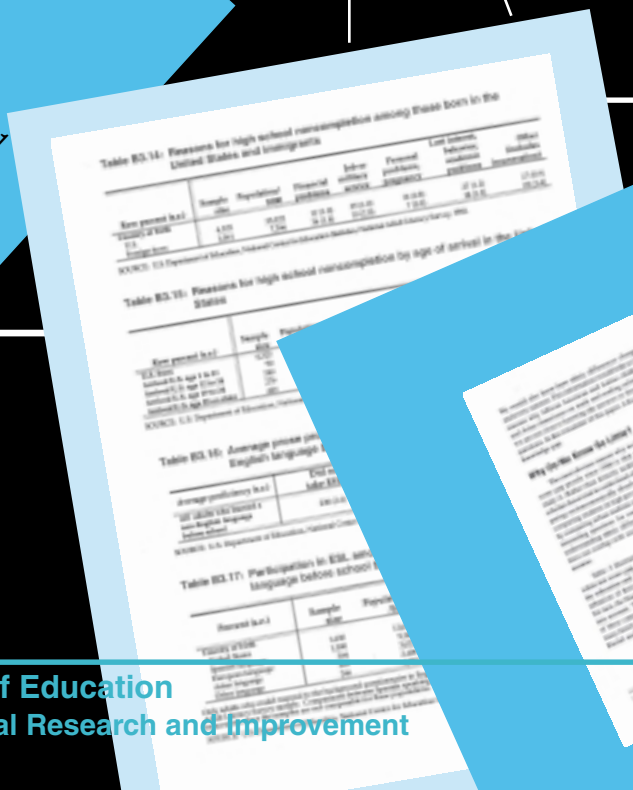
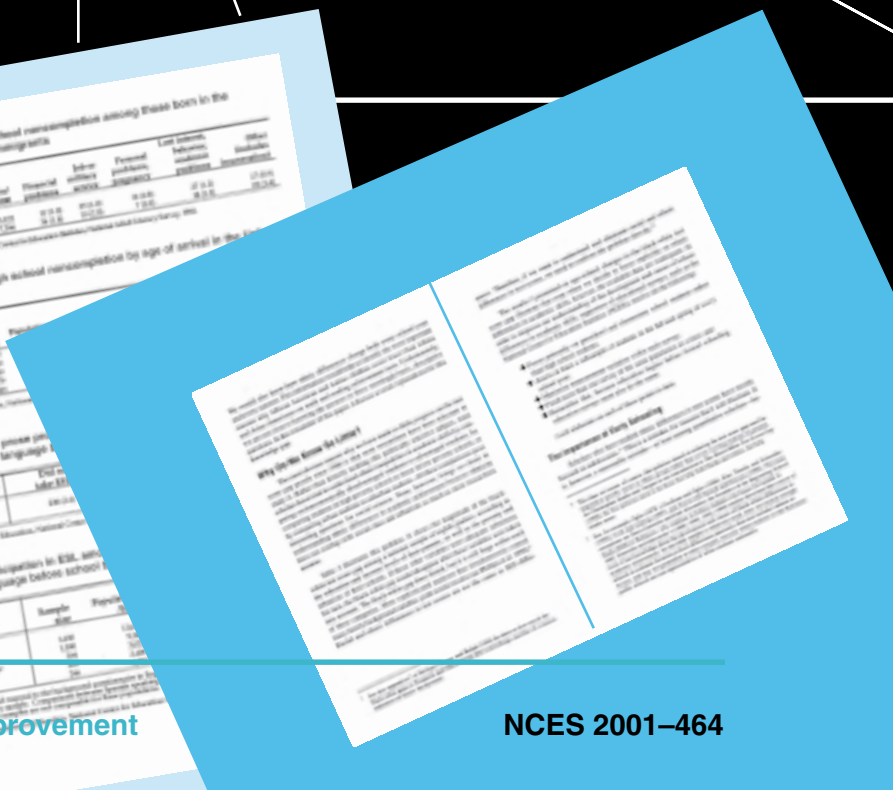
English Literacy and Language Minorities in the United States

Results from the

National Adult Literacy Survey







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August 2001

English Literacy and Language Minorities in the United States

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U.S. Department of Education
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EXECUTIVE SUMMARY

English Literacy and Language Minorities in the United States

English literacy and Language Minorities in the United States is one report in a series of U.S. Department of Education publications based on the 1992 National Adult Literacy Survey. Previously released reports in this series include *Adult Literacy in America, Literacy of Older Adults in America, Literacy Behind Prison Walls,* and *Literacy in the Labor Force*.

The increase in immigration to the United States in the 1970s and 1980s raised concerns among policymakers, researchers, and members of the public about how well immigrants were being integrated into the society and economy of the United States. This report addresses these concerns by providing an in-depth look at adult residents of the United States who were either born in other countries or were born in the United States but spoke a language other than English as young children. The report explores the English fluency and literacy of this population, their fluency and literacy in their native non-English languages, and their employment patterns and earnings.

Survey Purpose. The 1992 National Adult Literacy Survey provides the most detailed portrait ever of the English literacy abilities of adults living in the United States. The survey sought to avoid previous characterizations of all adults as either "literate" or "illiterate." Instead, it profiled the literacy abilities of adults based on their performance on a wide array of tasks that reflect the types of materials and demands they encounter in their daily lives (e.g., interpreting instructions from a warranty, reading maps, balancing a checkbook, or figuring out a tip).

Survey Methodology. Survey data were gathered in 1992 by trained staff who interviewed over 13,600 adults residing in U.S. households. The adults were randomly selected to represent the adult population of the country as a whole. In addition, 1,000 adults were interviewed in each of 11 states that chose to participate in a concurrent survey designed to provide results comparable to the national data. Finally, 1,150 inmates in 80 state and federal prisons were surveyed. The prisons were randomly selected to represent prisons across the country,

and the inmates themselves were randomly selected from each prison. In total, 26,000 adults participated in the survey.

Interviewers administered an extensive background questionnaire that collected information about respondents' language background, demographic characteristics, educational background, reading practices, workforce participation, and other areas related to literacy. Each survey participant also responded to a set of diverse literacy tasks. As a result of their responses to the literacy tasks, adult participants received proficiency scores on three scales that capture increasing degrees of difficulty in English prose, document, and quantitative literacy. Data from the background questionnaires, along with the English literacy proficiency scores, produced a wealth of information about the characteristics of people with different literacy skills.

Major Findings

Age Matters. Analyses presented in Chapter 2, "Language Background and Literacy Proficiency," show that the age at which an individual learned to speak English was related to his or her English literacy proficiency as an adult. On average, individuals who entered the United States before age 12 had English literacy skills as adults comparable to members of racial and ethnic groups who were born in the United States. Virtually everyone who was born in the United States or who immigrated to the United States before age 12 was fluent in English as an adult.

Many of the differences in English literacy proficiency between various racial or ethnic groups were due to differences in language backgrounds among the groups. Asian/Pacific Islander and Hispanic adults were more likely than whites to have been born in a country other than the United States, or to have been raised in homes where a language other than English was spoken. When we accounted for the differences in language background of members of these racial and ethnic groups, the English literacy skills of Asians/Pacific Islanders were comparable to those of whites and the English literacy skills of Hispanics were slightly lower than those of whites. However, on average blacks had lower English literacy proficiency than whites, and differences in language background did not explain these differences in English literacy proficiency between blacks and whites.

There were racial and ethnic group differences in fluency and literacy in languages other than English among adults raised in homes

where a language other than English was spoken. Individuals who grew up in homes where Spanish or an Asian language was spoken were more likely to report that they spoke that language as adults than were respondents who grew up in a home where a European language other than Spanish was spoken.

Schooling Enhances Literacy. Analyses presented in Chapter 3, "Schooling, Language Background, and Literacy Proficiency," show that formal education played a fundamental role in the acquisition of English language fluency and literacy for individuals who were raised in non-English-speaking homes, regardless of whether they were immigrants or native born. In particular, among immigrants who arrived in the United States at age 12 or older, level of formal education was related to English language fluency and literacy. Immigrants who arrived in the United States at age 12 or older, without the benefit of a substantial amount of formal education received in their native country, were the least likely to develop English language skills. Immigrants who arrived at age 12 or older with a substantial level of formal education obtained in their native country, were likely to be biliterate and bilingual in English and their native language.

Immigrants who arrived in the United States at age 12 or older with low levels of formal education had very low participation rates in English as a second language and adult basic skills training classes that might have improved their English language skills. This indicates that an important population, that is not currently being served, could benefit from these classes.

***Literacy Pays*.** Analyses presented in Chapter 4, "Employment and Earnings, Language Background, and Literacy Proficiency," show that adults living in the United States who were not fluent in English, primarily immigrants who arrived at age 12 or older with low levels of formal education, were less likely to be employed, and earn lower wages when they are employed, than individuals who were fluent and literate in English. However, fluency and literacy in English at the level of a native speaker was not necessary for successful integration into the American economy. Although individuals who learned English as their second language had lower English literacy—as measured by the National Adult Literacy Survey—than individuals who were raised in English-speaking homes, their average income and continuity of employment did not differ from that of native English speakers. They may have brought other skills to the workplace that compensated for

their lower levels of English literacy. Additionally, the earnings differential between Hispanics and the total population of the United States disappeared when differences in Hispanic literacy levels were taken into account.

Conclusion

Only non-native English speakers with low levels of formal education were truly disadvantaged in the labor market by their lack of native English language skills. Most members of this disadvantaged group were not being reached by existing English as a second language and basic skills classes.

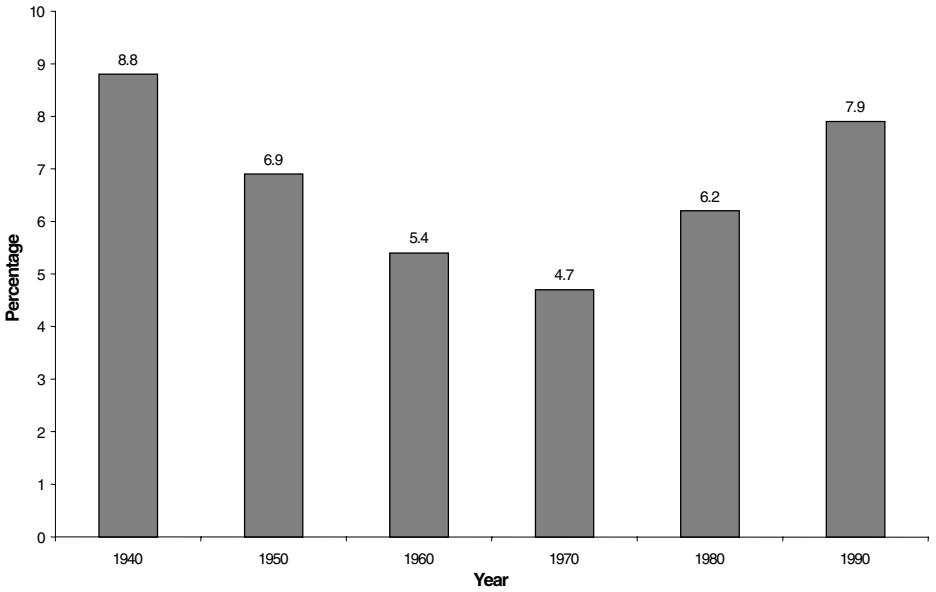
Other non-native English speakers and immigrants, even those with low levels of English literacy as measured by the 1992 National Adult Literacy Survey, were generally able to learn enough English to exhibit employment patterns and earnings comparable to native English speakers.

CHAPTER 1

Introduction

In 1990, 7.9 percent of the population of the United States was foreign-born, the highest percentage in 50 years (Figure 1.1). That same year, the total number of people living in the United States, but born abroad, was the highest it had been since the United States began keeping records.[1]

Figure 1.1: Foreign-born as percentage of U.S. population

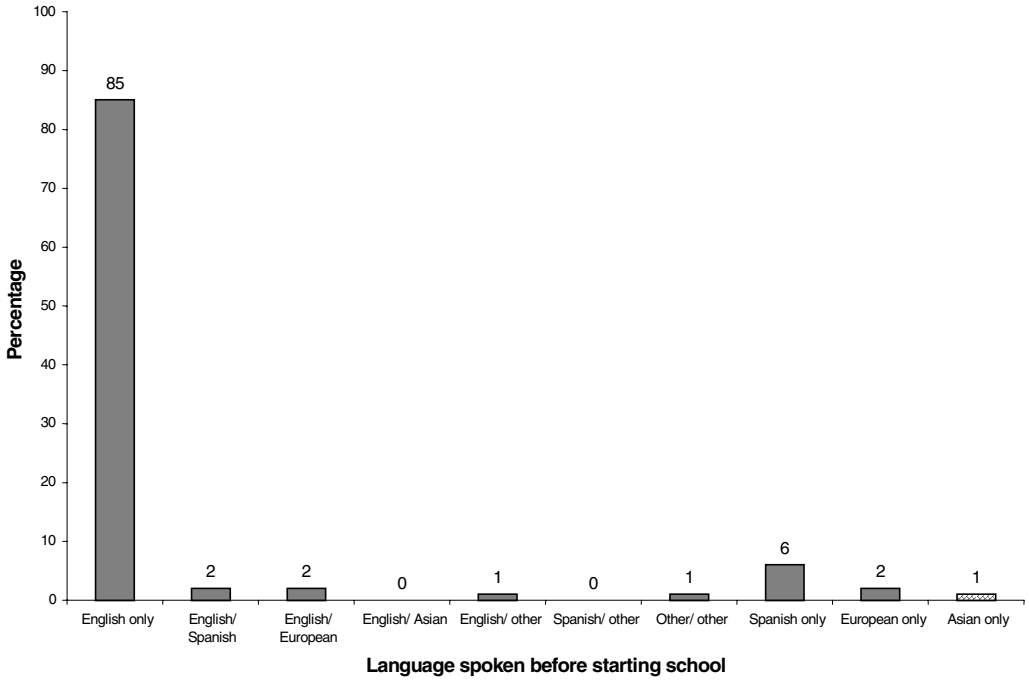


SOURCE: U.S. Bureau of the Census, Internet release date March 9, 1999, Table 1: Nativity of the Population and Place of Birth of the Native Population: 1850 to 1990.

Although the Census Bureau does not keep statistics on the percentage of the population that is not native English speaking, that percentage probably rose along with the percentage of immigrants. In 1992, 10 percent of the adult population spoke no English at all before

[1] U.S. Bureau of the Census, Internet release date March 9, 1999, Table 1: Nativity of the Population and Place of Birth of the Native Population: 1950 to 1990.

Figure 1.2: Percentage of adult population speaking English and non-English languages before starting school



Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

Percentages below 0.5 were rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

starting school (Figure 1.2).[2] Another 5 percent of the adult population spoke another language in addition to English before starting school.

The large number of immigrants and non-native English speakers living in the United States in the early 1990s led policymakers, researchers, and members of the public to ask questions about the extent to which these immigrants and non-native English speakers were integrated into the culture, society, and economy of the United States. Studies showed that immigrants were somewhat more likely to be unemployed than native-born workers and identified differences in English language skills and education between immigrants and non-

[2] Unless explicitly noted in the text, throughout this report adults are defined as people age 16 or older.

immigrants as the cause for much of this disparity.[3] One of these studies (Meisenheimer) advocated adding English fluency to the traditional list of human capital characteristics that are linked to labor force status and earnings.

Researchers were not able to explain all the differences in earnings between immigrants and non-immigrants by controlling for differences in English language skills and education. Economists reported that the earnings of Hispanic immigrants continued to lag behind those of the rest of the population, even after many years of living in the United States and after adjusting for educational attainment.[4] However, the same economists reported that the earnings of Asian and European immigrants were comparable to those of the native-born population after a few years.

This report confirms many of the findings of these researchers. Chapter 3 shows that English literacy is related to educational attainment, and immigrants from Spanish language countries have, on average, lower levels of educational attainment than immigrants from other countries. Chapter 4 shows that once immigrants reach a minimal level of English literacy, their employment histories and earnings are similar to those of people born in the United States. This report also confirms the findings that Hispanics and immigrants from Spanish language countries have, on average, lower earnings than immigrants from other countries.[5]

However, authors of the studies cited above had no objective measurements of the skills, including literacy skills, immigrants and non-native English speakers bring to the work place. Although educational attainment is related to literacy, results from the National Adult Literacy Survey show that adults with similar levels of education can have quite different levels of literacy.[6] This report incorporates English literacy, as measured by the National Adult Literacy Survey, as well as self-reported

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[3] J. Meisenheimer (1992). "How Do Immigrants Fare in the U.S. Labor Market?" *Monthly Labor Review* 115, pp. 3-19 and M. Enchautegui (1997). "Immigration and Wage Changes of High School Dropouts." *Monthly Labor Review* 120, pp. 3-8.

[4] R. Schoeni, F. McCarthy, and G. Vernez (1996). *The Mixed Economic Progress of Immigrants*, RAND, MR-763-IF/FF and R. Schoeni (1997). *New Evidence of the Economic Progress of Foreign-Born Men in the 1970s and 1980s*, RAND, RP-665.

[5] As discussed in the section of this chapter "About This Report," the National Adult Literacy Survey background questionnaire was available only in English and Spanish. Therefore, the Hispanic sample includes adults who have lower levels of English fluency than adults in other racial/ethnic groups in the sample. This affects comparisons between Hispanics and non-Hispanics.

[6] I. Kirsch, A. Jungeblut, L. Jenkins, and A. Kolstad (1993). *Adult Literacy in American: A First Look at the Results of the National Adult Literacy Survey*, Office of Educational Research and Improvement, U.S. Department of Education.

educational attainment, to help explain the difference in labor force status and earnings among different groups of immigrants.

Using literacy as measured by the National Adult Literacy Survey, this report contributes to the analysis of low earnings among Hispanics and immigrants from Spanish-speaking countries. Chapter 4 of the report goes beyond the work of other researchers and shows that Hispanics' incomes at each of the five prose levels of the National Adult Literacy Survey were comparable to the incomes of the total population at each level, indicating that Hispanics' lower average earnings may have been related to their low English literacy levels. Chapter 4 also shows that people born in Spanish language countries who scored at Level 3 (the middle level) on the prose literacy scale had incomes comparable to people born in the United States who scored at the same level.

Thus, the results of this report indicate that English literacy ability is a better predictor of earnings than educational attainment. Although English literacy ability and educational attainment are related to each other, one is not an exact proxy for the other.

This finding focuses attention on the importance of understanding how non-native English speakers become fluent and literate in English. The National Adult Literacy Survey data, upon which this report is based, is cross-sectional, rather than longitudinal. People were surveyed, and their literacy was assessed, at one point in time, 1992. Therefore, it is not possible to trace the events in each person's life that led to his or her level of English literacy. However, it is possible to use the data to explore which demographic attributes are related to the attainment of high levels of English fluency and literacy among non-native English speakers.

Chapter 2 shows that there is a strong relationship between age at immigration and the English literacy of adults as measured by the National Adult Literacy Survey. This finding supports other research which shows that, although it is never impossible to learn a new language, after puberty it becomes extremely difficult, or impossible, for a non-native speaker to acquire native-like pronunciation and syntactic competence in a new language.[7]

However, the research on second language acquisition indicates that literacy in a second language is somewhat easier to acquire after puberty than native-like pronunciation and syntax. Specifically, reading

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[7] B. Harley and W. Wang (1997). "The Critical Period Hypothesis: Where Are We Now?" In A.M.B. de Groot, J.F. Kroll, et al (eds.), *Tutorials in Bilingualism: Psycholinguistic Perspectives* (pp. 255-276). Mahwah, NJ: Lawrence Erlbaum Associates, Inc., Publishers.

involves many skills that are not language specific, and older second language learners, who are already literate in their first language, may be able to transfer many of the skills involved in reading their first language to reading their second language.[8] These transferable skills may include conceptual knowledge and rhetorical devices,[9] cognates and idioms,[10] and metacognitive strategies such as an understanding of how to learn to read.[11] Research showing that an adult's literacy level in a first language is a good predictor of the literacy level he or she will acquire in a second language helps to underscore the importance of education level prior to immigration.[12]

On average, as shown in Chapter 3, Hispanic immigrants arrived in the United States with lower levels of education than immigrants from Asian language countries, and therefore may have developed fewer reading skills in their native language which they could transfer to English. Although the data set used in this report is too small to explore the relationship between education prior to immigration, English literacy, and country of origin, the findings in Chapter 3 do suggest that adults who arrive in the United States with high levels of education are more likely to have high scores on the prose literacy scale than adults who arrive with low levels of education.

The National Adult Literacy Survey

This large-scale survey, conducted in 1992, grew out of the Adult Education Amendments of 1988, in which the U.S. Congress called upon

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[8] J. Cummins (1981). "The Role of Primary Language Development in Promoting Educational Success for Language Minority Students." In California State Department of Education (ed.), *Schooling and Language Minority Students: A Theoretical Framework*. Los Angeles: Evaluation, Dissemination, and Assessment Center.

[9] P. Carrell (1984). "The Effects of Rhetorical Organization on ESL Readers." *TESOL Quarterly*, 18, pp. 441-469 and S. Goldman, M. Reyes, and C. Varnhagen (1984). "Understanding Fables in First and Second Languages." *NABE Journal*, 8, pp. 835-866 and J. Langer, L. Bartolome, O. Vasquez, and T. Lucas (1990). "Meaning Construction in School Literacy Tasks: A Study of Bilingual Students." *American Educational Research Journal*, 27, pp. 427-471.

[10] G. Garcia and W. Nagy (1993). "Latino Students' Concept of Cognates." In D. Leu & C. Kinzer (eds.), *Examining Central Issues in Literacy Research Theory and Practice*, pp. 367-374. Chicago: National Reading Conference and S. Irujo (1986). "Don't Put Your Leg in Your Mouth: Transfer in the Acquisition of Idioms in a Second Language." *TESOL Quarterly*, 20, pp. 287-304.

[11] R. Pritchard (1990, December). *Reading in Spanish and English: A Comparative Study of Processing Strategies.* Paper presented at the Annual Meeting of Teachers of English to Speakers of Other Languages, Chicago, IL.

[12] K. Perkins, S. Brutten, and J. Pohlmann (1988, March 8-13). *First and Second Language Reading Comprehension.* Paper presented at the Annual Meeting of Teachers of English to Speakers of Other Languages, Chicago, IL and J. Fitzgerald (1995). "English-as-a-Second-Language Learners' Cognitive Reading Processes: A Review of Research in the United States." *Review of Educational Research*, 65, pp. 145-190.

the Department of Education to report on the definition of literacy and on the nature and extent of literacy among adults in the nation. In response, the Department's National Center for Education Statistics (NCES) and the Division of Adult Education and Literacy planned a national household survey of adult literacy.

The plan for developing and conducting the National Adult Literacy Survey was guided by a panel of experts from business and industry, labor, government, research, and adult education. This Literacy Definition Committee worked with Educational Testing Service staff to prepare a definition of literacy that would guide the development of the assessment objectives as well as the construction and selection of assessment tasks. A second panel, the Technical Review Committee, was formed to help ensure the soundness of the assessment design, the quality of the data collected, the integrity of the analyses conducted, and the appropriateness of the interpretations of the results.

NCES and the Literacy Definition Committee envisioned the National Adult Literacy Survey as more than just an assessment of literacy skills. They constructed an extensive background questionnaire that would also survey adults' literacy activities and practices, educational experiences, and workforce participation. They included a separate section on language environments, language acquisition, and current language usage in the survey questionnaire for respondents who spoke a language other than English before starting school. This background questionnaire allows us to link people's immigration histories and early language experiences with their English literacy levels as adults. Because minorities were over-sampled in the survey, we are able to provide information in this report on the literacy of some racial and ethnic groups living in the United States. The number of Hispanics who completed the survey was large enough that we were sometimes able to report results for Hispanic subgroups defined by country of origin. In most cases, we could report on Asians and Pacific Islanders as one group.

This introductory chapter summarizes the discussions that led to the adoption of a definition of literacy for the National Adult Literacy Survey, the framework used in designing the survey instruments, the populations assessed, the survey administration, the methods used for reporting results, and the issues covered in this report.

Defining and Measuring Literacy

The National Adult Literacy Survey is the third and largest assessment of adult literacy funded by the Federal government and conducted by ETS. The two previous efforts included a 1985 household survey of the literacy skills of 21 to 25-year-olds, funded by the U.S. Department of Education, and a 1989-90 survey of the literacy proficiencies of job seekers, funded by the U.S. Department of Labor.[13] The definition of literacy that guided the National Adult Literacy Survey was rooted in these preceding studies.

Building on earlier work in large-scale literacy assessment, the 1985 young adult survey attempted to extend the concept of literacy, to take into account some of the criticisms of previous surveys, and to benefit from advances in educational assessment methodology. The national panel of experts that was assembled to construct a definition of literacy for this survey rejected the types of arbitrary standards—such as signing one's name, completing five years of school, or scoring at a particular grade level on a school-based measure of reading achievement—that have long been used to make judgments about adults' literacy skills. Through a consensus process, this panel drafted the following definition of literacy, which helped set the framework for the young adult survey:

> *Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential.*[14]

Unlike traditional definitions of literacy, which focused on decoding and comprehension, this definition encompasses a broad range of skills that adults use in accomplishing the many different types of literacy tasks associated with work, home, and community contexts. This perspective is shaping not only adult literacy assessment, but policy as well—as seen in the National Literacy Act of 1991, which defined literacy as "an individual's ability to read, write, and speak in English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and to develop one's knowledge and potential."

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[13] I.S. Kirsh and A. Jungeblut (1986). *Literacy: Profiles of America's Young Adults*. Princeton, NJ: Educational Testing Service. I.S. Kirsh, A. Jungeblut, and A. Campbell (1992). *Beyond the School Doors: The Literacy Needs of Job Seekers Served by the U.S. Department of Labor*. Princeton, NJ: Educational Testing Service.

[14] This definition of literacy does not include speaking or understanding.

The definition of literacy from the 1985 young adult literacy assessment was adopted by the panel that guided the development of the 1989-90 survey of job seekers, and it also provided the starting point for the discussions of the NALS Literacy Definition Committee. In addition, while the committee recognized the importance of teamwork skills, interpersonal skills, and communication skills for functioning in various contexts, such as the work place, it decided that these areas would not be addressed in this survey.

Further, the committee endorsed the notion that literacy is neither a single skill suited to all types of texts, nor an infinite number of skills, each associated with a given type of text or material. Rather, as suggested by the results of the young adult and job-seeker surveys, an ordered set of skills appears to be called into play to accomplish diverse types of tasks.[15] Given this perspective, the NALS committee agreed to adopt not only the definition of literacy that was used in the previous surveys, but also the three scales developed as part of those efforts:

> **Prose literacy**—the knowledge and skills needed to understand and use information from texts that include editorials, news stories, poems, and fiction; for example, finding a piece of information in a newspaper article, interpreting instructions from a warranty, inferring a theme from a poem, or contrasting views expressed in an editorial.
>
> **Document literacy**—the knowledge and skills required to locate and use information contained in materials that include job applications, payroll forms, transportation schedules, maps, tables, and graphs; for example, locating a particular intersection on a street map, using a schedule to choose the appropriate bus, or entering information on an application form.
>
> **Quantitative literacy**—the knowledge and skills required to apply arithmetic operations, either alone or sequentially, using numbers embedded in printed materials; for example, balancing a

[15] By an "ordered set of skills," we mean that there are four strategies that underlie most prose and document tasks. These strategies—locate, cycle, integrate, and generate—must be accomplished in this order. For more information, see P. Mosenthal and I. Kirsch (1991). "Toward an Explanatory Model of Document Literacy," *Discourse Process,* 14, pp. 147-189.

checkbook, figuring out a tip, completing an order form, or determining the amount of interest from a loan advertisement.[16]

The literacy scales provide a useful way to organize a broad array of tasks and to report the assessment results. They represent a substantial improvement over traditional approaches to literacy assessment, which have tended to report on performance in terms of single tasks or to combine the results from diverse tasks into a single, conglomerate score. Such a score fosters the simplistic notion that "literates" and "illiterates" can be neatly distinguished from one another based on a single cutpoint on a single scale. The literacy scales, on the other hand, make it possible to profile the various types and levels of literacy among different subgroups in our society. In so doing, they help us to understand the diverse information-processing skills associated with the broad range of printed and written materials that adults read and their many purposes for reading them.

In adopting the three scales for use in this survey, the committee's aim was not to establish a single national standard for literacy. Rather, it was to provide an interpretive scheme that would enable levels of prose, document, and quantitative performance to be identified and allow descriptions of the knowledge and skills associated with each level to be developed.

The prose, document, and quantitative scales were built initially to report on the results of the young adult survey and were augmented in the survey of job seekers. The NALS Literacy Definition Committee recommended that a new set of literacy tasks be developed to enhance the scales. These tasks would take into account the following, without losing the ability to compare the NALS results to the earlier surveys:

- continued use of open-ended simulation tasks;
- continued emphasis on tasks that measure a broad range of information-processing skills and cover a wide variety of contexts;
- increased emphasis on simulation tasks that require brief written and/or oral responses;

[16] Quantitative literacy was measured using assessment questions written in English. Many non-native English speakers would have higher levels of quantitative literacy if assessed in their native language.

- increased emphasis on tasks that ask respondents to describe how they would set up and solve a problem; and
- the use of a simple, four-function calculator to solve selected quantitative problems.

Approximately 110 new assessment tasks were field tested, and 80 of these were selected for inclusion in the survey, in addition to 85 tasks that were administered in both the young adult and job-seeker assessments. By administering a common set of simulation tasks in each of the three literacy surveys, it is possible to compare results across time and across population groups.

A large number of tasks had to be administered in NALS to ensure that the survey would provide the broadest possible coverage of the literacy domains specified. Yet, no individual could be expected to respond to the entire set of 165 simulation tasks. Accordingly, the survey was designed to give each person participating in the study a subset of the total pool of literacy tasks, while at the same time ensuring that each of the 165 tasks was administered to a nationally representative sample of adults. Literacy tasks were included in sections that could be completed in about 15 minutes, and these sections were then compiled into booklets, each of which could be completed in about 45 minutes. During a personal interview, each survey respondent was asked to complete one booklet.

In addition to the time allocated for the literacy tasks, approximately 20 minutes were devoted to obtaining background and personal information from respondents. Two versions of the background questionnaire were administered, one in English and one in Spanish. Major areas explored included the following: *background and demographics*—country of birth, languages spoken or read, access to reading materials, size of household, educational attainment of parents, age, race/ethnicity, and marital status; *education*—highest grade completed in school, current aspirations, participation in adult education classes, and education received outside the country; *labor market experiences*—employment status, recent labor market experiences, and occupation; income—personal as well as household; and *activities*—voting behavior, hours spent watching television, frequency and content of newspaper reading, and use of literacy skills for work and leisure. These background data make it possible to gain an understanding of the

ways in which personal characteristics are associated with demonstrated performance on each of the three literacy scales.[17]

Conducting the Survey

NALS was conducted during the first eight months of 1992 with a nationally representative sample of some 13,600 adults. More than 400 trained interviewers, some of whom were bilingual in English and Spanish, visited nearly 27,000 addresses in the 50 states and the District of Columbia to select and interview adults aged 16 and older, each of whom was asked to provide personal and background information and to complete a booklet of literacy tasks.[18] Black and Hispanic households were oversampled to ensure reliable estimates of literacy proficiencies and to permit analyses of the performance of these subpopulations. Adults living in the U.S. territories were not included in the sample. Consequently, all Puerto Ricans in the sample lived in one of the 50 states or the District of Columbia.

To give states an opportunity to explore the skill levels of their populations, each of the 50 states was invited to participate in a concurrent assessment. While many states expressed an interest, 11 elected to participate in the State Adult Literacy Survey. Approximately 1,000 adults aged 16 to 64 were surveyed in each of the following states:

California	Louisiana	Pennsylvania
Illinois	New Jersey	Texas
Indiana	New York	Washington
Iowa	Ohio	

To permit comparisons of the state and national results, the survey instruments administered to the state and national samples were identical, and the data were gathered at the same time. Florida also participated in the state survey, but its data collection was unavoidably delayed until 1993.

Finally, more than 1,100 inmates in some 80 Federal and state prisons were included in the survey. Their participation helped to provide better estimates of the literacy levels of the total population and

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[17] A more detailed description of the NALS design and framework can be found in an interim report: A. Campbell, I.S. Kirsch, and A. Kolstad. (1992, October). A*ssessing Literacy: The Framework for the National Adult Literacy Survey*. Washington, DC: National Center for Education Statistics.
[18] Procedures used to select households are explained in Appendix C.

make it possible to report on the literacy proficiencies of this important segment of society. To ensure comparability with the national survey, the simulation tasks given to the prison participants were the same as those given to the household survey population. However, to address issues of particular relevance to the prison population, a revised version of the background questionnaire was developed. This instrument drew questions from the 1991 Survey of Inmates of State Correctional Facilities sponsored by the Bureau of Justice Statistics of the U.S. Department of Justice. These included queries about current offences, criminal history, and prison work assignments, as well as about education and labor force experiences.

Responses from the national household, the state, and prison samples were combined to yield the best possible performance estimates. Unfortunately, because of the delayed administration, the results from the Florida state survey could not be included in the national estimates. In all, more than 26,000 adults gave, on average, more than an hour of their time to complete the literacy tasks and background questionnaires. Participants who completed as much of the assessment as their skills allowed were paid $20 for their time. The demographic characteristics of the adults who participated in NALS are presented in Table 1.1.

Further information on the design of the sample, the survey administration, the statistical analyses and special studies that were conducted, and the validity of the literacy scales will be available in a forthcoming technical report.

Reporting the Results

The results of the National Adult Literacy Survey are reported using three scales, each ranging from 0 to 500: a prose scale, a document scale, and a quantitative scale. The scores on each scale represent degrees of proficiency along that particular dimension of literacy. For example, a low score (below 225) on the document scale indicates that an individual has very limited skills in processing information from tables, charts, graphs, maps, and the like (even those that are brief and uncomplicated). On the other hand, a high score (above 375) indicates advanced skills in performing a variety of tasks that involve the use of complex documents.

Survey participants received proficiency scores according to their performance on the survey tasks. A relatively small proportion of the respondents answered only a part of the survey, and an imputation

Table 1.1: The National Adult Literacy Survey sample

Total population	Sample size	Population /1000	National population (percent)
Total	26,091	191,289	100%
Sex			
Male	11,770	92,098	48
Female	14,279	98,901	52
Age			
16 to 18 years	1,237	10,424	5
19 to 24 years	3,344	24,515	13
25 to 39 years	10,050	63,278	33
40 to 54 years	6,310	43,794	23
55 to 64 years	2,924	19,503	10
65 years and older	2,214	29,735	16
Race/Ethnicity			
White	17,292	144,968	76
Black	4,963	21,192	11
Asian or Pacific Islander	438	4,116	2
American Indian or Alaskan Native	189	1,803	1
Other	83	729	0
Hispanic/Mexican	1,776	10,235	5
Hispanic/Puerto Rican	405	2,190	1
Hispanic/Cuban	147	928	0
Hispanic/Central or South American	424	2,608	1
Hispanic/Other	374	2,520	1

Prison population	Sample size	Population /1000	National population (percent)
Total	1,147	766	100%
Sex			
Male	1,076	723	94
Female	71	43	6
Race/Ethnicity			
White	417	266	35
Black	480	340	44
Asian or Pacific Islander	7	4	1
American Indian or Alaskan Native	27	18	2
Other	5	4	1
Hispanic groups	211	134	17

Note: The total population includes adults living in households and those in prison. The sample sizes for subpopulations may not add up to the total sample sizes due to missing data. The race/ethnicity categories are mutually exclusive. Some estimates for small subgroups of the national population may be slightly different from 1990 Census estimates due to the sampling procedures used.

Percentages below 0.5 are rounded to 0.

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

procedure was used to make the best possible estimates of their proficiencies. This procedure and related issues are detailed in the technical report.

Most respondents tended to receive similar, though not identical, scores on the three literacy scales. This does not mean, however, that the underlying skills involved in prose, document, and quantitative literacy are the same. Each scale provides some unique information, especially when comparisons are made across groups defined by variables such as race/ethnicity, education, and age.

The literacy scales allow us not only to summarize results for various subpopulations, but also to determine the relative difficulty of the literacy tasks included in the survey. In other words, just as individuals received scale scores according to their performance in the assessment, the literacy tasks received specific scale values according to their difficulty, as determined by the performance of the adults who participated in the survey. Previous research has shown that the difficulty of a literacy task, and therefore its placement on the literacy scale, is determined by three factors: the *structure of the material*—for example, exposition, narrative, table, graph, map, or advertisement; the *content* of the material and/or the *context* from which it is drawn—for example, home, work, or community; and the *nature of the task*—that is, what the individual is asked to do with the material, or his or her purpose for using it.[19]

The literacy tasks administered in NALS varied widely in terms of materials, content, and task requirements, and thus in terms of difficulty. This range is captured in Figure 1.3, which describes some of the literacy tasks and indicates their scale values.

Even a cursory review of this display reveals that tasks at the lower end of each scale differ from those at the high end. A more careful analysis of the range of tasks along each scale provides clear evidence of an ordered set of information-processing skills and strategies. On the prose scale, for example, tasks with low scale values ask readers to locate or identify information in brief, familiar, or uncomplicated materials, while those at the high end ask them to perform more demanding activities using materials that tend to be lengthy, unfamiliar, or complex. Similarly, on the document and quantitative scales, the tasks at the low

[19] I.S. Kirsch and P.B. Mosenthal (1990). "Exploring Document Literacy: Variables Underlying the Performance of Young Adults," *Reading Research Quarterly*, 25, pp. 5-30. P.B. Mosenthal and I.S. Kirsch (1992). "Defining the Constructs of Adult Literacy," paper presented at the National Reading Conference, San Antonio, Texas.

end of the scale differ from those at the high end in terms of the structure of the material, the content and context of the material, and the nature of the directive.

In an attempt to capture this progression of information-processing skills and strategies, each scale was divided into five levels: *Level 1* (0 to 225), *Level 2* (226 to 275), *Level 3* (276 to 325), *Level 4* (326 to 375), and *Level 5* (376 to 500). The points and score ranges that separate these levels on each scale reflect shifts in the literacy skills and strategies required to perform increasingly complex tasks. The survey tasks were assigned to the appropriate scale based on their difficulty as reflected in the performance of the national representative sample of adults surveyed. Analyses of the types of material and demands that characterize each level reveal the progression of literacy demands along each scale (Figure 1.4).[20]

While the literacy levels on each scale can be used to explore the range of literacy demands, these data do not reveal the types of literacy demands that are associated with particular contexts in this pluralistic society. That is, they do not enable us to say what specific level of prose, document, or quantitative skill is required to obtain, hold, or advance in a particular occupation, to manage a household, or to obtain legal or community services, for example. Nevertheless, the relationships among performance on the three scales and various social or economic indicators can provide valuable insights, and that is the goal of this report.

About This Report

This report examines the language and literacy skills of adults living in the United States in the context of their race and ethnicity, their country of birth, and the language(s) they spoke as young children. Chapter 2 of this report presents an overview of the oral and literacy proficiencies of adults living in the United States broken down by race and ethnicity, immigration status, and language(s) spoken while growing up. Chapter 3 examines the relationship between English literacy and formal education. Chapter 4 explores the relationship between employment and country of birth, language fluency and literacy. Chapter 5 summarizes the important findings of this report.

[20] Appendix A discusses the process followed to map individual respondents to the scales and literacy levels.

Figure 1.3: Difficulty values of selected tasks along the prose, document, and quantitative literacy scales

	Prose		Document		Quantitative	
0	149	Identify country in short article	69	Sign your name	191	Total a bank deposit entry
	210	Locate one piece of information in sports article	170	Locate expiration date on driver's license		
	224	Underline sentence explaining action stated in short article	180	Locate time of meeting on a form		
			214	Using pie graph, locate type of vehicle having specific sales		
225	226	Underline meaning of a term given in government brochure on supplemental security income	230	Locate intersection on a street map	238	Calculate postage and fees for certified mail
			246	Locate eligibility from table of employee benefits	246	Determine difference in price between tickets for two shows
	250	Locate two features of information in sport article	259	Identify and enter background information on application for social security card	270	Calculate total costs of purchase from an order form
	275	Interpret instructions from an appliance warranty				
275	288	Write a brief letter explaining error on a credit card bill	277	Identify information from bar graph depicting source of energy and year	278	Using calculator, calculate difference between regular and sale price from an advertisement
	304	Read a news article and identify a sentence that provides interpretation of a situation	298	Use sign out sheet to respond to call about resident	308	Using calculator, determine the discount from an oil bill if paid within 10 days
	316	Read lengthy article to identify two behaviors that meet a stated condition	314	Use bus schedule to determine appropriate bus for given set of conditions	321	Calculate miles per gallon using information given on mileage record chart
			323	Enter information given into an automobile maintenance record form	325	Plan travel arrangements for meeting using flight schedule
325	328	State in writing an argument made in lengthy newspaper article	342	Identify the correct percentage meeting specified conditions from a table of such information	331	Determine the correct change using information in a menu
	347	Explain difference between two types of employee benefits	352	Use bus schedule to determine appropriate bus for given set of conditions	350	Using information stated in news article, calculate amount of money that should go to raising a child
	359	Contrast views expressed in two editorials on technologies available to make fuel-efficient cars	352	Use table of information to determine pattern in oil exports across years	368	Using eligibility pamphlet, calculate the yearly amount a couple would receive for basic supplemental security income
	362	Generate unfamiliar theme from short poems				
	374	Compare two metaphors used in poem				
375	382	Compare approaches stated in narrative on growing up	378	Use information in table to complete a graph including labeling axes	382	Determine shipping and total costs on an order form for items in a catalog
	410	Summarize two ways lawyers may challenge prospective jurors	387	Use table in comparing credit cards. Identify the two categories used and write two differences between them	405	Using information in news article, calculate difference in times for completing a race
	423	Interpret a brief phrase from a lengthy news article	395	Using a table depicting information about parental involvement in school survey to write a paragraph summarizing extent to which parents and teachers agree	421	Using a calculator, determine the total cost of carpet to cover a room
500						

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Figure 1.4: Description of the prose, document, and quantitative literacy levels

	Prose	Document	Quantitative
LEVEL 1 *0-225*	Most of the tasks in this level require the reader to read relatively short text to locate a single piece of information which is identical to or synonymous with the information given in the question or directive. If plausible but incorrect information is present in the text, it tends not to be located near the correct information.	Tasks in this level tend to require the reader either to locate a piece of information based on a literal match or to enter information from personal knowledge on a document. Little, if any, distracting information is present.	Tasks in this level require readers to perform single, relatively simple arithmetic operations, such as addition. The numbers to be used are provided and the arithmetic operation to be performed is specified.
LEVEL 2 *225-275*	Some tasks in this level require readers to locate a single piece of information in the text; however, several distractors or plausible but incorrect pieces of information may be present, or low-level inferences may be required. Other tasks require the reader to integrate two or more pieces of information or to compare and contrast easily identifiable information based on a criterion provided in the question or directive.	Tasks in this level are more varied than those in Level 1. Some require the readers to match a single piece of information; however, several distractors may be present, or the match may require low-level inferences. Tasks in this level may also ask the reader to cycle through information in a document or to integrate information from various parts of a document.	Tasks in this level typically require readers to perform a single operation using numbers that are either stated in the task or easily located in the material. The operation to be performed may be stated in the question or easily determined from the format of the material (for example, an order form).
LEVEL 3 *276-325*	Tasks in this level tend to require readers to make literal or synonymous matches between text and information given in the task, or to make matches that require low-level inferences. Other tasks ask readers to integrate information from dense or lengthy text that contains no organizational aids such as headings. Readers may also be asked to generate a response based on information that can be easily identified in the text. Distracting information is present but is not located near the correct information.	Some tasks in this level require the reader to integrate multiple pieces of information from one or more documents. Others ask readers to cycle through rather complex tables or graphs which contain information that is irrelevant or inappropriate to the task.	In tasks in this level, two or more numbers are typically needed to solve the problem, and these must be found in the material. The operation(s) needed can be determined from the arithmetic relation terms used in the question or directive.
LEVEL 4 *326-375*	These tasks require readers to perform multiple-feature matches and to integrate or synthesize information from complex or lengthy passages. More complex inferences are needed to perform successfully. Conditional information is frequently present in tasks at this level and must be taken into consideration by the reader.	Tasks in this level, like those at the previous levels, ask readers to perform multiple-feature matches, cycle through documents, and integrate information; however, they require a greater degree of inferencing. Many of these tasks require readers to provide numerous responses but do not designate how many responses are needed. Conditional information is also present in the document tasks at this level and must be taken into account by the reader.	These tasks tend to require readers to perform two or more sequential operations or a single operation in which the quantities are found in different types of displays, or the operations must be inferred from semantic information given or drawn from prior knowledge.
LEVEL 5 *376-500*	Some tasks in this level require the reader to search for information in dense text which contains a number of plausible distractors. Others ask readers to make high-level inferences or use specialized background knowledge. Some tasks ask readers to contrast complex information.	Tasks in this level require the reader to search through complex displays that contain multiple distractors, to make high-level text-based inferences, and to use specialized knowledge.	These tasks require readers to perform multiple operations sequentially. They must disembed the features of the problem from text or rely on background knowledge to determine the quantities or operations needed.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

This report, which focuses on language minorities in the United States, discusses two distinct population groups: Hispanics and immigrants. As discussed in Chapter 2, the Hispanic racial/ethnic group has larger numbers of non-native English speakers than any other racial/ethnic group in the United States. Many Hispanics, even those born in the United States, grew up in homes where a non-English language (Spanish) was spoken. Therefore, in order to provide as full a portrait as possible of language minorities in the United States, we present most analyses in this report separately for Hispanics (including those born in the United States) and for immigrants (including those born in Spanish-speaking countries).

The sample size for non-native English speakers in other racial/ethnic groups is not large enough to support detailed separate analyses for these groups. Chapter 2 provides an overview of the language skills of language minorities in all the major racial/ethnic groups, in order to allow comparisons with Hispanics. However, the sample sizes of non-native English speakers in these groups do not permit analysis by education and employment level in Chapters 3 and 4.

Additionally, the background questionnaire for the National Adult Literacy Survey was only available in English and Spanish. Adults who were unable to complete the questionnaire in English or Spanish are not included in the sample analyzed in this report. Thus, when comparing Hispanics to other racial/ethnic groups, or comparing immigrants from Spanish-speaking countries to immigrants from non-Spanish-speaking countries, it is important to keep in mind that the Spanish-speaking sample includes people with lower levels of English fluency than the samples of other non-native English speakers. We tried to note in the text instances where this could lead the reader to draw false inferences about the comparative literacy ability of Hispanic and non-Hispanic adults.

In interpreting the results of this study, readers should bear in mind that the literacy tasks contained in this assessment and the adults invited to participate in the survey are samples drawn from their two respective universes. As such, the results are subject to both sampling and measurement error (as well as other sources of error). The sampling design and weighting procedures applied in this survey assure that participants' responses can be generalized to the populations of interest.

Discussions of differences between various subpopulations were based on statistical tests that consider the magnitude of the differences (for example, the difference in average prose proficiency between

immigrants and people born in the United States), the margin of error associated with the numbers being compared, and the number of comparisons being made. Only statistically significant differences (at the .05 level) are discussed in this report. Particularly because of the small sample size of some of the racial, ethnic, and immigrant groups discussed in this report, readers who are interested in making their own comparisons should take the survey error into account to distinguish real differences from those due to chance. Readers should also remember that the Hispanic sample includes adults who completed the Spanish language version of the background questionnaire.

Defining Terms Used Throughout This Report

We use the terms monolingual, bilingual, monoliterate, and biliterate extensively throughout this report. In this section we discuss how these terms are defined and what they mean in the context of this report.

The background questionnaire asked questions about fluency and literacy in English of all respondents, but questions about fluency and literacy in a language other than English were asked only of respondents who reported that they spoke a language other than English before starting school. The acquisition of a language other than English before starting school is one of the primary criteria for identifying the language-minority, non-English language background population in the United States. Growing up in a household where a language other than English is spoken, whether or not that person spoke it, is another such criterion.

Respondents who reported that they spoke a language other than English before starting school were asked, "….how well do you understand it?" "…how well do you speak it?" "…how well do you read it?" and "…how well do you write it?" As illustrated in Table 1.2, just over 4,000 respondents (representing approximately 29 million people) were asked these questions about fluency and literacy in a language other than English, while approximately 26,000 respondents (representing about 191 million people) answered a similar set of questions about fluency and literacy in English.

As illustrated in Table 1.2, over 65 percent of adults who spoke a language other than English before they started school reported that they still understood that language very well, and an additional 22 percent reported that they understood that language well but not very well in 1992. Over half of adults who spoke a language other than English before starting school reported that they still spoke that language very well as

adults, and 24 percent reported that they spoke the language well but not very well. We coded everyone who spoke or understood a language other than English well or very well as fluent in that language. Thus, the majority of people who spoke a language other than English before starting school are coded as being fluent in that language as adults.

Somewhat fewer people said they were literate in a language other than English that they spoke before starting school. As illustrated in Table 1.2, less than half of individuals who spoke a language other than English before starting school read that language very well as adults. Twenty percent read the language well but not very well. Just over 40 percent of individuals who spoke a language other than English before starting school write that language very well today, and 20 percent write that language well but not very well. We coded everyone who spoke a language other than English before starting school and currently reads or writes that language well or very well as being literate in that language. Thus, fewer people are coded literate in a non-English language than are coded fluent in that language.

We followed a similar coding strategy for fluency and literacy in English, except that the questions about English fluency and literacy were asked of all people, not just those people who spoke a language other than English before starting school. Individuals who spoke or understood English well or very well were coded as being fluent in English. Individuals who read or write English well or very well were coded as being literate in English.

Individuals who were coded as being fluent in English and another language were classified bilingual. Individuals who were coded as being literate in English and another language were classified biliterate. Because only people who spoke a language other than English before starting school were asked questions that allowed us to classify them as fluent or literate in a language other than English, the categories bilingual and biliterate include only individuals who speak a language other than English as a native language. People who learned a language other than English after starting school could not be classified as bilingual or biliterate, even if they attained high levels of proficiency in that language.

Table 1.2: Distribution of responses to questions about understanding, speaking, reading, and writing English and other languages

Row percent (s.e.)	Sample size	Population /1000	Very well	Well	Not well	Not at all
In non-English language, how well do you…						
Understand it?	4,028	28,703	67 (1.0)	22 (0.8)	10 (0.7)	2 (0.3)
Speak it?	4,021	28,645	57 (1.0)	24 (1.0)	15 (0.8)	4 (0.4)
Read it?	4,022	28,679	45 (1.3)	20 (1.0)	17 (0.8)	17 (1.1)
Write it?	4,024	28,690	41 (1.3)	20 (1.0)	17 (0.7)	23 (1.4)
In English, how well do you…						
Understand it?	26,076	191,205	81 (0.5)	15 (0.5)	3 (0.1)	1 (0.1)
Speak it?	26,068	191,081	72 (0.8)	24 (0.8)	3 (0.2)	1 (0.1)
Read it?	26,041	190,927	71 (0.7)	23 (0.6)	5 (0.2)	2 (0.1)
Write it?	25,999	190,648	64 (0.8)	27 (0.7)	7 (0.2)	3 (0.1)

Questions about understanding, speaking, reading, and writing a language other than English were asked only of immigrants and people raised in homes where a language other than English was spoken. Therefore the sample size for these questions is smaller than the sample size for the questions concerning English comprehension and usage.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Differences Between the Bilingual and Biliterate Categories

There was considerable overlap of responses between the biliterate and bilingual populations, but they were not identical. Thus, much analysis in this report is done separately using both the self-reported literacy and self-reported fluency categories. In the remainder of this section, we discuss how the bilingual and biliterate categories differ.

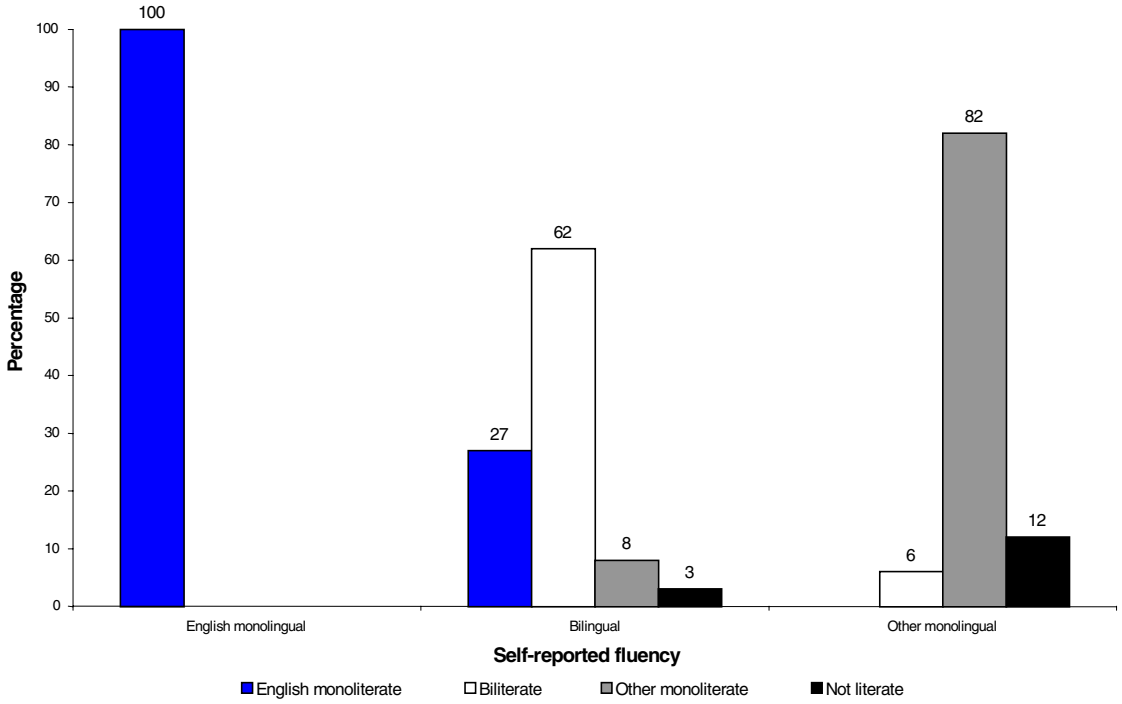
As illustrated in Figure 1.5, although the majority of people who were classified as bilingual were also biliterate, 27 percent of bilingual individuals were literate only in English and 8 percent were literate only in a language other than English, based on people's self-assessment of their reading and writing skills. Fewer than five percent reported being not literate at all.

However, 100 percent of people who were classified as English monolingual were also classified as English monoliterate based on their self-reported literacy. As we will discuss in more detail in Chapter 2, some of the people who were coded English monolingual were raised in homes where a language other than English was spoken, but learned to speak and write English at an early age and ceased speaking their native language. These respondents, non-native English speakers who learned

English at an early age and stopped speaking their native language, had English skills comparable to native English speakers. Most of the people in the English monolingual category were native English speakers who were not asked questions about fluency and literacy in a language other than English.

As illustrated in Figure 1.5, 12 percent of people who were not fluent in English (other monolinguals) were not literate in any language, based on people's self-assessment of their reading and writing abilities. Just over 5 percent of people who were not fluent in English (other monolinguals) considered themselves biliterate: they read or wrote English well or very well even though they spoke and understood English poorly or not at all. As we would expect, over 80 percent of the people who were fluent only in a language other than English (other monolinguals) were also literate only in that language.

Figure 1.5: Self-reported literacy by self-reported fluency

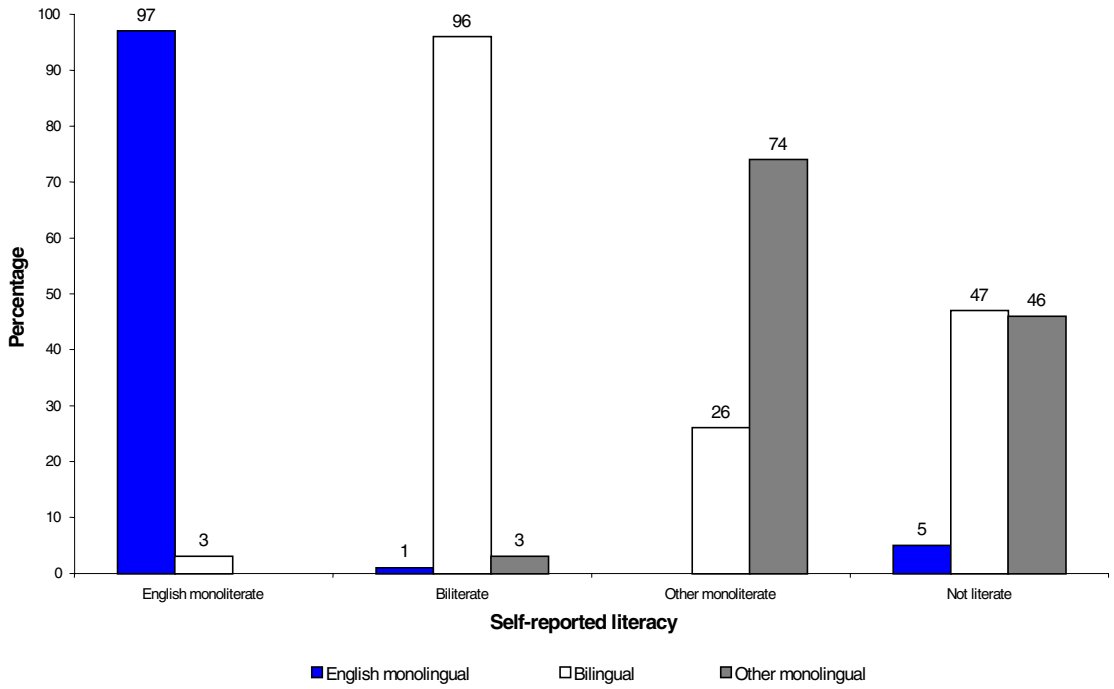


Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual. Respondents who reported that they spoke only English before starting school and who reported that they read or wrote English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Although, as illustrated in Figure 1.5 and discussed above, only 62 percent of people who were bilingual were also biliterate, 96 percent of people who were biliterate were bilingual (Figure 1.6). Thus, it was considerably more likely that someone who spoke a language was unable to read that language, than that someone who read a language was unable to speak that language. This is not surprising, since learning to read a language usually requires formal instruction. Many of the bilingual respondents in this survey were educated in schools in the United States where reading instruction was provided primarily in English. Thus, although they are fluent in a language other than English, they may never have had the opportunity to learn to read and write that language.

Figure 1.6: Self-reported fluency by self-reported literacy



Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual. Respondents who reported that they spoke only English before starting school and who reported that they read or wrote English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Almost all respondents who were English monoliterate were also English monolingual. However, approximately one fourth of people who were other monoliterate were also bilingual. These are people who spoke a language other than English before starting school and learned to speak English later in life, but never learned to read English.

The non-literate population is evenly split between people who were coded bilingual and people who were coded other monolingual, when we use people's own assessment of their reading and writing skills to define literacy (Figure 1.6). Only 5 percent of the non-literate population was coded English monolingual. This means that, when we defined literacy using people's self-assessment of their reading and writing skills, at least 95 percent of the non-literate population of the United States spoke a language other than English before starting school, since only respondents who spoke a language other than English before starting school were asked the questions that allowed us to classify them as bilingual or other monolingual.

A Note on Interpretations

In reviewing the information contained in this report, readers should be aware that no single factor determines what an individual's literacy proficiencies will be. All of us develop our own unique repertoire of competencies depending on a wide array of conditions and circumstances, including our family backgrounds, educational attainments, interests and aspirations, economic resources, and employment experiences. Any single survey, this one included, can focus on only some of these variables.

Further, while the results revealed certain characteristics that are related to literacy, the nature of the survey makes it impossible to determine the direction of these relationships. In other words, it is impossible to identify the extent to which literacy shapes particular aspects of our lives or is, in turn, shaped by them. For example, there is a strong relationship between educational attainment and literacy proficiencies. On the one hand, it is likely that staying in school longer does strengthen an individual's literacy skills. On the other hand, it is also true that those with more advanced skills tend to remain in school longer. Other variables, as well, are likely to play a role in the relationship between literacy and education. In interpreting such relationships in this report, the authors strove to acknowledge the many factors involved.

A final note deserves emphasis. This report describes the literacy proficiencies of various subpopulations defined by characteristics such as race, ethnicity, country of origin, age of arrival in the United States, and educational background. While certain groups demonstrate lower literacy skills than others, on average, within every group there are some individuals who perform well and some who perform poorly. Accordingly, when one group is said to have lower average proficiencies than another, this does not imply that *all* adults in the first group perform worse than those in the second. Such statements are only intended to highlight general patterns of differences among various groups and, therefore, do not capture the variability within each group.

CHAPTER 2

Language Background and Literacy Proficiency

In this chapter, we examine the language and literacy skills of members of different racial and ethnic groups living in the United States in 1992. The analyses presented in this chapter will show that immigrants who entered the United States before age 12 had English literacy skills as adults comparable to members of the same racial and ethnic group who were born in the United States, and that virtually everyone born in the United States, or immigrating to the United States before age 12, spoke English fluently as an adult.

The analyses presented in this chapter will also show that people raised in homes where no English was spoken had English literacy levels as adults substantially lower than people raised in homes where English was spoken; people raised in homes where an Asian or European language was spoken in addition to English obtained English literacy proficiency as adults comparable to people who grew up in homes where only English was spoken; and people raised in homes where Spanish was spoken in addition to English obtained English literacy proficiency as adults slightly below that of people who grew up in homes where only English was spoken.

We will also show that the English literacy skills of Asians/Pacific Islanders were comparable to those of whites, and the English literacy skills of Hispanics were slightly lower than those of whites, when we accounted for the differences in language background of members of these racial and ethnic groups.

Defining Self-Reported Fluency and Literacy

As explained in Chapter 1, each individual who participated in the National Adult Literacy Survey was asked to complete a background questionnaire requesting demographic and other information, as well as a booklet of prose, document, and quantitative literacy tasks. The background questionnaire was orally administered in English or Spanish. Respondents who spoke a language other than English before starting school were asked questions about fluency and literacy in that language.

These respondents were also asked detailed questions about the languages they actually spoke as children, as well as questions about the languages spoken by other people living in their homes. Individuals not born in this country were asked how long they had lived here. From that information, we were able to determine each individual's approximate age when immigrating to the United States. This background information is used extensively in this chapter.

We determined each individual's fluency and literacy in English and his or her native language from his or her responses to the background questionnaire. As discussed in Chapter 1, individuals who stated that they spoke or understood a language well or very well were coded as being fluent in that language. Those who answered that they spoke and understood a language poorly or not at all were coded not fluent in that language. A similar procedure was followed for literacy. Individuals who claimed to read or write a language well or very well were coded literate in that language, while those who claimed to read and write it poorly or not at all were coded not literate in that language.

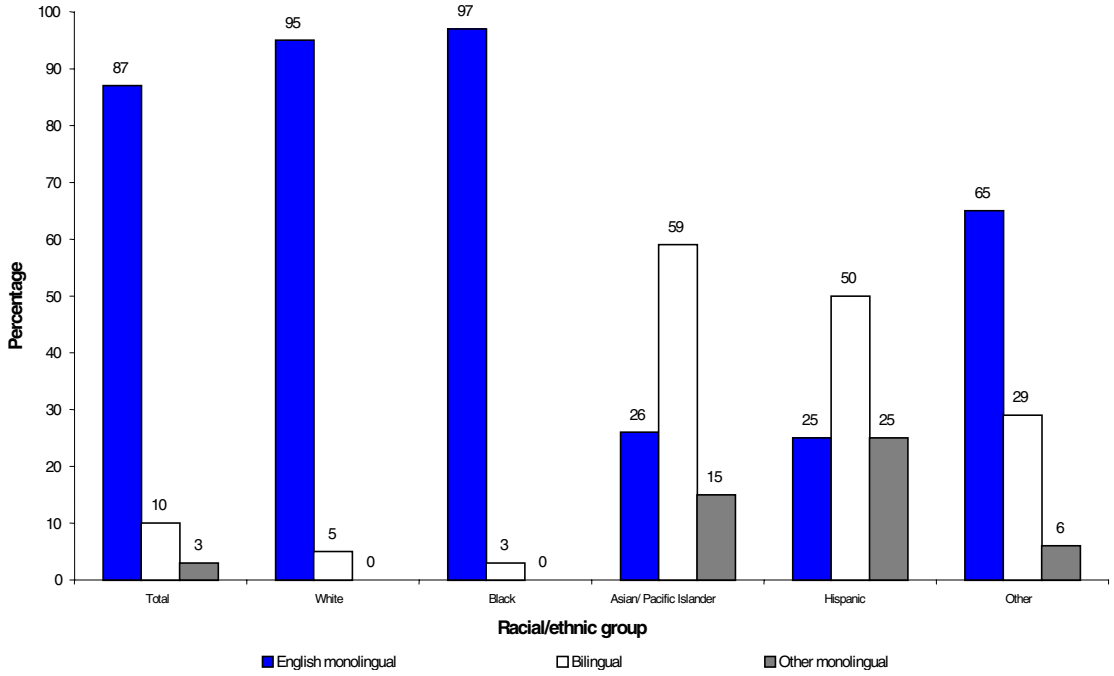
Because questions about fluency and literacy in a language other than English were asked only of respondents who spoke a language other than English before starting school, the biliterate and bilingual categories in this report refer only to native speakers of a language other than English.

People who learned a second language in school or as an adult were always coded monoliterate and English monolingual, because there was no way to identify them in the dataset.

Self-Reported Literacy and Fluency of the Adult Population

In 1992, approximately 10 percent of adults living in the United States spoke a language other than English before starting school and considered themselves bilingual in English and another language, while three percent of adults were fluent only in a language other than English (Figure 2.1). These numbers varied among racial and ethnic groups. In 1992, people who identified themselves as white or black were much more likely than members of other racial and ethnic groups to be English monolingual (Figure 2.1). Over half of Asian/Pacific Islanders and 50 percent of Hispanics were bilingual, while only 5 percent of whites and 3 percent of blacks fell into the bilingual category (Figure 2.1). One quarter

Figure 2.1: Self-reported fluency by racial/ethnic group



Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

of Hispanics and 15 percent of Asians/Pacific Islanders reported they were fluent only in a language other than English, compared with less than 1 percent of whites and blacks (Figure 2.1).[1]

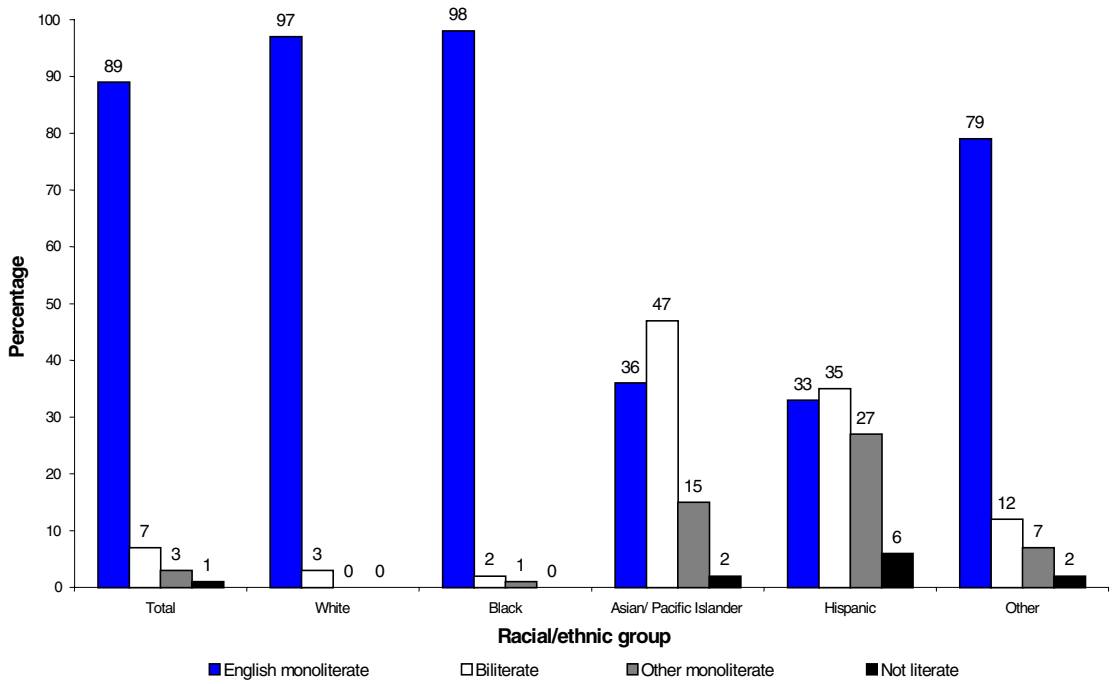
Most people also believed that they read and wrote English well or very well. Only 3 percent said that they were literate only in a language other than English, and 1 percent said that they were not literate in any language (Figure 2.2). Seven percent of people spoke a language other than English before starting school and as adults considered themselves to be biliterate (Figure 2.2).

Literacy in English and languages other than English also varied among racial and ethnic groups. As we discussed in Chapter 1, whites and blacks were much more likely than members of other racial and

[1] The fact that Hispanics could answer the background questionnaire in Spanish undoubtedly inflated the estimates for Hispanics compared to the other racial/ethnic groups.

ethnic groups to have spoken only English before starting school and therefore to have read English as their primary or only language. Just under one-half of Asian/Pacific Islanders and 35 percent of Hispanics were raised in homes where a language other than English was spoken and, as adults, considered themselves biliterate, while 15 percent of Asian/Pacific Islanders and 27 percent of Hispanics said that they were literate only in a language other than English (Figure 2.2). These numbers were lower for whites and blacks. Only 3 percent of whites and 2 percent of blacks considered themselves biliterate, and less than 1 percent of whites and blacks considered themselves literate only in a language other than English. Hispanics had higher rates of self-assessed illiteracy than whites, blacks, or Asian/Pacific Islanders; 6 percent answered that they did not read or write any language well (Figure 2.2).

Figure 2.2: Self-reported literacy by racial/ethnic group



Respondents who reported that they spoke only English before starting school and who reported that they read or write English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults are coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

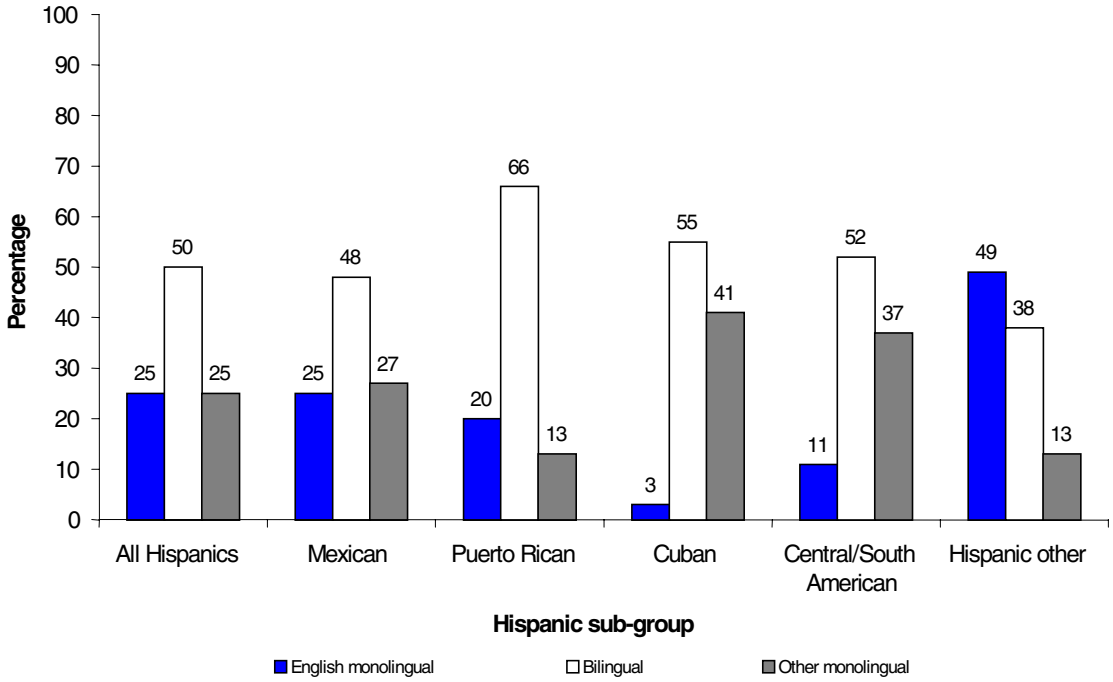
Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Among Hispanics, there was significant variation in oral language and literacy ability based on country of origin. Hispanics of Mexican, Cuban, or Central/South American origin were more likely to speak only Spanish than Hispanics of Puerto Rican or other/not identified origin (Figure 2.3). Only 3 percent of Hispanics of Cuban origin answered that they spoke Spanish poorly or not at all (that is, they were English monolingual), a smaller percentage than any other Hispanic group except Hispanics of Central/South American origin (Figure 2.3). Hispanics of Mexican, Cuban, or Central/South American origin were also more likely to read only Spanish than Hispanics of Puerto Rican or other/not identified origin (Figure 2.4).

Approximately 15 percent of Hispanics of Puerto Rican and other/not identified origin reported that they read or wrote only Spanish well (that is, they were monolingual in a language other than English), compared with over 25 percent of the other Hispanic sub-groups (Figure 2.4).

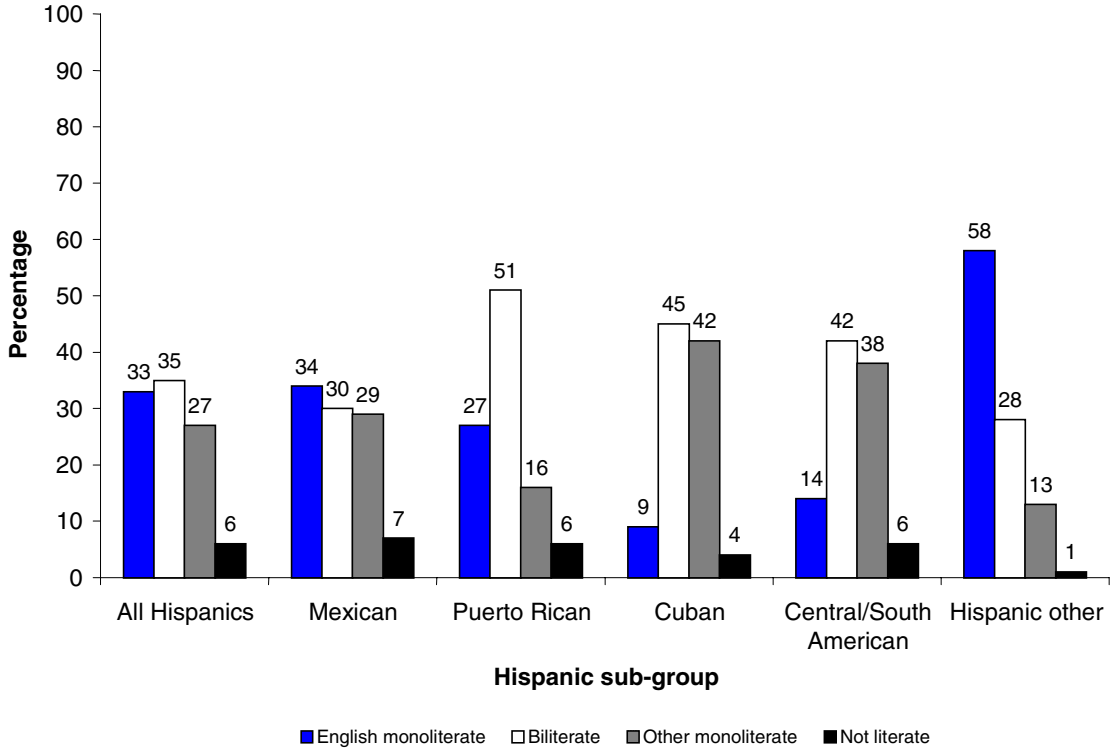
Figure 2.3: Self-reported fluency by Hispanic sub-group



Respondents who reported that they spoke only English before starting school and who reported that they read or write English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Figure 2.4: Self-reported literacy by Hispanic sub-group



Respondents who reported that they spoke only English before starting school and who reported that they read or write English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Age of Arrival in the United States and Language Spoken in the Home While Growing Up

We divided the adult population into five categories based on how old each respondent was when he or she arrived in the United States. Those five categories are: (1) born in the United States, (2) arrived at age 1 to 11, (3) arrived at age 12 to 18, (4) arrived at age 19 to 24, and (5) arrived at age 25 or older.

Ninety percent of people born in the United States grew up in homes where only English was spoken (Table 2.1). However, Hispanics and Asians/Pacific Islanders born in the United States were much less likely than whites and blacks born in the United States to have grown up in homes where only English was spoken. Only 48 percent of

Asians/Pacific Islanders and 36 percent of Hispanics born in the United States were raised in homes where only English was spoken, compared with 92 percent of whites and 99 percent of blacks (Table 2.1).

A significant number of immigrants also grew up in homes where English was the only language spoken. Slightly over one-third of immigrants arriving in the United States before age 12 and approximately one-tenth of immigrants arriving in the United States after age 12 grew up in homes where only English was spoken (Table 2.1). Some of these people were immigrants from countries where English is the primary or secondary language, such as England and the Philippines. Others may have been children of American citizens who were living abroad at the time of their birth or they may have lived in families where a conscious decision was made to stop speaking a language other than English. The data available from the National Adult Literacy Survey background questionnaire did not allow us to distinguish accurately among these various groups.

Age of Arrival in the United States and Self-Reported Fluency and Literacy

Virtually everyone born in the United States, regardless of racial and ethnic group, reported that he or she was fluent (Table 2.2) and literate (Table 2.3) in English.[2] However, as discussed below, for people not born in the United States, their age of arrival in the United States was related to their fluency and literacy in English as adults.

As we discussed above, people who immigrated to the United States before age 12 were more likely to have been raised in homes where only English was spoken than were people who immigrated to the United States after age 12. These people were not asked questions about fluency and literacy in a language other than English, so we coded them monolingual and monoliterate English. Therefore, we expected that more people who arrived in the United States before age 12 would be coded as being fluent and literate in English only.

Additionally, individuals who immigrated to the United States before age 12 probably spent at least five years in an American school where instruction took place in English. Many schools offer special

[2] People who are coded bilingual or English monolingual answered that they spoke or understood English well or very well. People who are coded biliterate or English monoliterate answered that they read or wrote English well or very well.

Table 2.1: Language spoken in home while growing up by racial/ethnic group and age of arrival in the United States

Row percent (s.e.)	Sample size	Population /1000	English/ other	English only	Other only
Total population					
U.S.-born	23,160	170,823	8 (0.5)	90 (0.5)	2 (0.1)
Arrived U.S. age 1 to 11	519	3,389	22 (2.3)	35 (2.9)	42 (2.7)
Arrived U.S. age 12 to 18	599	3,830	5 (1.0)	10 (1.5)	84 (1.8)
Arrived U.S. age 19 to 24	666	4,497	4 (0.9)	12 (2.0)	84 (2.3)
Arrived U.S. age 25 or older	1,011	7,790	7 (1.1)	12 (1.2)	81 (1.4)
White					
U.S.-born	16,673	139,356	6 (0.4)	92 (0.4)	1 (0.1)
Arrived U.S. age 1 to11	158	1,201	17 (4.1)	65 (5.3)	19 (4.0)
Arrived U.S. age 12 to 18	82	646	12 (3.6)	28 (6.6)	60 (7.4)
Arrived U.S. age 19 to 24	117	1,229	4 (2.3)	29 (5.0)	66 (6.2)
Arrived U.S. age 25 or older	197	2,107	7 (2.0)	25 (3.4)	67 (3.2)
Black					
U.S.-born	4,715	19,929	1 (0.2)	99 (0.2)	- - -
Arrived U.S. age 1 to 11	38	138	- - -	- - -	- - -
Arrived U.S. age 12 to 18	49	270	- - -	56 (6.9)	44 (6.9)
Arrived U.S. age 19 to 24	49	258	12 (4.3)	42 (9.8)	46 (10.8)
Arrived U.S. age 25 or older	86	472	8 (3.5)	50 (6.5)	42 (7.4)
Asian/Pacific Islander					
U.S.-born	86	851	33 (5.3)	48 (7.3)	19 (5.8)
Arrived U.S. age 1 to 11	53	504	22 (5.6)	33 (8.5)	45 (8.8)
Arrived U.S. age 12 to 18	60	464	10 (4.4)	8 (4.3)	82 (7.0)
Arrived U.S. age 19 to 24	73	604	12 (4.4)	10 (6.3)	78 (7.1)
Arrived U.S. age 25 or older	153	1,505	18 (4.6)	4 (2.0)	78 (4.6)
Total Hispanic					
U.S.-born	1,481	8,726	39 (2.4)	36 (1.8)	26 (1.9)
Arrived U.S. age 1 to 11	261	1,490	28 (2.8)	7 (2.3)	65 (3.1)
Arrived U.S. age 12 to 18	397	2,347	4 (1.2)	0 (0.3)	96 (1.3)
Arrived U.S. age 19 to 24	414	2,298	1 (0.4)	1 (0.5)	99 (0.6)
Arrived U.S. age 25 or older	546	3,459	3 (0.8)	1 (0.5)	96 (0.8)
Mexican					
U.S.-born	960	5,521	38 (2.7)	29 (1.9)	33 (2.7)
Arrived U.S. age 1 to 11	109	623	29 (5.0)	1 (1.1)	70 (5.1)
Arrived U.S. age 12 to 18	237	1,401	2 (1.9)	0 (0.3)	98 (1.9)
Arrived U.S. age 19 to 24	232	1,279	- - -	- - -	100 (0.0)
Arrived U.S. age 25 or older	225	1,332	1 (0.7)	1 (0.5)	98 (0.8)
Puerto Rican					
U.S.-born	175	898	43 (7.1)	34 (6.3)	23 (4.1)
Arrived U.S. age 1 to 11	64	313	37 (7.6)	5 (1.8)	59 (7.5)
Arrived U.S. age 12 to 18	57	330	6 (2.7)	1 (1.6)	93 (3.4)
Arrived U.S. age 19 to 24	55	249	2 (1.6)	0 (0.2)	98 (1.6)
Arrived U.S. age 25 or older	50	374	5 (2.7)	2 (1.4)	93 (3.2)
Cuban					
U.S.-born	21	100	- - -	- - -	- - -
Arrived U.S. age 1 to 11	26	171	- - -	- - -	- - -
Arrived U.S. age 12 to 18	17	119	- - -	- - -	- - -
Arrived U.S. age 19 to 24	9	66	- - -	- - -	- - -
Arrived U.S. age 25 or older	74	476	3 (1.7)	- - -	97 (1.7)
Central/South American					
U.S.-born	43	292	- - -	- - -	- - -
Arrived U.S. age 1 to 11	43	242	- - -	- - -	- - -
Arrived U.S. age 12 to 18	62	330	7 (3.8)	- - -	93 (3.8)
Arrived U.S. age 19 to 24	83	513	- - -	1 (0.7)	99 (0.7)
Arrived U.S. age 25 or older	147	912	5 (1.9)	2 (1.2)	93 (2.2)
Other Hispanic					
U.S.-born	282	1,916	38 (5.3)	53 (6.8)	9 (2.5)
Arrived U.S. age 1 to 11	19	142	- - -	- - -	- - -
Arrived U.S. age 12 to 18	24	168	- - -	- - -	- - -
Arrived U.S. age 19 to 24	35	191	- - -	- - -	- - -
Arrived U.S. age 25 or older	50	365	2 (2.1)	2 (2.2)	95 (2.9)
Other					
U.S.-born	204	1,961	29 (10.2)	65 (12.8)	6 (4.3)
Arrived U.S. age 1 to 11	9	56	- - -	- - -	- - -
Arrived U.S. age 12 to 18	11	103	- - -	- - -	- - -
Arrived U.S. age 19 to 24	13	108	- - -	- - -	- - -
Arrived U.S. age 25 or older	29	247	- - -	- - -	- - -

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table 2.2: Self-reported fluency by racial/ethnic group and age of arrival in the United States

Row percent (s.e.)	Sample size	Population /1000	Bilingual	English monolingual	Other monolingual
Total population					
U.S.-born	23,189	171,073	5 (0.4)	94 (0.4)	- - -
Arrived U.S. age 1 to 11	519	3,389	55 (3.0)	44 (2.9)	2 (0.65
Arrived U.S. age 12 to 18	598	3,830	61 (2.6)	12 (2.0)	27 (2.6)
Arrived U.S. age 19 to 24	666	4,497	55 (2.8)	13 (2.3)	32 (2.3)
Arrived U.S. age 25 or older	1,007	7,746	48 (2.1)	13 (1.1)	38 (2.2)
White					
U.S.-born	16,693	138,554	3 (0.2)	97 (0.2)	- - -
Arrived U.S. age 1 to 11	158	1,201	29 (4.9)	71 (4.9)	- - -
Arrived U.S. age 12 to 18	82	646	67 (6.6)	30 (7.4)	3 (2.7)
Arrived U.S. age 19 to 24	117	1,229	62 (5.9)	33 (6.3)	5 (2.9)
Arrived U.S. age 25 or older	196	2,080	63 (3.3)	28 (3.3)	8 (3.2)
Black					
U.S.-born	4,726	19,991	1 (0.2)	99 (0.2)	- - -
Arrived U.S. age 1 to 11	38	138	- - -	- - -	- - -
Arrived U.S. age 12 to 18	49	270	42 (7.0)	58 (7.0)	- - -
Arrived U.S. age 19 to 24	49	258	58 (10.4)	39 (9.7)	3 (2.6)
Arrived U.S. age 25 or older	85	465	43 (5.5)	52 (6.5)	5 (3.7)
Asian/Pacific Islander					
U.S.-born	87	851	24 (6.1)	73 (4.9)	3 (2.8)
Arrived U.S. age 1 to 11	53	504	46 (8.3)	52 (8.5)	3 (0.5)
Arrived U.S. age 12 to 18	60	464	83 (6.0)	11 (4.4)	7 (4.3)
Arrived U.S. age 19 to 24	73	604	79 (6.1)	13 (6.7)	8 (3.6)
Arrived U.S. age 25 or older	153	1,505	65 (5.5)	5 (2.1)	30 (5.1)
Total Hispanic					
U.S.-born	1,479	8,716	50 (2.1)	49 (2.1)	1 (0.3)
Arrived U.S. age 1 to 11	261	1,490	84 (3.0)	13 (2.8)	3 (1.0)
Arrived U.S. age 12 to 18	396	2,347	57 (3.2)	2 (0.8)	41 (3.4)
Arrived U.S. age 19 to 24	414	2,298	43 (3.3)	1 (0.7)	56 (3.2)
Arrived U.S. age 25 or older	544	3,449	34 (2.5)	2 (0.5)	64 (2.5)
Mexican					
U.S.-born	958	5,511	54 (1.9)	44 (1.8)	2 (0.5)
Arrived U.S. age 1 to 11	109	623	85 (4.0)	10 (3.5)	6 (1.8)
Arrived U.S. age 12 to 18	236	1,401	47 (3.5)	2 (1.0)	51 (3.8)
Arrived U.S. age 19 to 24	232	1,279	31 (4.5)	1 (1.1)	68 (4.2)
Arrived U.S. age 25 or older	225	1,332	22 (2.7)	1 (0.8)	77 (2.6)
Puerto Rican					
U.S.-born	175	898	55 (6.3)	45 (6.3)	- - -
Arrived U.S. age 1 to 11	64	313	87 (6.8)	9 (6.2)	3 (3.3)
Arrived U.S. age 12 to 18	57	330	82 (9.1)	1 (1.6)	17 (10.5)
Arrived U.S. age 19 to 24	55	249	64 (10.9)	0 (0.2)	36 (10.9)
Arrived U.S. age 25 or older	50	374	65 (7.0)	2 (1.4)	33 (6.6)
Cuban					
U.S.-born	21	100	- - -	- - -	- - -
Arrived U.S. age 1 to 11	26	171	- - -	- - -	- - -
Arrived U.S. age 12 to 18	17	119	- - -	- - -	- - -
Arrived U.S. age 19 to 24	9	66	- - -	- - -	- - -
Arrived U.S. age 25 or older	74	476	30 (4.8)	1 (1.0)	69 (4.9)
Central/South American					
U.S.-born	43	292	- - -	- - -	- - -
Arrived U.S. age 1 to 11	43	242	- - -	- - -	- - -
Arrived U.S. age 12 to 18	62	330	60 (6.9)	3 (1.9)	37 (7.0)
Arrived U.S. age 19 to 24	83	513	53 (7.3)	1 (0.7)	47 (7.5)
Arrived U.S. age 25 or older	145	902	44 (5.7)	3 (1.3)	53 (5.4)
Other Hispanic					
U.S.-born	282	1,916	33 (8.3)	67 (8.3)	- - -
Arrived U.S. age 1 to 11	19	142	- - -	- - -	- - -
Arrived U.S. age 12 to 18	24	168	- - -	- - -	- - -
Arrived U.S. age 19 to 24	35	191	- - -	- - -	- - -
Arrived U.S. age 25 or older	50	365	23 (10.5)	2 (2.2)	74 (10.7)
Other					
U.S.-born	204	1,961	23 (8.7)	76 (8.8)	0 (1.8)
Arrived U.S. age 1 to 11	9	56	- - -	- - -	- - -
Arrived U.S. age 12 to 18	11	103	- - -	- - -	- - -
Arrived U.S. age 19 to 24	13	108	- - -	- - -	- - -
Arrived U.S. age 25 or older	29	247	- - -	- - -	- - -

Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table 2.3: Self-reported literacy by racial/ethnic group and age of arrival in the United States

Row percent (s.e.)	Sample size	Population /1000	Biliterate	English monoliterate	Other monoliterate	Not literate
Total population						
U.S.-born	23,190	171,042	3 (0.1)	97 (0.2)	- - -	0 (0.1)
Arrived U.S. age 1 to 11	519	3,389	37 (2.6)	58 (2.7)	3 (1.0)	3 (0.5)
Arrived U.S. age 12 to 18	599	3,830	48 (3.4)	14 (2.0)	35 (3.4)	3 (0.9)
Arrived U.S. age 19 to 24	666	4,497	46 (2.3)	15 (2.3)	34 (2.2)	5 (1.3)
Arrived U.S. age 25 or older	1,011	7,790	39 (2.1)	16 (1.2)	39 (2.0)	6 (0.9)
White						
U.S.-born	16,692	139,513	1 (0.1)	99 (0.1)	- - -	- - -
Arrived U.S. age 1 to 11	158	1,201	14 (3.9)	86 (3.9)	- - -	- - -
Arrived U.S. age 12 to 18	82	646	61 (6.9)	32 (7.4)	8 (5.2)	- - -
Arrived U.S. age 19 to 24	117	1,229	58 (5.3)	33 (6.2)	9 (4.1)	1 (0.6)
Arrived U.S. age 25 or older	197	2,107	48 (4.1)	34 (4.2)	15 (3.2)	4 (1.9)
Black						
U.S.-born	4,726	19,991	0 (0.2)	100 (0.2)	- - -	- - -
Arrived U.S. age 1 to 11	38	138				
Arrived U.S. age 12 to 18	49	270	39 (7.7)	58 (7.0)	- - -	3 (3.3)
Arrived U.S. age 19 to 24	49	258	33 (6.2)	55 (7.4)	7 (3.7)	5 (4.2)
Arrived U.S. age 25 or older	86	472	20 (7.0)	59 (6.9)	20 (5.5)	1 (1.5)
Asian/Pacific Islander						
U.S.-born	87	851	8 (2.1)	89 (4.2)	3 (2.8)	0 (0.2)
Arrived U.S. age 1 to 11	53	504	19 (5.6)	72 (6.3)	3 (3.0)	6 (2.5)
Arrived U.S. age 12 to 18	60	464	69 (8.0)	23 (6.8)	6 (4.0)	2 (2.3)
Arrived U.S. age 19 to 24	73	604	66 (6.3)	18 (6.9)	12 (2.4)	5 (2.7)
Arrived U.S. age 25 or older	153	1,505	62 (6.4)	8 (2.3)	30 (5.7)	- - -
Total Hispanic						
U.S.-born	1,481	8,726	31 (1.9)	64 (2.0)	2 (0.4)	4 (0.7)
Arrived U.S. age 1 to 11	261	1,490	65 (2.9)	26 (2.9)	5 (1.4)	3 (1.1)
Arrived U.S. age 12 to 18	397	2,347	41 (4.1)	2 (0.6)	53 (4.5)	4 (1.1)
Arrived U.S. age 19 to 24	414	2,298	35 (3.5)	1 (0.7)	56 (3.3)	8 (2.1)
Arrived U.S. age 25 or older	546	3,459	26 (2.6)	2 (0.5)	61 (2.7)	11 (1.5)
Mexican						
U.S.-born	960	5,521	32 (2.2)	60 (2.3)	2 (0.6)	6 (1.1)
Arrived U.S. age 1 to 11	109	623	67 (5.1)	20 (4.1)	10 (2.9)	3 (1.6)
Arrived U.S. age 12 to 18	237	1,401	30 (3.5)	1 (0.9)	65 (4.2)	4 (1.5)
Arrived U.S. age 19 to 24	232	1,279	21 (4.0)	1 (1.1)	68 (4.3)	11 (3.0)
Arrived U.S. age 25 or older	225	1,332	15 (2.3)	1 (0.7)	70 (2.6)	14 (2.9)
Puerto Rican						
U.S.-born	175	898	41 (5.2)	55 (5.0)	0 (0.4)	3 (1.6)
Arrived U.S. age 1 to 11	64	313	56 (5.1)	29 (6.6)	5 (2.3)	10 (5.2)
Arrived U.S. age 12 to 18	57	330	63 (15.1)	1 (1.0)	33 (16.1)	4 (3.1)
Arrived U.S. age 19 to 24	55	249	53 (10.9)	0 (0.2)	44 (11.9)	2 (2.2)
Arrived U.S. age 25 or older	50	374	56 (8.3)	2 (1.4)	27 (7.6)	15 (6.0)
Cuban						
U.S.-born	21	100	- - -	- - -	- - -	- - -
Arrived U.S. age 1 to 11	26	171	- - -	- - -	- - -	- - -
Arrived U.S. age 12 to 18	17	119	- - -	- - -	- - -	- - -
Arrived U.S. age 19 to 24	9	66	- - -	- - -	- - -	- - -
Arrived U.S. age 25 or older	74	476	26 (5.6)	- - -	68 (6.5)	6 (1.9)
Central/South American						
U.S.-born	43	292	- - -	- - -	- - -	- - -
Arrived U.S. age 1 to 11	43	242	- - -	- - -	- - -	- - -
Arrived U.S. age 12 to 18	62	330	53 (7.7)	2 (1.9)	39 (7.1)	5 (2.7)
Arrived U.S. age 19 to 24	83	513	44 (5.9)	1 (0.7)	49 (5.9)	6 (2.9)
Arrived U.S. age 25 or older	147	912	33 (5.4)	4 (1.4)	52 (5.7)	11 (2.7)
Other Hispanic						
U.S.-born	282	1,916	20 (4.7)	79 (4.8)	0 (0.3)	0 (0.3)
Arrived U.S. age 1 to 11	19	142	- - -	- - -	- - -	- - -
Arrived U.S. age 12 to 18	24	168	- - -	- - -	- - -	- - -
Arrived U.S. age 19 to 24	35	191	- - -	- - -	- - -	- - -
Arrived U.S. age 25 or older	50	365	20 (9.7)	2 (2.2)	75 (10.0)	2 (1.4)
Other						
U.S.-born	204	1,961	5 (2.1)	94 (2.2)	1 (0.6)	0 (0.6)
Arrived U.S. age 1 to 11	9	56	- - -	- - -	- - -	- - -
Arrived U.S. age 12 to 18	11	103	- - -	- - -	- - -	- - -
Arrived U.S. age 19 to 24	13	108	- - -	- - -	- - -	- - -
Arrived U.S. age 25 or older	29	247	- - -	- - -	- - -	- - -

Respondents who reported that they spoke only English before starting school and who report that they read or write English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

classes in English as a second language. Therefore, even if a language other than English was spoken in their childhood home, we expected more of this population to have spoken and read English well or very well as adults in 1992.

Responses to the literacy and fluency questions on the National Adult Literacy Survey questionnaire indicate that people who immigrated to the United States at a young age considered themselves fluent and literate in English. Almost all respondents who arrived in the United States at age 11 or younger answered that they spoke or understood English well or very well (Table 2.2), and 94 percent answered that they read or wrote English well or very well (Table 2.3). Since, as shown in Table 2.1, 42 percent of people who arrived in the United States before age 12 reported growing up in homes where no English was spoken, these high figures for English fluency and literacy indicate that the majority of immigrants who came to the United States at a young age were learning English outside the home, probably in the public school system.

Most immigrants who arrived in this country as teenagers or young adults did not have the same opportunity to study English as immigrants who arrived as children. As we have discussed above, they were also less likely than immigrants who arrived as children to grow up in homes where English was spoken. This was reflected in their responses to questions about English fluency and literacy. They were more likely to answer that they did not speak or read English well than those who immigrated before age 12.

However, even when we limited our analysis to people who arrived in the United States as teenagers or adults, a majority had learned English somewhere other than in their childhood homes. Although, as shown in Table 2.1, 84 percent of immigrants who arrived in the United States at age 12 to 18 reported that no English was spoken in their childhood home, only 27 percent of the same group did not speak English well as adults and were coded other monolingual (Table 2.2).

Almost half of people who immigrated to the United States before age 12 did not speak or understand any language other than English well (Table 2.2), and over half of them did not read or write any language other than English well (Table 2.3). In comparison, fewer than 15 percent of people who immigrated to the United States after age 12 were not fluent in a language other than English (i.e., were English monolingual), and fewer than 20 percent of people who immigrated to the United States

after age 12 were not literate in a language other than English (i.e., were English monoliterate).

Hispanics were more likely than whites or Asian/Pacific Islanders to be fluent in a language other than English as adults when they immigrated to the United States as children younger than 12 (i.e., they were not English monolingual). Only 13 percent of Hispanic adults who immigrated to the United States between the ages of 1 and 11 were fluent only in English, compared with 71 percent of whites and 52 percent of Asians/Pacific Islanders (Table 2.2). This finding is not surprising since only 7 percent of Hispanics who immigrated to the United States before age 12 grew up in homes where only English was spoken, compared to 65 percent of whites and 33 percent of Asians/Pacific Islanders (Table 2.1).

A lower percentage of Hispanics who immigrated to the United States before age 12 was literate only in English than was the case with any other racial and ethnic group (Table 2.3). Just over 25 percent of Hispanic immigrants who arrived in the United States before age 12 reported that they read and wrote only English, a much lower percentage than the 86 percent of whites and 72 percent of Asians/Pacific Islanders who arrived in the United States at the same age and reported reading and writing only English (Table 2.3).

Our sample size was not large enough to determine whether or not English fluency and literacy varied among Hispanics with different countries of origin when we controlled for age of arrival in the United States.

Language Spoken in the Home While Growing Up, Language Spoken Before Starting School, and Language Usually Spoken Today

We have already seen that there are large differences between the racial and ethnic groups in terms of language background. As discussed above, Hispanics and Asians/Pacific Islanders born in the United States were less likely than whites and blacks born in the United States to grow up in homes where English was spoken. Hispanics who immigrated to the United States at a young age were more likely than members of other racial and ethnic groups who immigrated to the United States at the same age to speak a language other than English as adults.

In this section, we look in more detail at these differences in language background. We analyze whether or not people were likely to learn English and whether or not people were likely to maintain their knowledge of a language other than English, based on their exposure to English and other languages as young children. We show that although almost everyone who was raised in a home where a second language was spoken in addition to English was fluent in English as an adult, people raised in homes where Spanish or an Asian language was spoken in addition to English were more likely to continue to be bilingual as adults than people raised in homes where a European language was spoken, in addition to English.[3]

Not surprisingly, most people who grew up in homes where no English was spoken reported that they did not speak any English before starting school (Figure 2.5). Over 90 percent of respondents who grew up in homes where only Spanish or an Asian language was spoken, and over 80 percent of respondents who grew up in homes where only a European language was spoken, reported that they did not speak English before starting school (Figure 2.5).[4]

However, there was a lot of variation in the language experience of people who grew up in a home where English was spoken in addition to another language. Individuals who grew up in homes where English and a European language other than Spanish were spoken, were more likely to speak only English as children (51 percent) than were people who grew up in homes where Spanish (31 percent) or an Asian language (29 percent) was spoken in addition to English (Figure 2.5). Thus, even before they started school the majority of respondents who grew up in English/European language bilingual homes did not speak their household's non-English language, making it less likely that they would become biliterate or bilingual as adults than those who grew up in homes where English and Spanish or English and an Asian language were spoken.

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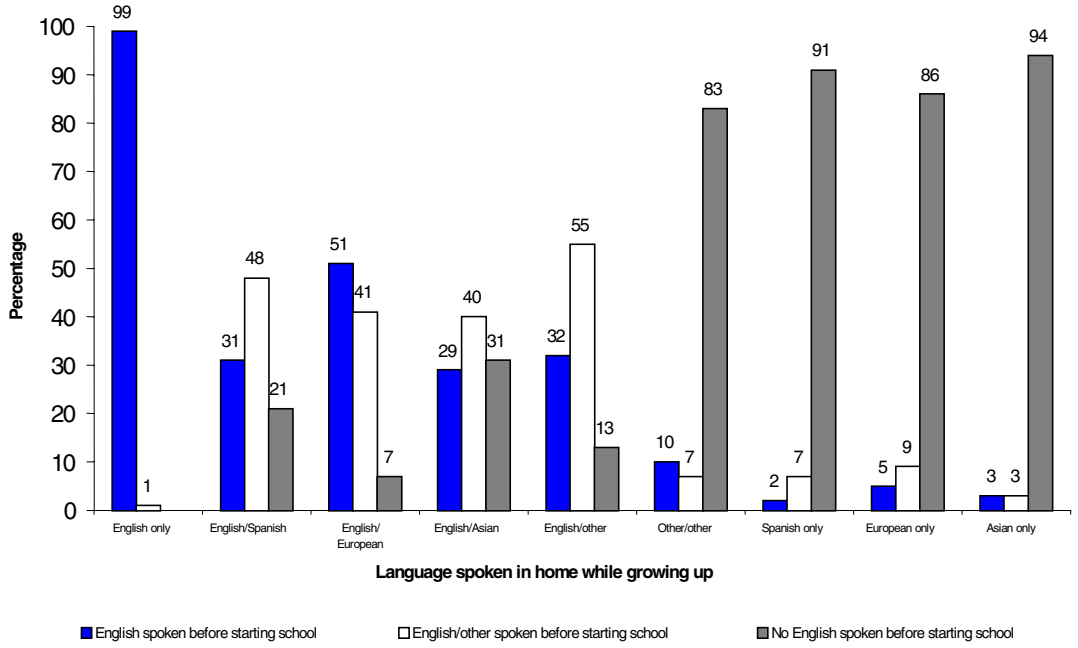
[3] In our increasingly global economy, speaking a second language in addition to English is generally acknowledged to be an important human capital asset. Thus, although the primary focus of this report is on English fluency and literacy, we do not want to diminish the importance of fluency and literacy in another language.

[4] No follow-up questions were asked to allow us to determine how people who grew up in non-English speaking homes learned English before starting school. We assume that some of them were exposed to the English language through television, neighbors, baby-sitters, preschool or Head Start classes, and/or extended family members who spoke English. In addition, we do not know the preschool English proficiency of the respondents.

Figure 2.5: Language spoken before starting school by language spoken in home while growing up



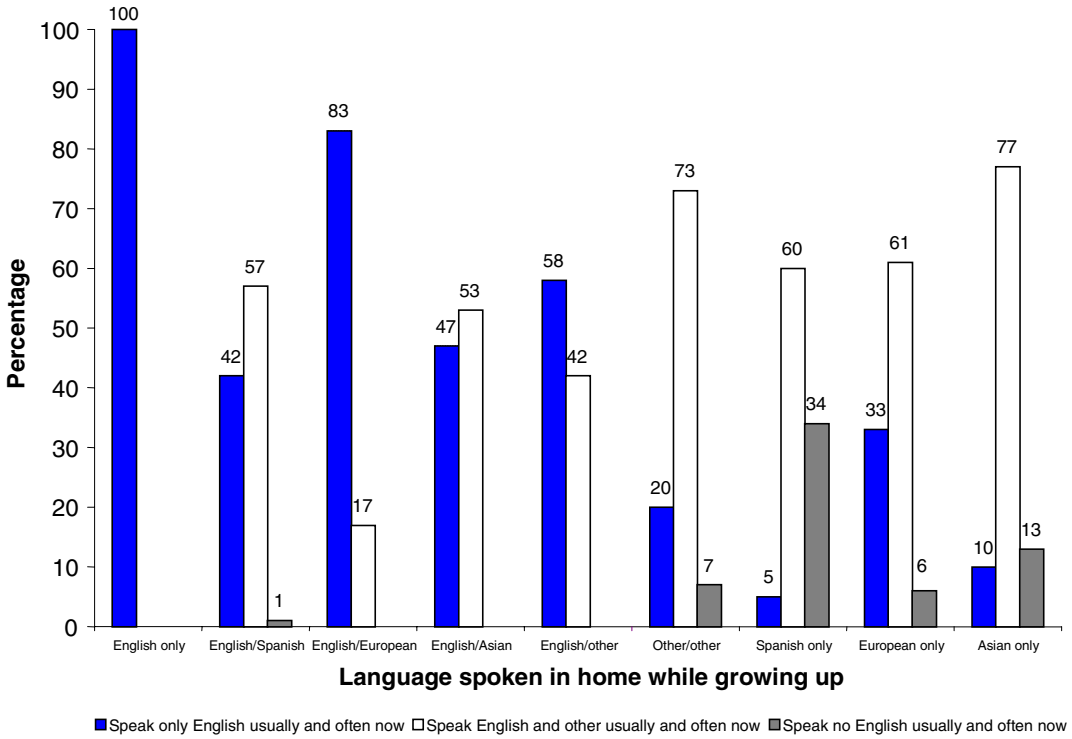
Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

This difference reappears when respondents were asked what language they usually and often speak now. While 42 percent of those who were raised in English/Spanish homes and 47 percent of those raised in English/Asian homes said English only, 83 percent of those raised in English/European homes replied English only (Figure 2.6).

Only 17 percent of those raised in English/European language speaking homes reported usually and often speaking two languages as adults, compared to 53 percent of those raised in English/Asian homes and 57 percent of those raised in English/Spanish homes (Figure 2.6). Almost no one who grew up in a home in which another language was spoken in addition to English did not usually and often speak English as an adult (Figure 2.6).

Figure 2.6: Language usually and often spoken now by language spoken in home while growing up



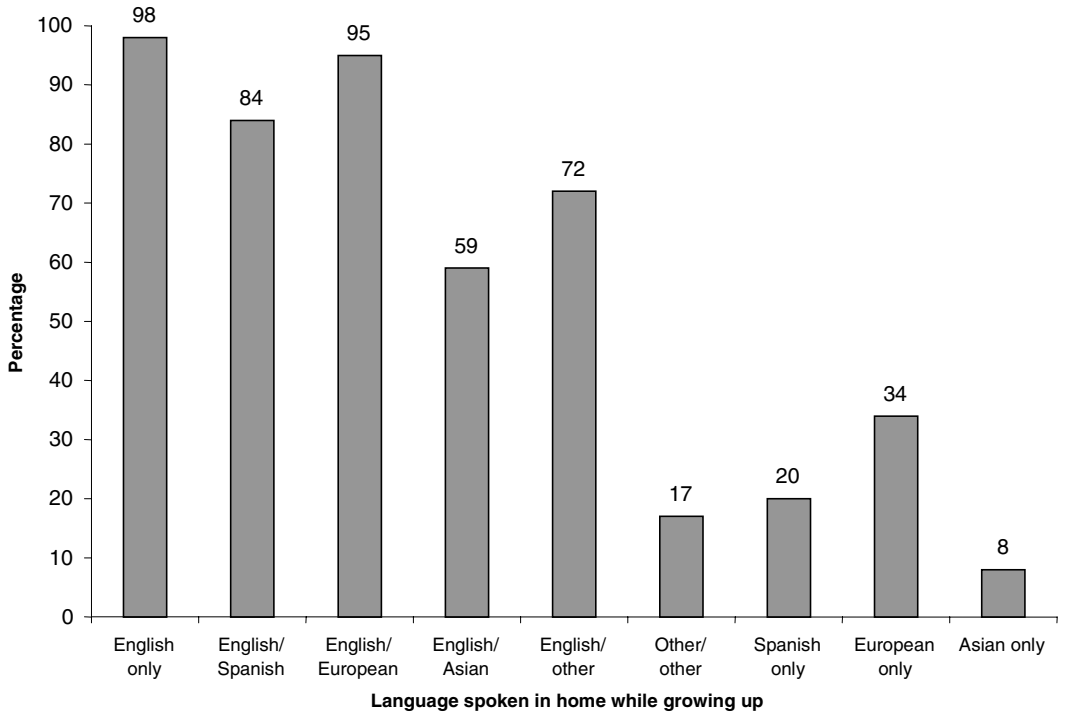
Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

However, a significant minority of people raised in homes where no English was spoken, reported that they did not speak English as adults living in the United States. (Many of these people did not grow up in the United States, or attend school in the United States.) People raised in households where only Spanish was spoken were more likely as adults in 1992 to regularly speak only a language other than English (34 percent) than were people raised in households where only an Asian language (13 percent) or a European language (6 percent) was spoken (Figure 2.6). Some of this difference is undoubtedly attributable to the fact that there was a Spanish language background questionnaire.

The majority of people raised in homes where two languages were spoken were born in the United States, while less than half of those raised in homes where only a language other than English was spoken were born in this country (Figure 2.7). Thus, part of what we are seeing is a difference based on country of birth. As we discussed earlier, virtually everyone born in this country grew up speaking English. It follows that since most people who grew up in homes where two languages were spoken were born in this country, they regularly spoke English as adults. However, if they were from a Spanish or Asian language background, they were more likely as adults to also speak a language other than English than if they were from a European language background other than Spanish. Since most people who grew up in homes where only a

Figure 2.7: Percent of population born in the United States by language spoken in home while growing up



Respondents who reported that they spoke only English before starting school were not asked what language they usually and often speak now. They were coded as speaking only English.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

language other than English was spoken were not born in this country, it was not surprising that many of them did not regularly speak English as adults in 1992.

We still need to understand why people who grew up in Spanish/English or Asian/English speaking households were more likely to continue to be bilingual as adults than were people who grew up in households where English and a European language other than Spanish were spoken (Figure 2.6). Some of this difference between people of Spanish, Asian, and European language backgrounds may have resulted from differences in settlement patterns. The well defined European language communities that existed in most large American cities at the turn of the century had shrunk or vanished by 1992, making it unlikely that immigrants with European language backgrounds would live around other people with similar linguistic backgrounds. Many American communities in 1992 had neighborhoods with large Spanish or Asian language speaking populations, making immigrants' retention of their native language both easier and more useful.

Measuring English Literacy Using the National Adult Literacy Survey

Our discussion so far in this chapter has focused on self-assessed literacy and oral fluency. The National Adult Literacy Survey provides an objective measure of respondents' literacy in English. However, comparable data are not available on respondents' literacy in any other language.

As discussed in Chapter 1, the results of the National Adult Literacy Survey were reported using three scales, each ranging from 0 to 500: a prose literacy scale, a document literacy scale, and a quantitative literacy scale. The scores on each scale represent degrees of proficiency along that particular dimension of literacy.

In addition, the National Adult Literacy Survey classified respondents' performance on the literacy tasks that made up the assessment into five levels for each scale: *Level 1* (0 to 225), *Level 2* (226 to 275), *Level 3* (276 to 325), *Level 4* (326 to 375), and *Level 5* (376 to 500). Performance in Level 1 on the prose scale indicates that the individual had limited or no skills reading texts written in English. For example, tasks at this level required the individual to locate a single piece of information in a relatively short text written in English that did not include any distracting incorrect information located near the correct

information. On the other hand, tasks at Level 5 on the prose scale required that the individual search for information in a dense text written in English which contained a number of plausible distractors. The individual had to make high-level inferences, use specialized background knowledge, and contrast complex information presented in English. Performance at each level indicates greater proficiency than performance at the previous level.

Performance in Level 1 on the document scale indicates very limited skills in processing information in English from tables, charts, graphs, maps and the like (even those that were brief and uncomplicated). On the other hand, performance in Level 5 on the document scale indicates advanced skills in performing a variety of tasks that involve the use of complex documents written in English. (See Appendix A for a complete discussion of the levels on all three scales.)

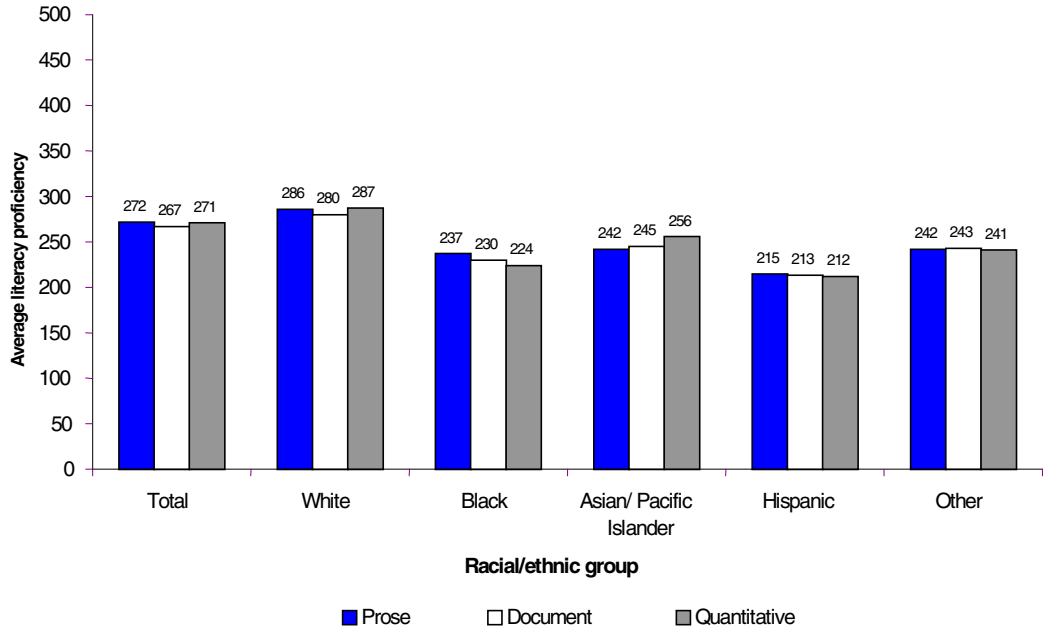
The Relationship Between Race/Ethnicity, Self-Reported Fluency and Literacy, and English Literacy Measured by the National Adult Literacy Survey

As illustrated in Figure 2.8, whites had higher mean scores than blacks, Hispanics, Asian/Pacific Islanders, or others on all three scales of the National Adult Literacy Survey. Whites were also less likely to be in Level 1, and more likely to be in Level 4 on the prose and document scales, than any of the other racial and ethnic groups. So few people were in Level 5, the highest level, that it was hard to measure differences between racial and ethnic groups at that level (Table 2.4).

Among Hispanics, people with backgrounds classified as other/not identified had higher mean proficiency scores than other Hispanic sub-groups (Figure 2.9). When we looked only at the population that was English monolingual (Table 2.5) or English monoliterate (Table 2.6), the difference between whites and the other ethnic/racial groups, with the exception of blacks, either narrowed or disappeared on all three literacy scales.[5] People who were bilingual had lower scores on all three scales than people who were English monolingual (Table 2.5). Similarly, people who were biliterate had lower scores on all three scales than people who were English monoliterate (Table 2.6). All of the difference in mean prose scores

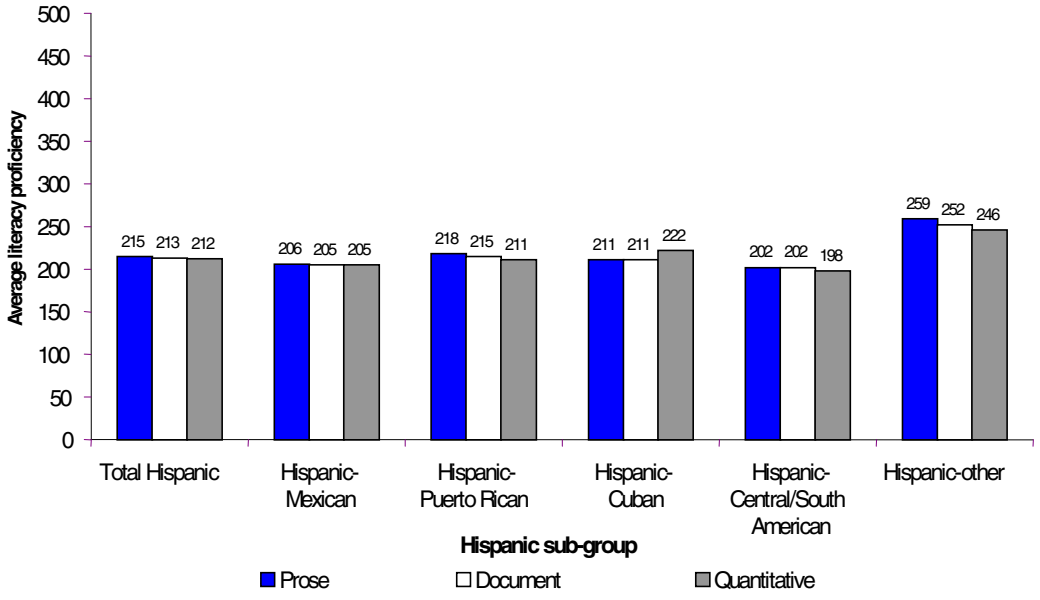
[5] For a detailed discussion of the relationship between race/ethnicity and education, see I.S. Kirsch, A. Jungeblat, L. Jenkins, and A. Kolstad (1993). Adult Literacy in America: A First Look at the Results of the National Adult Literacy Survey. Washington, D.C.: National Center for Education Statistics.

Figure 2.8: Average literacy proficiencies by racial/ethnic group



Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Figure 2.9: Average literacy proficiencies by Hispanic sub-group



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992

Table 2.4: Average literacy proficiencies and literacy levels by racial/ethnic group

Row percent (s.e.)	Sample size	Population /1000	Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Average proficiency
PROSE								
Total population	26,091	191,289	20 (0.4)	27 (0.6)	32 (0.7)	17 (0.4)	3 (0.2)	272 (0.6)
White	17,292	144,968	14 (0.4)	25 (0.7)	36 (0.8)	21 (0.5)	4 (0.3)	286 (0.7)
Black	4,963	21,192	37 (1.2)	37 (1.3)	21 (1.0)	4 (0.5)	0 (0.1)	237 (1.4)
Asian/Pacific Islander	438	4,116	36 (4.5)	26 (3.9)	25 (3.2)	12 (1.9)	2 (0.7)	242 (6.7)
Total Hispanic	3,126	18,481	49 (1.5)	26 (1.4)	19 (1.4)	6 (0.8)	1 (0.3)	215 (2.2)
Mexican	1,779	10,259	53 (1.8)	25 (1.6)	17 (1.3)	5 (0.7)	0 (0.3)	206 (3.2)
Puerto Rican	405	2,190	47 (4.7)	33 (5.3)	17 (3.6)	3 (1.8)	0 (0.3)	218 (6.1)
Cuban	148	936	53 (7.0)	24 (7.1)	16 (4.4)	6 (4.9)	1 (2.1)	211 (9.6)
Central/South American	380	2,297	59 (4.4)	22 (3.7)	16 (3.9)	3 (1.7)	0 (0.3)	202 (6.9)
Other Hispanic	414	2,799	26 (2.8)	26 (4.9)	33 (4.8)	13 (2.9)	2 (1.5)	259 (4.9)
Other	272	2,532	32 (5.6)	34 (6.0)	25 (7.3)	8 (2.2)	1 (1.0)	242 (7.0)
DOCUMENT								
Total population	26,091	191,289	23 (0.5)	28 (0.6)	31 (0.5)	16 (0.4)	3 (0.2)	267 (0.7)
White	17,292	144,968	16 (0.6)	27 (0.7)	34 (0.7)	19 (0.5)	3 (0.3)	280 (0.8)
Black	4,963	21,192	42 (1.0)	37 (1.2)	18 (0.9)	3 (0.4)	0 (0.1)	230 (1.2)
Asian/Pacific Islander	438	4,116	34 (3.6)	25 (3.7)	28 (3.6)	11(2.3)	2 (0.9)	245 (5.6)
Total Hispanic	3,126	18,481	49 (1.7)	26 (1.7)	19 (1.4)	5 (0.8)	1 (0.3)	213 (2.5)
Mexican	1,779	10,259	54 (2.0)	26 (1.7)	16 (1.5)	4 (0.7)	0 (0.2)	205 (3.5)
Puerto Rican	405	2,190	48 (3.8)	30 (5.3)	18 (3.4)	4 (1.1)	0 (0.3)	215 (6.6)
Cuban	148	936	48 (8.4)	29 (6.9)	16 (3.9)	4 (3.6)	2 (1.3)	211 (12.0)
Central/South American	380	2,297	55 (4.4)	26 (4.1)	15 (3.3)	4 (1.5)	0 (0.5)	202 (6.7)
Other Hispanic	414	2,799	29 (2.8)	25 (3.4)	32 (3.6)	12 (3.6)	2 (1.5)	252 (5.0)
Other	272	2,532	33 (5.7)	34 (4.5)	25 (4.8)	7 (2.7)	1 (0.9)	243 (7.6)
QUANTITATIVE								
Total population	26,091	191,289	22 (0.5)	25 (0.5)	31 (0.5)	18 (0.3)	4 (0.2)	271 (0.7)
White	17,292	144,968	14 (0.5)	24 (0.6)	35 (0.6)	22 (0.4)	5 (0.2)	287 (0.8)
Black	4,963	21,192	45 (1.0)	34 (1.1)	17 (1.0)	3 (0.4)	0 (0.1)	224 (1.4)
Asian/Pacific Islander	438	4,116	30 (3.9)	23 (3.6)	28 (3.0)	16 (2.3)	4 (1.7)	256 (6.7)
Total Hispanic	3,126	18,481	49 (1.3)	25 (1.5)	20 (1.4)	5 (1.0)	1 (0.2)	212 (2.5)
Mexican	1,779	10,259	53 (1.7)	25 (2.2)	17 (2.0)	4 (0.7)	1 (0.3)	205 (3.6)
Puerto Rican	405	2,190	50 (3.7)	28 (5.3)	17 (3.2)	3 (1.3)	1 (0.4)	211 (7.2)
Cuban	148	936	46 (6.8)	20 (6.6)	25 (5.3)	5 (5.7)	4 (2.6)	222 (13.5)
Central/South American	380	2,297	55 (4.6)	27 (4.4)	16 (2.7)	3 (1.6)	0 (0.5)	198 (6.8)
Other Hispanic	414	2,799	32 (2.9)	24 (3.5)	33 (3.6)	11 (4.8)	1 (1.2)	246 (6.0)
Other	272	2,532	37 (4.9)	28 (5.0)	27 (4.6)	7 (3.0)	1 (0.8)	241 (5.5)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

between whites and Asians/Pacific Islanders, and much of the difference in mean prose scores between whites and Hispanics, could be attributed to the fact that a much larger percentage of Hispanics and Asians/Pacific Islanders were bilingual or monolingual/monoliterate in a language other than English, than was the case for whites. The document and quantitative scores showed the same pattern (Tables 2.5 and 2.6).

All the people participating in the survey who were classified as bilingual spoke English as a second language. Thus, for most of them, their English was not as good as the English of native speakers, even

Table 2.5: Average literacy proficiencies by racial/ethnic group and self-reported fluency

Average proficiency (s.e.)	Sample size	Population /1000	Prose	Document	Quantitative
Total population					
Bilingual	2,789	20,021	240 (2.0)	239 (2.1)	244 (2.4)
English monolingual	22,421	165,454	281 (0.7)	275 (0.8)	280 (0.8)
White					
Bilingual	750	7,110	254 (3.8)	247 (3.7)	254 (4.7)
English monolingual	16,518	137,559	288 (0.8)	282 (0.9)	289 (0.9)
Black					
Bilingual	108	612	216 (8.3)	214 (13.5)	218 (9.4)
English monolingual	4,847	20,538	238 (1.4)	230 (1.2)	225 (1.4)
Asian/Pacific Islander					
Bilingual	272	2,426	248 (5.3)	254 (5.2)	269 (6.4)
English monolingual	117	1,085	290 (6.3)	285 (6.0)	287 (5.0)
Hispanic					
Bilingual	1,598	9,154	230 (2.5)	231 (2.7)	232 (2.5)
English monolingual	746	4,638	275 (2.3)	271 (2.7)	269 (3.2)
Mexican					
Bilingual	878	4,919	222 (4.1)	223 (4.1)	225 (3.6)
English monolingual	425	2,539	268 (2.7)	265 (2.7)	264 (3.2)
Puerto Rican					
Bilingual	283	1,448	226 (7.8)	222 (9.5)	220 (9.0)
English monolingual	77	448	263 (10.3)	264 (8.1)	263 (12.8)
Cuban					
Bilingual	77	516	255 (14.8)	257 (13.4)	271 (19.2)
English monolingual	11	- - -	- - -	- - -	- - -
Central/South American					
Bilingual	191	1,202	233 (5.9)	242 (4.8)	238 (5.0)
English monolingual	44	- - -	- - -	- - -	- - -
Other Hispanic					
Bilingual	169	1,070	259 (6.0)	258 (6.7)	250 (8.2)
English monolingual	189	1,371	292 (5.3)	286 (5.9)	282 (6.2)
Other					
Bilingual	61	718	229 (10.5)	238 (11.1)	236 (10.2)
English monolingual	193	1,634	259 (6.1)	254 (7.1)	253 (5.9)

Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

though in response to a survey question they answered that they spoke or understood English well. In fact, it is possible that many of them meant that they spoke English well for a non-native speaker. We did not expect non-native speakers of English to do as well on a test given in English, such as the National Adult Literacy Survey assessment, as a native speaker of English would do.

Table 2.6: Average literacy proficiencies by racial/ethnic group and self-reported literacy

Average proficiency (s.e.)	Sample size	Population /1000	Prose	Document	Quantitative
Total population					
Biliterate	1,845	12,834	251 (1.8)	250 (1.9)	255 (2.2)
English monoliterate	23,078	170,506	281 (0.7)	274 (0.7)	279 (0.7)
White					
Biliterate	430	3,829	266 (3.2)	259 (3.0)	265 (4.6)
English monoliterate	16,801	140,314	288 (0.8)	281 (0.9)	288 (0.9)
Black					
Biliterate	73	372	230 (8.6)	226 (10.3)	234 (8.6)
English monoliterate	4,871	20,660	238 (1.4)	231 (1.2)	225 (1.4)
Asian/Pacific Islander					
Biliterate	218	1,922	251 (6.6)	256 (6.1)	271 (6.6)
English monoliterate	158	1,465	288 (6.8)	283 (6.7)	290 (5.7)
Hispanic					
Biliterate	1,094	6,412	244 (2.5)	244 (2.5)	246 (2.6)
English monoliterate	1,031	6,091	267 (2.4)	263 (2.4)	261 (2.8)
Mexican					
Biliterate	536	3,121	240 (4.0)	238 (3.6)	242 (3.8)
English monoliterate	614	3,478	259 (2.6)	256 (2.7)	255 (2.8)
Puerto Rican					
Biliterate	209	1,110	234 (5.3)	231 (5.6)	231 (5.1)
English monoliterate	113	595	258 (8.5)	259 (7.7)	255 (10.7)
Cuban					
Biliterate	64	424	261 (12.5)	266 (10.4)	283 (16.5)
English monoliterate	17	- - -	- - -	- - -	- - -
Central/South American					
Biliterate	168	971	242 (5.9)	247 (4.8)	246 (5.4)
English monoliterate	54	318	271 (8.9)	266 (7.5)	258 (9.3)
Other Hispanic					
Biliterate	117	785	267 (7.9)	266 (8.4)	259 (9.4)
English monoliterate	233	1,620	286 (6.8)	280 (6.2)	276 (7.1)
Other					
Biliterate	30	- - -	- - -	- - -	- - -
English monoliterate	217	1,977	255 (4.7)	252 (6.0)	250 (5.6)

Respondents who reported that they spoke only English before starting school and who report that they read or wrote English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

There were some small differences in performance on the prose scale of the National Adult Literacy Survey between Hispanics of different national origins who were bilingual/biliterate or English monolingual/monoliterate. English monolingual Hispanics who were of other/not identified origin did somewhat better on the prose scale than English monolingual Hispanics who were of Mexican origin (Table 2.5). English monoliterate Hispanics who were of other/not identified origin

also did somewhat better on the prose scale than English monoliterate Hispanics who were of Mexican origin (Table 2.6). The document scale exhibited the same differences in performance between Hispanics of other/not identified and Hispanics of Mexican origin (Tables 2.5 and 2.6). We had so few Hispanics in our sample who were monolingual or monoliterate in English and were of Puerto Rican, Cuban, or Central/South American origin that we were unable to compare their average proficiencies with that of other Hispanic sub-groups.

Age of Arrival in the United States and English Literacy Measured by the National Adult Literacy Survey

As we discussed earlier, age of arrival in the United States was related to whether or not immigrants learned to speak and read English. Almost everyone who was born in the United States or who arrived before age 12 was fluent and literate in English as an adult in 1992. Many people who arrived in the United States before age 12 were raised in English-speaking homes (Table 2.1). The experience of people who arrived in the United States after age 12 was more varied. In this section, we examine average proficiency scores on the National Adult Literacy Survey to determine whether or not we are able to measure differences in English literacy based upon an individual's age of arrival in the United States.

Among the population as a whole, there were no measurable differences in average proficiency scores on any of the three scales between people born in this country and those who arrived here before they were 12 years old (Table 2.7). However, both these groups did much better on all three literacy scales than people who arrived in the United States at an age older than 12 (Table 2.7).

There was a sharp drop-off in average literacy scores between immigrants who arrived in the United States younger than age 12 and those who arrived between the ages of 12 and 18 (Table 2.7). Many immigrants who arrived between the ages of 12 and 18 never attended American schools. (This will be explored further in Chapter 3.) Those who did attend American schools had only a few years to learn English before moving into the labor force. Additionally, as discussed earlier in this chapter, immigrants who arrived in the United States after age 11 were more likely to grow up in homes where no English was spoken than were immigrants who arrived in this country at a younger age. Thus, it

Table 2.7: Average literacy proficiencies by racial/ethnic group and age of arrival in United States

Average proficiency (s.e.)	Sample size	Population /1000	Prose	Document	Quantitative
Total Population					
U.S.-born	23,197	171,111	280 (0.7)	273 (0.7)	278 (0.8)
Arrived U.S. age 1 to 11	519	3,389	275 (2.8)	270 (3.1)	272 (3.3)
Arrived U.S. age 12 to 18	599	3,830	206 (5.0)	210 (5.2)	212 (5.7)
Arrived U.S. age 19 to 24	666	4,497	200 (4.4)	203 (4.9)	206 (5.3)
Arrived U.S. age 25 or older	1,011	7,790	193 (3.8)	189 (3.8)	192 (4.6)
White					
U.S.-born	16,693	139,554	288 (0.8)	281 (0.9)	288 (0.9)
Arrived U.S. age 1 to 11	158	1,201	300 (3.6)	291 (4.4)	299 (4.0)
Arrived U.S. age 12 to 18	82	646	265 (10.8)	263 (9.5)	269 (8.4)
Arrived U.S. age 19 to 24	117	1,229	247 (10.6)	247 (8.5)	252 (11.6)
Arrived U.S. age 25 or older	197	2,107	236 (7.8)	233 (7.1)	237 (10.1)
Black					
U.S.-born	4,728	19,994	237(1.4)	230 (1.2)	224 (1.4)
Arrived U.S. age 1 to 11	38	138	- - -	- - -	- - -
Arrived U.S. age 12 to 18	49	270	246 (10.4)	245 (9.7)	242 (10.7)
Arrived U.S. age 19 to 24	49	258	242 (14.2)	240 (20.7)	242 (17.9)
Arrived U.S. age 25 or older	86	472	205 (7.1)	198 (10.3)	201 (9.3)
Asian/Pacific Islander					
U.S.-born	87	851	280 (7.9)	271 (9.3)	285 (7.6)
Arrived U.S. age 1 to 11	53	504	287 (8.7)	287 (6.8)	287 (8.7)
Arrived U.S. age 12 to 18	60	464	265 (10.5)	269 (11.3)	279 (11.2)
Arrived U.S. age 19 to 24	73	604	236 (8.9)	238 (8.1)	254 (8.0)
Arrived U.S. age 25 or older	153	1,505	206 (13.5)	216 (11.8)	227 (14.7)
Total Hispanic					
U.S.-born	1,481	8,726	257 (2.3)	254 (2.3)	252 (2.5)
Arrived U.S. age 1 to 11	261	1,490	251 (3.9)	247 (4.5)	246 (5.2)
Arrived U.S. age 12 to 18	397	2,347	173 (5.6)	178 (6.2)	179 (6.5)
Arrived U.S. age 19 to 24	414	2,298	163 (5.2)	166 (5.9)	166 (6.3)
Arrived U.S. age 25 or older	546	3,459	160 (4.3)	151 (4.8)	150 (4.8)
Mexican					
U.S.-born	960	5,521	246 (3.2)	245 (3.0)	244 (3.1)
Arrived U.S. age 1 to 11	109	623	243 (6.6)	241 (6.4)	242 (6.3)
Arrived U.S. age 12 to 18	237	1,401	154 (6.2)	161 (6.8)	164 (7.2)
Arrived U.S. age 19 to 24	232	1,279	142 (5.4)	142 (5.6)	141 (5.8)
Arrived U.S. age 25 or older	225	1,332	138 (3.2)	130 (4.8)	129 (4.7)
Puerto Rican					
U.S.-born	175	898	250 (6.0)	250 (6.3)	245 (6.6)
Arrived U.S. age 1 to 11	64	313	223 (11.2)	220 (9.5)	212 (10.6)
Arrived U.S. age 12 to 18	57	330	193 (21.6)	194 (14.5)	191 (21.6)
Arrived U.S. age 19 to 24	55	249	181 (12.9)	186 (13.7)	185 (11.1)
Arrived U.S. age 25 or older	50	374	190 (15.1)	166 (16.8)	168 (20.2)
Cuban					
U.S.-born	21	100	- - -	- - -	- - -
Arrived U.S. age 1 to 11	26	171	- - -	- - -	- - -
Arrived U.S. age 12 to 18	17	119	- - -	- - -	- - -
Arrived U.S. age 19 to 24	9	66	- - -	- - -	- - -
Arrived U.S. age 25 or older	74	476	172 (13.0)	174 (19.0)	183 (19.1)
Central/South American					
U.S.-born	43	292	- - -	- - -	- - -
Arrived U.S. age 1 to 11	43	242	- - -	- - -	- - -
Arrived U.S. age 12 to 18	62	330	189 (9.9)	191 (10.6)	187 (12.4)
Arrived U.S. age 19 to 24	83	513	179 (9.3)	189 (10.7)	187 (12.3)
Arrived U.S. age 25 or older	147	912	176 (11.4)	170 (10.4)	167 (11.3)
Other Hispanic					
U.S.-born	282	1,916	283 (6.7)	277 (6.4)	273 (7.4)
Arrived U.S. age 1 to 11	19	142	- - -	- - -	- - -
Arrived U.S. age 12 to 18	24	168	- - -	- - -	- - -
Arrived U.S. age 19 to 24	35	191	- - -	- - -	- - -
Arrived U.S. age 25 or older	50	365	154 (17.7)	134 (13.0)	119 (17.1)
Other					
U.S.-born	208	1,986	255 (4.6)	255 (5.5)	253 (5.4)
Arrived U.S. age 1 to 11	9	56	- - -	- - -	- - -
Arrived U.S. age 12 to 18	11	103	- - -	- - -	- - -
Arrived U.S. age 19 to 24	13	108	- - -	- - -	- - -
Arrived U.S. age 25 or older	29	247	- - -	- - -	- - -

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

was expected that their scores on a test of English literacy would be lower than the scores of immigrants who arrived in this country at a younger age.

This same general pattern held for the individual racial and ethnic groups, although because of smaller sample size it was somewhat harder to measure. Whites and Asians/Pacific Islanders who arrived in the United States as adults age 25 or older, scored lower on all three literacy scales than whites and Asians/Pacific Islanders who were born in the United States or arrived at age 1 to 11 (Table 2.7). Although it appears that whites and Asians/Pacific Islanders who were born in the United States had slightly lower scores on all three literacy scales than those who arrived before age 12, the differences were not greater than could have occurred by chance (Table 2.7). There were so few blacks in the sample who were not born in the United States that we cannot report any differences between groups of blacks based on their age of arrival.

Hispanics who arrived before age 12, or who were born in the United States, did significantly better on all three literacy scales than Hispanics who arrived in the United States after age 12 (Table 2.7). This was expected since, as we discussed earlier, Hispanics who arrived in this country before age 12 were more likely to have grown up in homes where English was spoken. Looking at the sub-groups of Hispanics, this was also true of Mexicans, the largest group of Hispanic immigrants in the United States (Table 2.7). Puerto Ricans who were born in the mainland United States did better on all three scales than Puerto Ricans who arrived at age 25 or older (Table 2.7). The sample size was too small for the other Hispanic sub-groups to reach any conclusions about the relationship between age of arrival in the United States and English proficiency as measured by the National Adult Literacy Survey.

Language Spoken in the Home While Growing Up and English Literacy Measured by the National Adult Literacy Survey

Language spoken in the home while growing up was also related to adult literacy. People who grew up in homes where a European language or an Asian language was spoken in addition to English received, on average, scores on all three literacy scales that were not statistically different from people who grew up in homes where only English was spoken (Table 2.8). In fact, people who grew up in homes where an Asian language was spoken in addition to English were somewhat less likely as adults to be in

Level 1, the lowest level on the document and quantitative literacy scales of the National Adult Literacy Survey (Table 2.8).

People who grew up in homes where only an Asian or only a European language was spoken did worse on average on all three literacy scales than people who grew up in homes where only English or English plus a European, Spanish, or Asian language was spoken (Table 2.8). People who grew up in homes where only an Asian, Spanish, or European language was spoken were also more likely than people who grew up in homes where only English was spoken to have scored in the lowest level on all three National Adult Literacy Survey scales (Table 2.8).

People who grew up in bilingual homes where Spanish was spoken in addition to English did somewhat worse, on average, on all three literacy scales than people who grew up in homes where only English was spoken (Table 2.8). They were also more likely to score in Level 1 on the quantitative scale, although not on the prose or document scales, than people raised in homes where only English was spoken (Table 2.8). However, the people who grew up in homes where both English and Spanish were spoken did better on average on all three scales than people who grew up in homes where only Spanish was spoken (Table 2.8).

Thus, people who grew up in homes where no English was spoken had, on average, lower English literacy as adults than people who grew up in homes where English was spoken. As discussed earlier, most of the people who grew up in homes where English was spoken were not born in the United States. However, people who grew up in homes where a European or Asian language was spoken in addition to English, had literacy scores that were comparable, on average, to people who grew up in homes where only English was spoken. People who grew up in homes where Spanish was spoken in addition to English had, on average, lower literacy scores than people who grew up in homes where only English was spoken, but higher literacy scores than people who grew up in homes where only Spanish was spoken. As discussed earlier, most of the people who grew up in bilingual homes where a second language was spoken in addition to English were born in this country.

Language Spoken in the Home Before Starting School and Measured English Literacy

As we discussed earlier in this chapter, language(s) spoken in the home while growing up was related to language(s) spoken by an individual

Table 2.8: Average literacy proficiencies and literacy levels by language spoken in home while growing up

Row percent (s.e.)	Sample size	Population /1000	Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Average proficiency
PROSE								
English only	21,242	156,620	16 (0.4)	27 (0.6)	34 (0.8)	19 (0.5)	4 (0.2)	282 (0.7)
English/Spanish	789	4,406	23 (2.5)	34 (3.6)	32 (3.6)	11 (1.8)	1 (0.6)	261 (3.2)
English/European	1,017	8,426	19 (2.3)	26 (2.4)	33 (2.8)	19 (2.3)	3 (0.7)	278 (3.5)
English/Asian	56	394	5 (3.5)	28 (13.5)	42 (11.5)	24 (10.5)	1 (1.5)	297 (9.7)
English/other	235	1,901	21 (5.0)	31 (5.6)	36 (4.3)	10 (2.6)	2 (1.3)	264 (8.4)
Spanish/other	25	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Other/other	258	2,358	45 (3.8)	28 (4.8)	19 (3.9)	7 (2.3)	1 (0.7)	223 (6.9)
Spanish only	1,866	10,979	71 (2.1)	20 (1.8)	8 (1.3)	2 (0.7)	0 (0.2)	178 (3.1)
European only	404	4,092	43 (4.1)	28 (3.9)	19 (2.9)	8 (2.1)	1 (1.2)	230 (5.7)
Asian only	162	1,629	56 (5.0)	24 (6.7)	15 (5.9)	5 (2.1)	1 (0.5)	198 (9.0)
DOCUMENT								
English only	21,242	156,620	18 (0.6)	28 (0.6)	33 (0.6)	17 (0.4)	3 (0.2)	276 (0.8)
English/Spanish	789	4,406	24 (2.4)	37 (2.8)	29 (3.2)	10 (1.9)	1 (0.8)	259 (3.0)
English/European	1,017	8,426	25 (2.7)	29 (2.4)	29 (2.6)	15 (2.0)	2 (0.8)	266 (3.5)
English/Asian	56	394	4 (2.8)	24 (9.0)	38 (8.2)	29 (10.0)	4 (3.6)	304 (10.0)
English/other	235	1,901	26 (5.7)	31 (6.9)	33 (5.8)	9 (3.5)	1 (1.3)	258 (8.9)
Spanish/other	25	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Other/other	258	2,358	43 (4.2)	25 (4.3)	24 (5.8)	8 (4.9)	1 (0.7)	232 (7.2)
Spanish only	1,866	10,979	69 (2.1)	21 (1.6)	9 (1.2)	1 (0.5)	0 (0.2)	177 (3.4)
European only	404	4,092	45 (3.3)	30 (3.6)	17 (3.3)	8 (2.0)	1 (0.6)	228 (4.5)
Asian only	162	1,629	55 (4.4)	21 (4.0)	19 (2.9)	4 (2.1)	1 (0.8)	201 (8.0)
QUANTITATIVE								
English only	21,242	156,620	17 (0.6)	25 (0.6)	33 (0.6)	19 (0.4)	5 (0.2)	280 (0.8)
English/Spanish	789	4,406	28 (2.5)	32 (2.6)	30 (3.3)	9 (2.2)	2 (0.9)	257 (3.8)
English/European	1,017	8,426	22 (2.3)	25 (2.3)	32 (2.7)	18 (2.1)	3 (0.8)	274 (3.8)
English/Asian	56	394	4 (2.7)	19 (13.2)	42 (12.4)	28 (9.9)	7 (9.1)	308 (11.8)
English/other	235	1,901	25 (5.4)	27 (3.7)	34 (5.8)	11 (3.6)	2 (1.6)	262 (11.0)
Spanish/other	25	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Other/other	258	2,358	38 (3.2)	27 (3.7)	24 (3.6)	9 (2.4)	1 (0.8)	236 (7.4)
Spanish only	1,866	10,979	68 (1.9)	20 (1.9)	10 (1.3)	2 (1.0)	0 (0.3)	177 (3.4)
European only	404	4,092	41 (3.4)	27 (3.0)	19 (2.3)	10 (1.9)	2 (1.5)	233 (5.7)
Asian only	162	1,629	46 (4.7)	22 (4.3)	22 (4.0)	9 (2.4)	2 (1.4)	221 (9.4)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

before starting school. Therefore, it is not surprising that when we looked at the relationship between literacy, as measured by the National Adult Literacy Survey, and the language(s) spoken by an individual before starting school, we noticed a pattern similar to the one we discussed when we looked at the relationship between literacy and the language(s) spoken in the home before a respondent started school.

Table 2.9: Average literacy proficiencies and literacy levels by language spoken before starting school

Row percent (s.e.)	Sample size	Population /1000	Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Average proficiency
PROSE								
English only	21,986	162,078	16 (0.4)	27 (0.6)	35 (0.8)	19 (0.5)	4 (0.2)	282 (0.7)
English/Spanish	592	3,419	25 (2.7)	36 (4.1)	29 (3.7)	9 (1.6)	1 (0.6)	257 (3.1)
English/European	492	4,360	20 (3.3)	27 (3.2)	32 (2.5)	17 (1.9)	4 (1.0)	275 (3.9)
English/Asian	34	242	- - -	- - -	- - -	- - -	- - -	- - -
English/other	147	1,324	29 (8.4)	31 (5.1)	29 (5.1)	9 (3.8)	2 (1.9)	246 (15.7)
Spanish/other	17	159	- - -	- - -	- - -	- - -	- - -	- - -
Other/other	275	2,226	41 (3.6)	29 (4.3)	22 (3.9)	8 (2.2)	0 (0.6)	234 (5.3)
Spanish only	1,895	11,074	69 (1.8)	19 (1.6)	9 (1.4)	3 (0.7)	0 (0.2)	180 (2.8)
European only	434	4,428	42 (3.3)	29 (3.4)	20 (2.3)	8 (2.0)	1 (1.0)	232 (5.1)
Asian only	173	1,683	51 (5.0)	27 (5.5)	17 (5.4)	5 (2.2)	0 (0.5)	205 (8.8)
DOCUMENT								
English only	21,986	162,078	18 (0.6)	28 (0.7)	33 (0.6)	17 (0.4)	3 (0.2)	275 (0.8)
English/Spanish	592	3,419	27 (2.6)	36 (3.0)	27 (3.1)	9 (1.6)	1 (0.6)	256 (3.0)
English/European	492	4,360	29 (3.8)	30 (3.3)	26 (3.3)	13 (1.8)	2 (1.0)	260 (3.9)
English/Asian	34	242	- - -	- - -	- - -	- - -	- - -	- - -
English/other	147	1,324	35 (9.1)	29 (6.8)	26 (7.4)	9 (3.6)	1 (1.4)	247 (14.8)
Spanish/other	17	159	- - -	- - -	- - -	- - -	- - -	- - -
Other/other	275	2,226	40 (3.9)	27 (3.8)	23 (5.0)	9 (4.8)	1 (0.7)	237 (6.5)
Spanish only	1,895	11,074	68 (2.0)	21 (1.5)	10 (1.3)	2 (0.6)	0 (0.2)	179 (3.2)
European only	434	4,428	44 (3.2)	29 (3.2)	18 (3.0)	8 (2.0)	1 (0.7)	230 (4.0)
Asian only	173	1,683	50 (4.3)	23 (3.9)	20 (2.8)	6 (2.5)	0 (0.5)	209 (8.0)
QUANTITATIVE								
English only	21,986	162,078	18 (0.5)	25 (0.5)	33 (0.6)	19 (0.4)	4 (0.2)	280 (0.8)
English/Spanish	592	3,419	30 (2.6)	33 (3.5)	27 (3.8)	8 (2.4)	2 (0.9)	252 (3.1)
English/European	492	4,360	23 (3.0)	28 (3.4)	27 (3.4)	19 (2.6)	4 (1.4)	270 (3.9)
English/Asian	34	242	- - -	- - -	- - -	- - -	- - -	- - -
Spanish/other	17	159	- - -	- - -	- - -	- - -	- - -	- - -
English/other	147	1,324	34 (8.4)	25 (5.8)	30 (7.3)	9 (4.3)	2 (1.3)	246 (18.6)
Other/other	275	2,226	35 (3.6)	29 (5.1)	25 (4.0)	10 (2.8)	1 (0.7)	243 (5.4)
Spanish only	1,895	11,074	66 (1.6)	20 (1.6)	11 (1.1)	2 (0.9)	0 (0.3)	179 (3.1)
European only	434	4,428	41 (3.2)	26 (3.6)	21 (2.6)	10 (1.9)	2 (1.1)	233 (5.5)
Asian only	173	1,683	41 (4.4)	23 (4.2)	23 (3.9)	10 (2.3)	2 (1.5)	228 (8.6)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

People who spoke no English before starting school did less well, on average, on all three literacy scales than people who spoke only English before starting school (Table 2.9). People who spoke English and a European language other than Spanish before starting school did the same, on average, on the prose and quantitative scales of the National Adult Literacy Survey, and slightly worse on the document scale, as people who spoke only English before starting school (Table 2.9). People who spoke English and Spanish before starting school did slightly worse

on all three literacy scales than people who spoke only English before starting school, but better than people who spoke only Spanish (Table 2.9). We did not have enough people in the sample who spoke both English and an Asian language before starting school to report any results.

Summary

There was a relationship between some of the demographic variables we looked at in this chapter and the probability that an adult living in the United States would be fluent and literate in English. Virtually everyone born in the United States and everyone who immigrated to the United States before age 12 reported being fluent and literate in English as an adult. Indeed, there was no measurable difference on any of the three National Adult Literacy Survey scales between the average scores of people born in the United States and the average scores of people who immigrated to the United States before age 12. The fact that over one-half of people who immigrated to the United States before age 12 reported they were raised in homes where English was spoken contributes to this high rate of English literacy and fluency, but the 42 percent of young immigrants who were not raised in homes where English was spoken must have learned English in school or another place outside the home. Almost everyone who grew up in a house where a second language was spoken in addition to English reported that they were fluent and literate in English as an adult.

There was also a relationship between many of the demographic variables examined in this chapter and the likelihood that an adult living in the United States would be fluent and literate in both English and a language other than English that was learned before starting school. Hispanics and Asians/Pacific Islanders were much more likely than whites and blacks to be fluent and literate in both English and a non-English native language. This was partly because whites and blacks were much less likely than Asian/Pacific Islanders to have spoken a language other than English during early childhood.

However, even if we look only at people who were raised in homes where a language other than English was spoken, respondents who grew up in homes where Spanish or an Asian language was spoken were more likely to speak that language as adults than respondents who grew up in homes where a European language other than Spanish was spoken.

Respondents who were fluent and literate in both English and a native language other than English had lower average scores on all three literacy scales than respondents who spoke only English as adults. This was not surprising, since English was the second language of these bilingual respondents.

Approximately 3 percent of adults living in the United States were not fluent and literate in English. However, over one quarter of immigrants who moved to the United States at age 12 or older were not fluent in English. People raised in households where only Spanish was spoken were more likely than people raised in households where only an Asian or European language other than Spanish was spoken to report that they did not regularly speak English. However, this difference is probably related to the fact that the background questionnaire was only available in English and Spanish.

Much of the difference in performance between racial and ethnic groups on the literacy scales was related to differences in language background between racial and ethnic groups. Whites did better, on average, on all three literacy scales than blacks, Hispanics, Asians/Pacific Islanders and people of other races/ethnic groups. However, when we looked only at the scores of people who were coded English monolingual as adults, that is, people who spoke only English before starting school or people who speak only English now, the difference between whites and Asians/Pacific Islanders disappeared, and the difference between whites and Hispanics narrowed. The differences between whites and blacks did not change when we look only at people who were coded English monolingual, since very few members of either group spoke a language other than English before starting school and still spoke that language as adults.

CHAPTER 3

Schooling, Language Background, and Literacy Proficiency

This chapter examines the relationship between English literacy and formal education among adults living in the United States. We look at this relationship within the context of language background, which Chapter 2 showed to be related to English literacy. Throughout this chapter, we see that higher levels of schooling are associated with higher levels of English language proficiency.

Formal education plays a fundamental role in enabling the U.S. population to become literate in the English language. This chapter focuses on the relationship between education and English literacy for U.S. adults who learned a language other than English before going to school. The analyses will indicate that immigrants who arrived in the United States as children developed higher levels of English literacy skills than immigrants who arrived later in life. The education young immigrants received in U.S. schools played a primary role in adoption of the English language. The level of education received by adult immigrants in their native countries was also positively associated with English literacy after arriving in the United States.

While nations differ in the number of years of instruction students receive at the elementary, secondary, and postsecondary levels, the relevance of these international differences to the findings presented in this chapter is minimized for two reasons. First, while the questionnaire items that measure education reflect U.S. practices in terms of the length of time spent in elementary and secondary education, interviewers were instructed to probe for equivalent levels of education if a respondent indicated that he or she went to school outside the United States. Second, comparisons are generally limited to three broad educational categories: less than secondary, secondary only, and some postsecondary.

Hispanics comprise the largest language minority group in the United States. Therefore, this chapter will focus on the experiences of the Hispanic population as well as the experience of immigrants in the United States. The reader is cautioned against making comparisons between Hispanics and other racial/ethnic groups or between native Spanish speakers and native speakers of other non-English languages. The

screening instrument used for the National Adult Literacy Survey in 1992 was available in English and Spanish, but not in other non-English languages. The results presented here, therefore, reflect substantially different populations for Spanish and non-Spanish language minorities. For non-Spanish language minority populations we only have data from those individuals who were able to complete the background questionnaire in English. This upwardly biases the estimates of English literacy for non-Spanish language groups.

Most of the analyses in this chapter made use of derived variables, which reflected respondents' self-assessed fluency and literacy. These variables were constructed using information from the background questionnaire. As explained in Chapter 1, each individual who participated in the National Adult Literacy Survey was asked to complete a background questionnaire, as well as a booklet of prose, document, and quantitative literacy tasks. Respondents who spoke a language other than English before starting school were asked questions about fluency and literacy in that language. We used the answers to these items to determine each individual's fluency and literacy in English and non-English languages. As discussed in Chapter 1, individuals who stated that they spoke or understood a language well or very well were coded as being fluent in that language. Those who answered that they spoke and understood a language poorly or not at all were coded not fluent. A similar procedure was followed for literacy. Individuals who claimed to read or write a language well or very well were coded literate in that language, while those who claimed to read and write it poorly or not at all were coded not literate.

Because questions about fluency and literacy in a language other than English were asked only of respondents who spoke a language other than English before starting school, the biliterate and bilingual categories in this report referred only to native speakers of a language other than English. People who learned a second language in school or as an adult were always coded as monoliterate/English monolingual, since no questions asked about languages other than English that were learned at school or in other settings.

Educational Attainment

The amount of formal education an individual living in the United States receives influences many aspects of his or her life. Therefore, differences in the amount of schooling completed by the members of various language

background groups should be taken into consideration when examining other differences in life outcomes. This section compares the aggregate education levels of adults born in the United States to those born in other countries, and explores the relationship between formal education level and current English language proficiency.

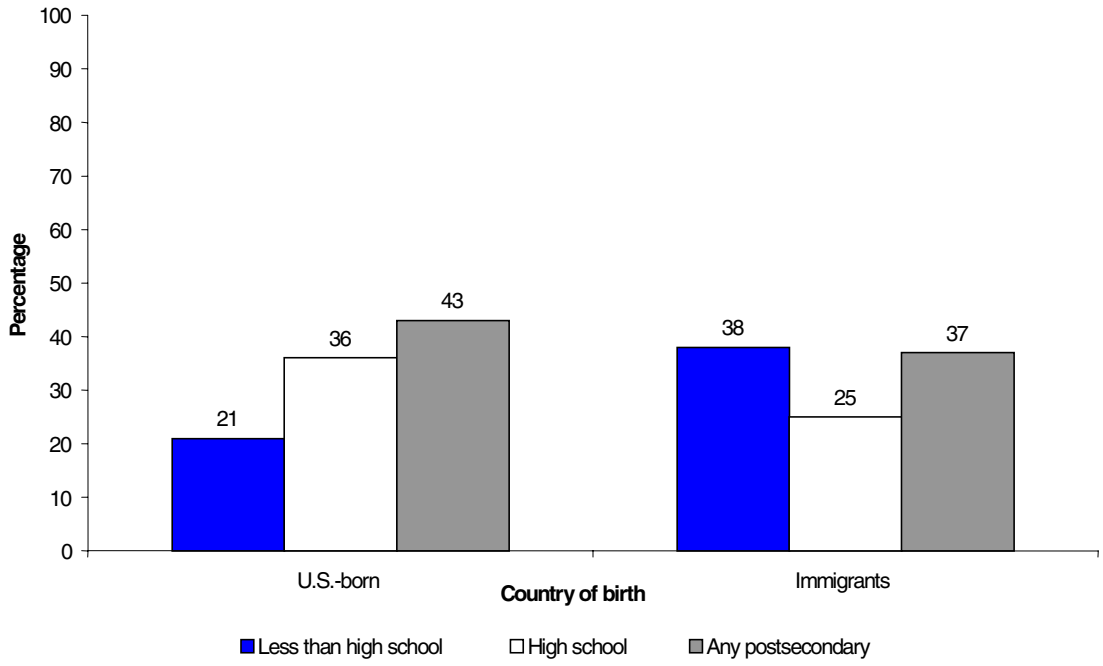
In order to keep the distinctions of education level meaningful and to help ensure adequate cell size for statistical analyses, we divided the National Adult Literacy Survey sample into only three educational attainment categories: respondents who left school without earning a high school diploma; those who completed their education by earning a high school diploma or GED (this group also included a small proportion of individuals who were still attending high school at the time of the survey); and individuals who received at least some form of postsecondary education.

U.S.-born adults had significantly higher levels of education than those born in other countries (Figure 3.1). They were significantly more likely to have finished high school and to have some college experience. Immigrants were more likely to have left school before finishing high school.

Immigrants attained education levels similar to people born in the United States, except for those from Spanish-speaking countries. Immigrants from Spanish-speaking countries were more likely to leave school before finishing high school and less likely to receive some postsecondary education than other immigrants (Figure 3.2). Immigrants from other European language countries were more likely to continue their education after high school than people born in the United States. Other differences observed between immigrants from non-Spanish language countries and the U.S.-born population were not statistically significant.

Hispanic immigrants were significantly more likely than those from countries in which European, Asian, or other languages predominate to have left school without a high school diploma. Over half of the immigrants from Spanish-speaking countries had not finished high school, compared to less than one-quarter of those born in non-Spanish countries. People born in Spanish-speaking countries were also significantly less likely than immigrants from other countries to have any postsecondary experience. Only one-fifth of Hispanic immigrants had received any education beyond high school. This sharply contrasts with the roughly half of other immigrants who had some college experience.

Figure 3.1: Level of educational attainment by immigration status



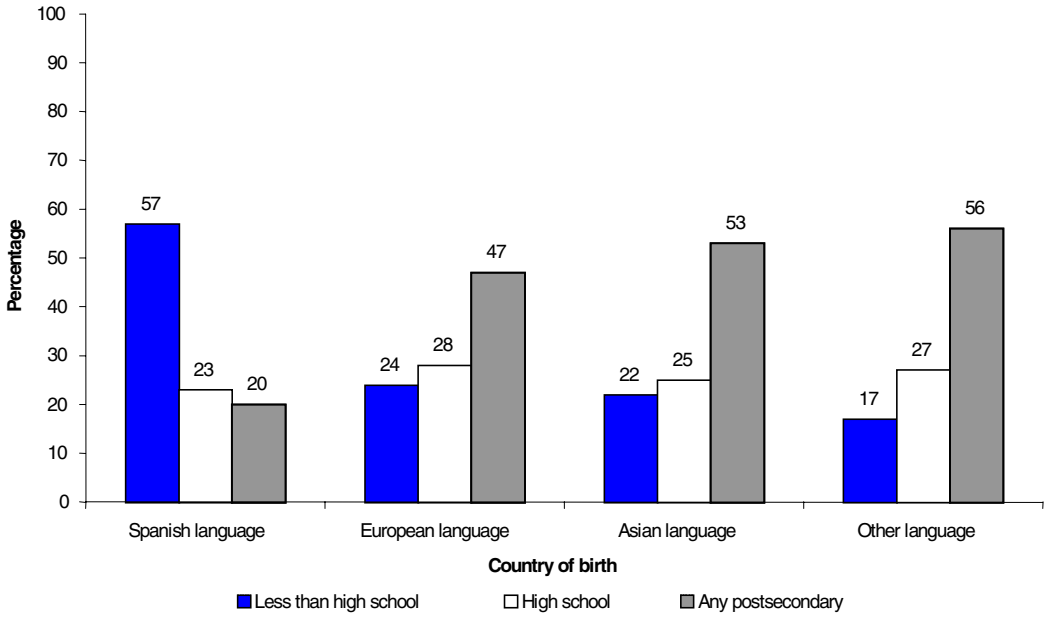
Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish-speaking and other non-English-speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Differences in the aggregate education levels of non-Spanish-speaking immigrants were small and generally not statistically significant.

This difference between the education level of immigrants from Spanish-speaking countries and immigrants from non-Spanish-speaking countries probably stems from geography, as well as different reasons for being in the United States. The relative proximity of Mexico and other Latin America countries to the United States presents a lower financial barrier to immigration than travel over an ocean. Therefore, social class may have been less of a barrier to immigration from Spanish-speaking countries than from elsewhere in the world. In addition, as discussed in Chapter 4, many Spanish-speaking immigrants worked as low-wage workers in U.S. agriculture and industry. In contrast, *The Chronicle of Higher Education* reports that foreign-born adults from other parts of the world more often came to the United States seeking higher education. Over half of foreign students attending U.S. colleges and universities come from

Figure 3.2: Level of educational attainment by country of birth



Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish-speaking and other non-English-speaking adults may not be accurate, since the samples are not comparable for these populations.

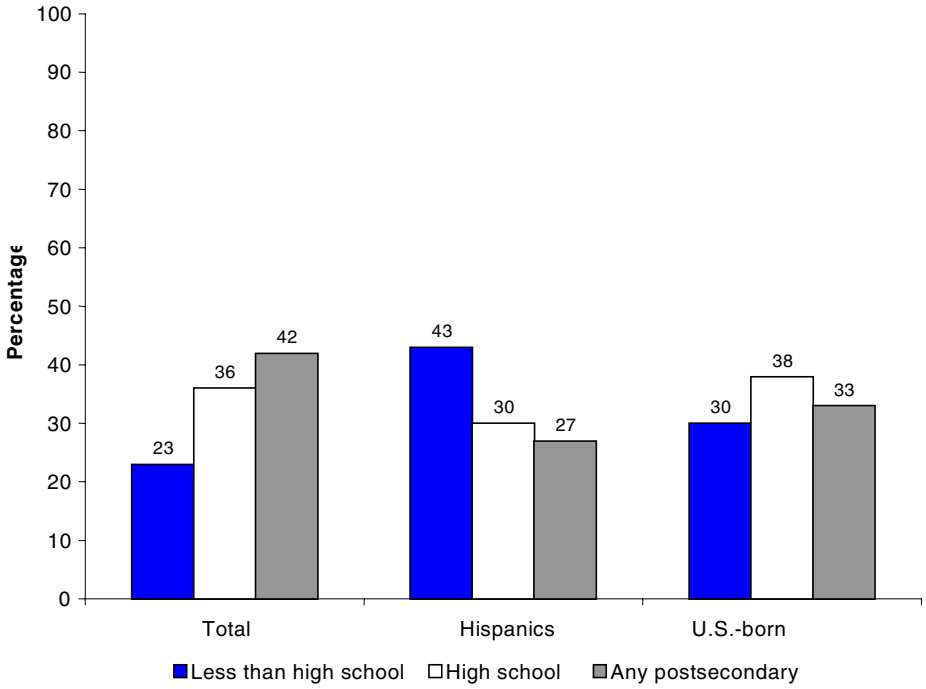
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Asian countries.[1] Some of the difference in educational attainment between immigrants from Spanish-speaking countries and immigrants from other countries may be attributed to the fact that the background survey was only available in English and Spanish.

A large proportion of the Hispanic population was born outside the United States. Therefore, it is not surprising that the education level of Hispanics as a group fell significantly below the U.S. average (Figure 3.3). Hispanics were nearly twice as likely to have left school before finishing high school as other members of the total U.S. population. Hispanics were also significantly less likely to enter college than those born in the United States: 27 percent of Hispanics had some postsecondary training compared to 42 percent of all adults living in the United States. The educational disadvantage of Hispanics was not limited to immigrant members of this group. U.S.-born Hispanics were also less likely to receive postsecondary education than total adult population (Figure 3.3).

[1] *The Chronicle of Higher Education.* December 12, 1997. Page A42.

Figure 3.3: Level of educational attainment among all U.S. adults, all Hispanics, and U.S.-born Hispanics



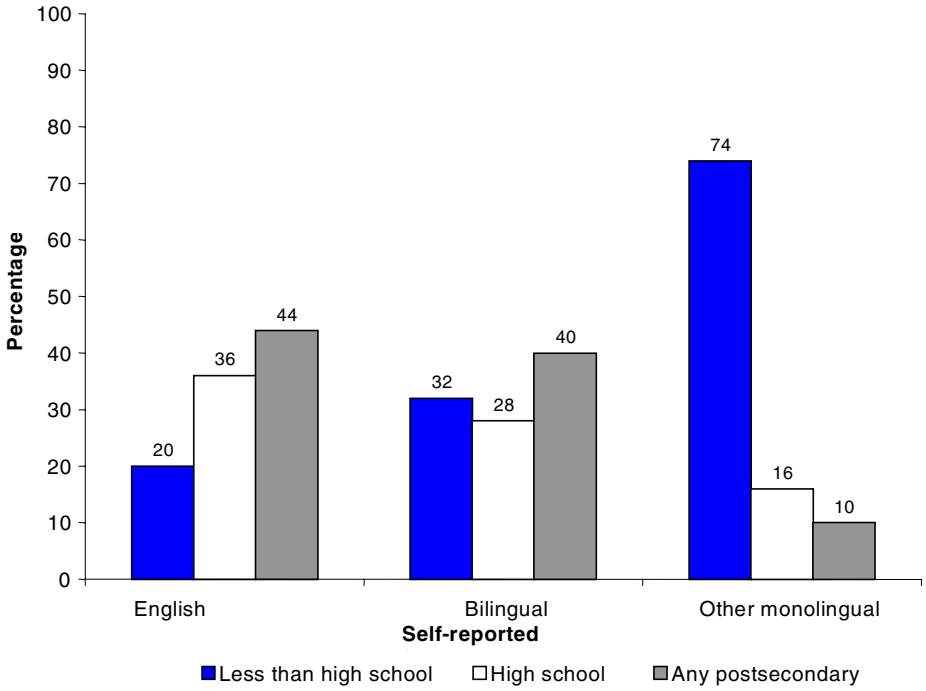
Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

A substantial fraction of native-born adults, as well as most foreign-born adults, had language backgrounds that were not exclusively English. Therefore, an analysis that looks only at country of birth and Spanish ethnicity presents an incomplete story of the role language plays in educational attainment. Figures 3.4 and 3.5 illustrate the relationship between self-assessed English fluency and literacy and educational attainment.

These figures indicate that exclusive use of non-English languages in the U.S. adult population is strongly related to attainment of low levels of formal education. Proportionately more adults who exclusively spoke, read, and wrote only one language other than English (other monolinguals and other monoliterates) had less than a high school education than those who were English monolingual or bilingual. Nearly three quarters of those who spoke a non-English language exclusively had less than a high school

Figure 3.4: Level of educational attainment by self-reported fluency



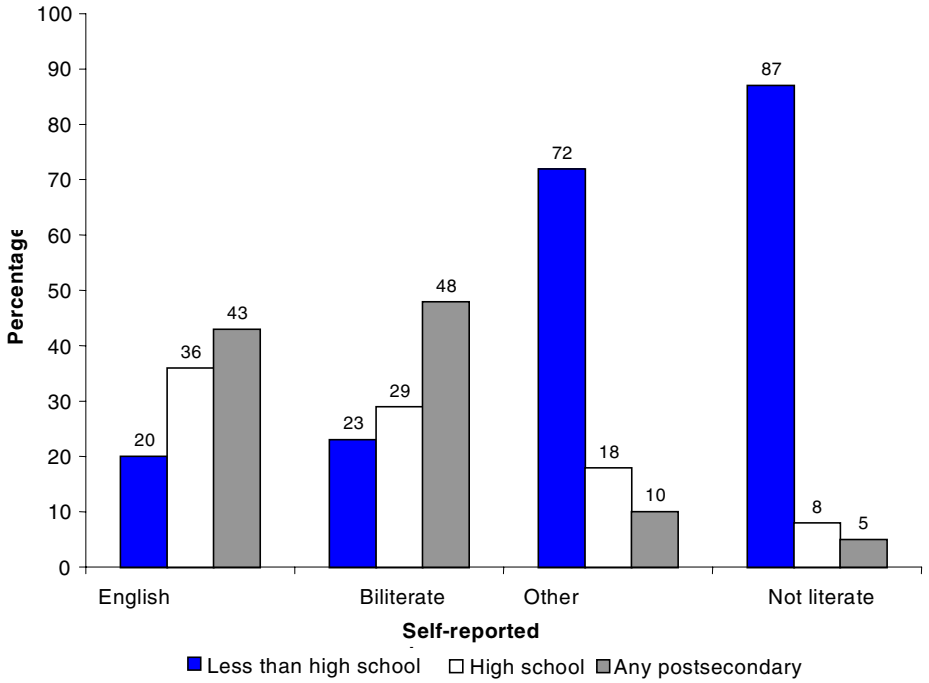
Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

education. In contrast, only 20 percent of the English monolingual population and 32 percent of the bilingual population did not finish high school. Furthermore, 87 percent of those who reported that they were not literate in any language had less than a high school education. Again, this may reflect differences in prior schooling among immigrant adults.

The educational differences between those who use both a non-English language and English as their second language, and those who use English exclusively or as their native language, were more subtle. Bilingual individuals were less likely to finish high school than people who spoke English only. Approximately one-third of the bilingual population failed to complete high school compared to only 20 percent of those who spoke English exclusively or as their native language. The biliterate population,

Figure 3.5: Level of educational attainment by self-reported literacy



Respondents who reported that they spoke only English before starting school and who report that they read or wrote English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

however, had an educational advantage over those who read and wrote English as their native or only language. Nearly half of biliterate individuals had some postsecondary education compared to 43 percent of individuals who read and wrote English only. This high level of education among biliterate individuals was not due to learning a non-English language in school, as only respondents who learned a language other than English before going to school were coded biliterate. While the estimated 23 percent of biliterate individuals who did not complete high school was nominally higher than the 20 percent estimate for individuals who were English monoliterates, this difference was not larger than could have occurred by chance.

Figure 3.2 indicates that immigrant populations differed in their formal levels of education depending on what language was spoken in

their country of origin. The low levels of education of immigrants from Spanish-speaking countries were reflected in the low education levels of the entire Hispanic population. In Chapter 2, we saw a related pattern. Hispanics were less likely than those from other ethnic groups to claim proficiency in spoken and written English. Hispanics were more likely to retain exclusive use of Spanish than were native speakers of other non-English languages. Hispanics were less likely to speak, read, and write English because Hispanic immigrants were less educated than immigrants from non-Spanish language countries. This study showed that the majority of adults who were fluent or literate only in languages other than English did not finish high school (Figures 3.3 and 3.4).

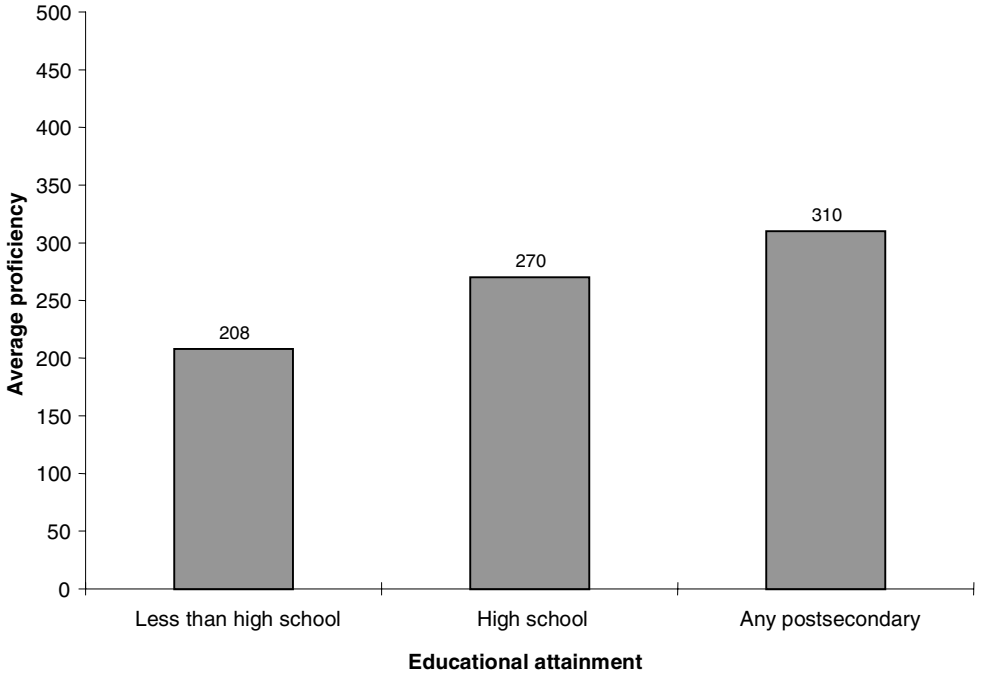
Immigrants from Spanish language countries had significantly lower education levels than both the native-born population and the foreign-born from non-Spanish language countries. The difference in formal education level among the foreign and U.S.-born members of the Hispanic population was related to the tendency to retain exclusive or primary use of Spanish. We now turn to exploring the relationship between formal education level and English literacy skills as measured by the National Adult Literacy Survey.

Education Attainment and Measured Prose Literacy

The observed relationship between education level and the life outcomes of today's adults has magnified the importance of understanding how education level is related to valued labor market skills, such as English literacy. In the next section we explore the relationship between prose literacy as measured by the National Adult Literacy Survey, education level, country of birth, and language status. We explore the labor market implications of these relationships in Chapter 4.

The amount of schooling a person completed was positively associated with his or her degree of English literacy. Simply put, the longer people stayed in school, the better they read English on average. It is important to remember that schooling is both a cause and effect of literacy proficiency. Not only does formal instruction develop English literacy skills, but individuals with stronger literacy skills may be inclined to stay in school longer. While it is difficult to identify cause and effect in the relationship between education and literacy skills, the existence of a positive relationship is clear (Figure 3.6). Individuals who have graduated from high school averaged 270 on the prose literacy scale, 62 points higher

Figure 3.6: Average prose proficiency by educational attainment



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

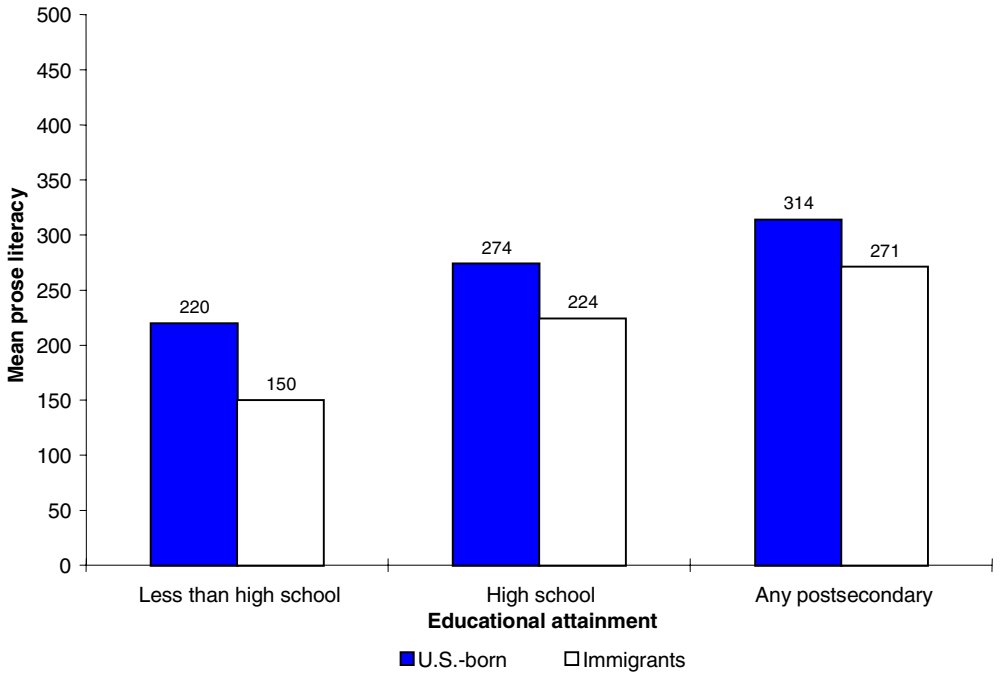
than individuals who failed to complete high school. Individuals who have gone on to college scored higher still, averaging 310.

The presence of immigrants and other individuals who currently use a language other than English in the U.S. population complicates our understanding of the relationship between education and English literacy. For instance, foreign-born adults who received much or all of their schooling abroad in a language other than English may, quite understandably, not read and write English as well as native speakers of English who received the same nominal level of instruction, but received all their schooling in English. Furthermore, as we saw in the previous section, immigrants from different parts of the world differed substantially in the amount of education they had completed. They also differed in their use of the English language prior to and after their arrival in the United States. National Adult Literacy Survey data allow us to investigate the relationship of country of birth, language status, formal level of education, and objective measures of English literacy.

Average scores on the prose literacy scale demonstrated a positive relationship with formal education level both for those born in the United States and for those born in other countries (Figure 3.7). Mean prose proficiency scores for the U.S.-born population increased from 220 for those who did not finish high school to 274 for high school graduates. The prose proficiency score for U.S.-born individuals with at least some college experience increases further still to 314. In the immigrant population, scores rise significantly at each step from 150 to 224 to 271, from the lowest education level to the highest. While the native-born population scored significantly higher on the prose literacy scale, within each educational category the foreign-born with postsecondary experience scored on par with native-born high school graduates and significantly higher than U.S. natives who had not completed high school.

Increases in formal education level seemed to be associated with higher mean prose literacy scores for immigrants, regardless of the language spoken in their county of birth (Table 3.1). However, due to the small number of cases of immigrants from Asian language and other

Figure 3.7: Average prose proficiency by educational attainment and immigration status



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

language backgrounds, we were not able to determine if all the observed differences between education levels within the Asian and other language groups were due to factors other than chance.

Due primarily to the large immigrant component of the Hispanic population, Hispanics scored significantly lower on the prose literacy scale than the total population, both overall and within the same education level. The differences in scale scores within the same education level between U.S.-born Hispanics and the total population were small and generally not statistically significant (Table 3.2). Only the mean scale score of U.S.-born Hispanics with some college experience was significantly lower than their counterparts in the total population. As we discussed in the previous section, however, the U.S.-born Hispanics had

Table 3.1: Average prose proficiency by educational attainment and country of birth

Average proficiency (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary	All
Country of birth						
United States	23,178	170,947	220 (1.5)	274 (0.9)	314 (0.9)	280 (0.7)
Spanish language countries	1,605	9,428	141 (3.1)	211 (4.9)	242 (4.6)	178 (3.0)
European language countries	521	4,745	182 (9.5)	245 (5.9)	297 (3.9)	254 (4.5)
Asian language countries	280	2,728	- - -	216 (19.0)	264 (7.1)	226 (8.4)
Other	443	2,848	188 (12.9)	233 (8.7)	275 (4.5)	249 (3.8)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish-speaking and other non-English-speaking adults may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table 3.2: Average prose proficiency by educational attainment and Hispanic ethnicity

Average proficiency (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary	All
Total population	26,027	190,695	208 (1.6)	270 (0.9)	310 (0.8)	273 (0.6)
Hispanics	3,093	18,236	162 (3.3)	242 (3.3)	275 (2.9)	216 (2.1)
U.S.-born Hispanics	1,480	8,726	205 (4.8)	262 (3.0)	296 (3.3)	257 (2.3)

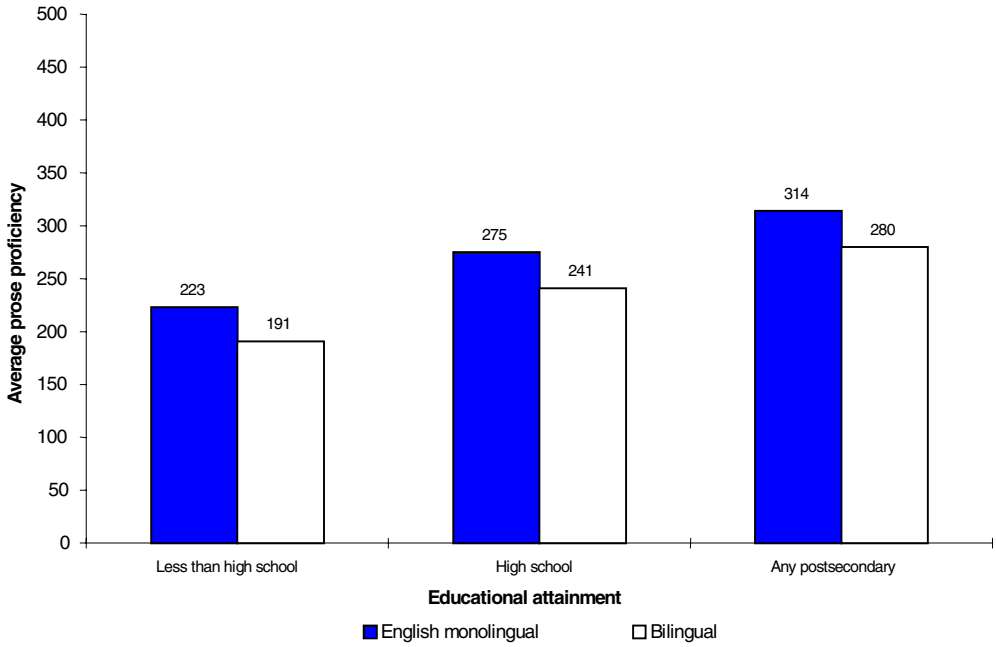
Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

lower average levels of educational attainment than the total population of the United States and hence lower scale scores overall.

Bilingual individuals, as defined in this report, all spoke a language other than English before starting school. Hence, it was not surprising that even when we hold education level constant, bilingual individuals scored lower on the prose literacy scale than those who spoke English only or as their native language (Figure 3.8). Within all three education levels, those who spoke English exclusively or as their native language scored approximately 30 points higher than those who spoke English in addition to another language. It is important to point out that this means that people who were bilingual appeared to benefit equally, in terms of increases in measured English proficiency, from receiving formal education, as did those who spoke English exclusively or as a native language. A similar pattern was observed among individuals based on self-assessed literacy.

Figure 3.8: Average prose proficiency by educational attainment and self-reported fluency

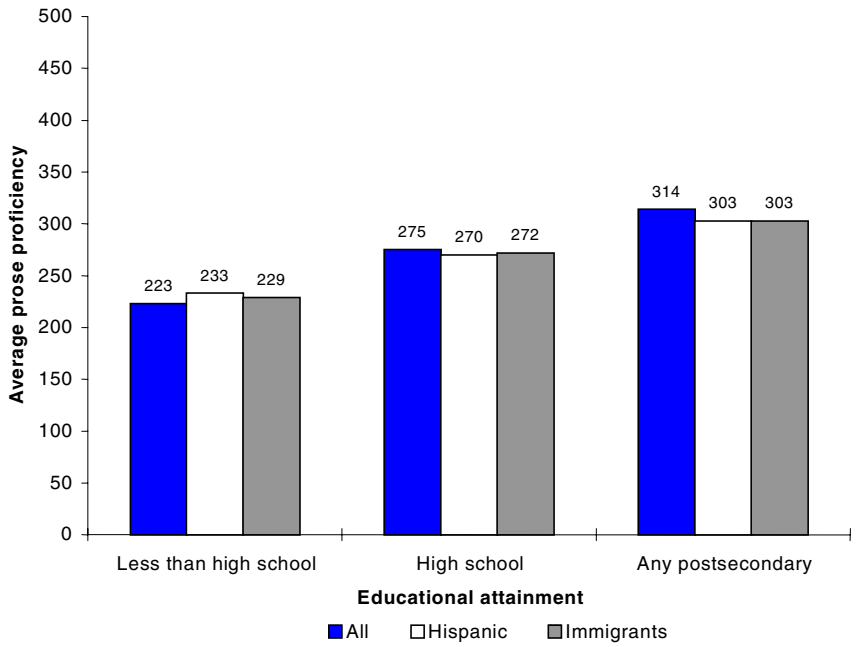


Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

The preceding figures and tables show a consistently positive relationship between formal education and English literacy. Differences in English reading skills remained for members of language minority groups, specifically immigrants and Hispanics, even after controlling for group differences in education. Looking only at those who spoke English exclusively or as their native language, individuals with the same levels of educational attainment had similar prose proficiency levels, regardless of country of birth or ethnicity (Figure 3.9).

Figure 3.9: Average prose proficiency by educational attainment, Hispanic ethnicity, and nativity among adults who speak exclusively English



Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

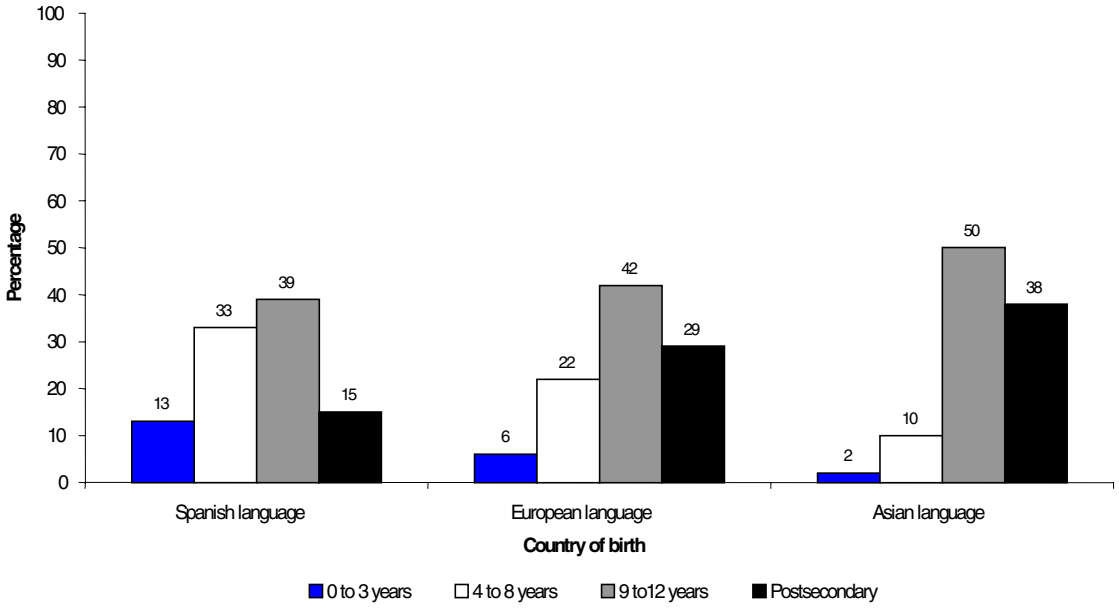
Educational Attainment Prior to Arrival in the United States

The background questionnaire asked foreign-born adults to indicate the level of schooling they had attained before coming to the United States using the following categories: did not attend school, primary (grades K to 3), elementary (grades 4 to 8), secondary (grades 9 to 12), post secondary vocational, college or university, or other. For this analysis, we grouped respondents into four age-at-arrival categories (ages 1 to 11, 12 to 18, 19 to 24, and 25 or older) and four prior education levels (0 to 3 years, 4 to 8 years, 9 to 12, and postsecondary/other schooling). Because background variables provided only rough approximations of both age of arrival and schooling prior to immigration, the data were most useful in gauging the educational status of people who arrived when they were at least 19 years old.[2] This is because adult immigrants would be highly unlikely to seek or receive elementary or secondary education in the United States.

Differences in the level of pre-immigration education among immigrants from different countries who arrived in the United States as children or adolescents were generally not significant when countries were grouped into language categories. Furthermore, the differences that might exist in the data were difficult to interpret, given the imprecision of measurement in both the age of U.S. arrival and amount of education received outside the United States, as measured by the National Adult Literacy Survey. When we compared pre-immigration educational attainment of individuals who were 19 years or older when they arrived in the United States, we saw that adult immigrants from Spanish language countries tended to report lower levels of prior education than those from countries where Asian languages were spoken (Figures 3.10 and 3.11). Both among immigrants who arrived between the ages of 19 and 24 and among those who arrived later in life, individuals from Spanish language countries were approximately twice as likely as their counterparts from Asian language countries to have arrived in the United States with 0 to 3 years or 4 to 8 years of school. Adult Hispanic immigrants were also substantially less likely than Asian immigrants to report postsecondary

[2]U.S. residence was coded in five-year increments between 1 and 20 years, ten-year increments between 21 and 50, and 51 or more years. Age of arrival was estimated as the difference between the individual's age and the midpoint of the U.S. residence code described above, and thus might differ by five or even more years from the actual age of arrival for some respondents. This uncertainty makes it impossible to determine whether respondents who arrived between the ages of 6 and 18 had completed the number of school years considered normal for the U.S.-born population.

Figure 3.10: Highest level of education completed before coming to the United States among immigrants who arrived when they were 19 to 24 years of age

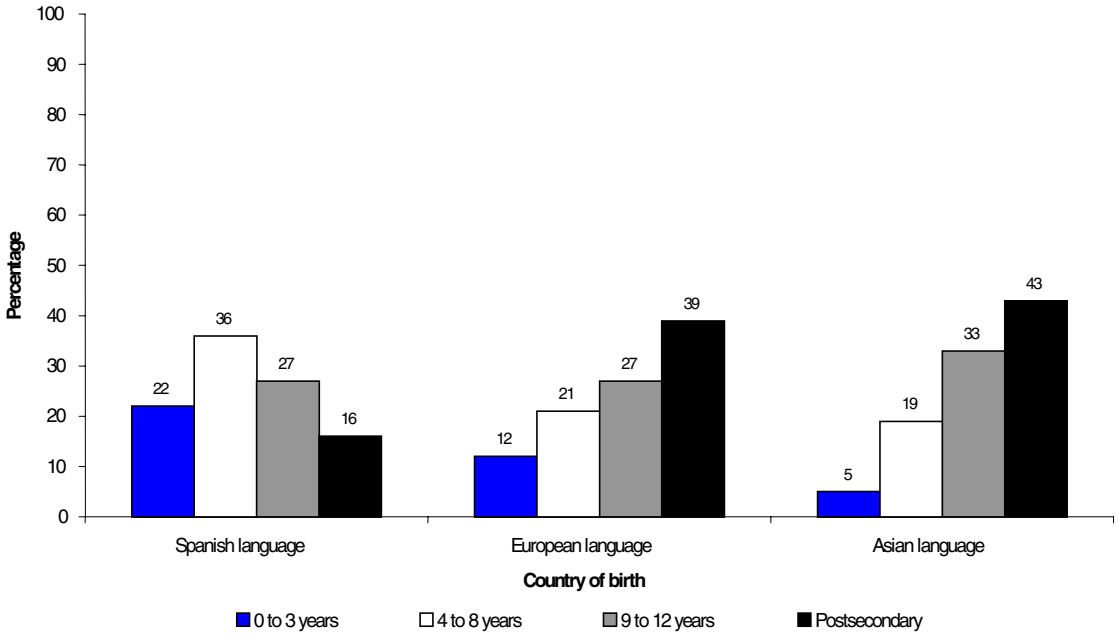


Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish-speaking and other non-English-speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

experience. The estimates of pre-immigration education for immigrants from European language countries tended to fall in between those for people born in Spanish or Asian language countries. Those who arrived from European language countries after reaching 25 years of age were more likely to have received some college training than their Spanish language country counterparts. Due to the relatively small number of respondents who emigrated from a European language country after the age of 19, other differences in native country schooling in comparison to Hispanic and Asian immigrants were not statistically significant. (Some of the differences between immigrants from Spanish language countries and immigrants from other countries are probably related to the fact that the background questionnaire was only available in English and Spanish.)

Figure 3.11: Highest level of education completed before coming to the United States among immigrants who arrived after age 25



Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish-speaking and other non-English-speaking adults may not be accurate, since the samples are not comparable for these populations.

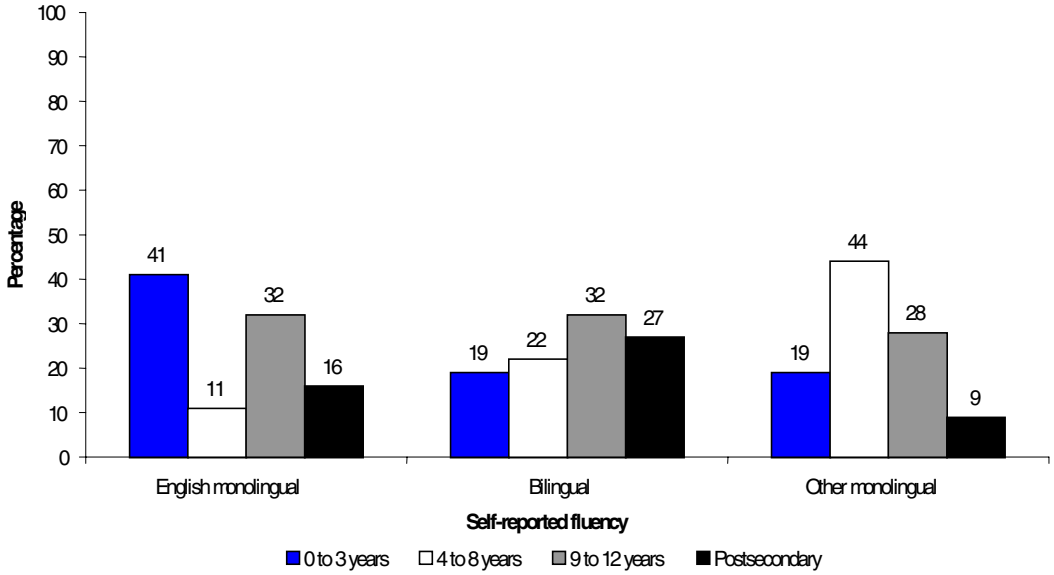
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Performance on the Prose Literacy Scale

The interrelationship of pre-immigration education, self-reported oral language fluency and literacy, and measured English literacy was reflected in the prose literacy scores of all immigrants. The educational opportunities available in the countries of birth, age at the time of immigration, and subsequent patterns of acquisition of the English language need to be kept in mind in making sense of the findings about the English language proficiency of the U.S. adult population that was foreign-born.

Foreign-born individuals who self-reported fluency in both English and their native language were more likely than those who spoke only

Figure 3.12: Highest level of education completed before coming to the United States by self-reported fluency among immigrants



Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

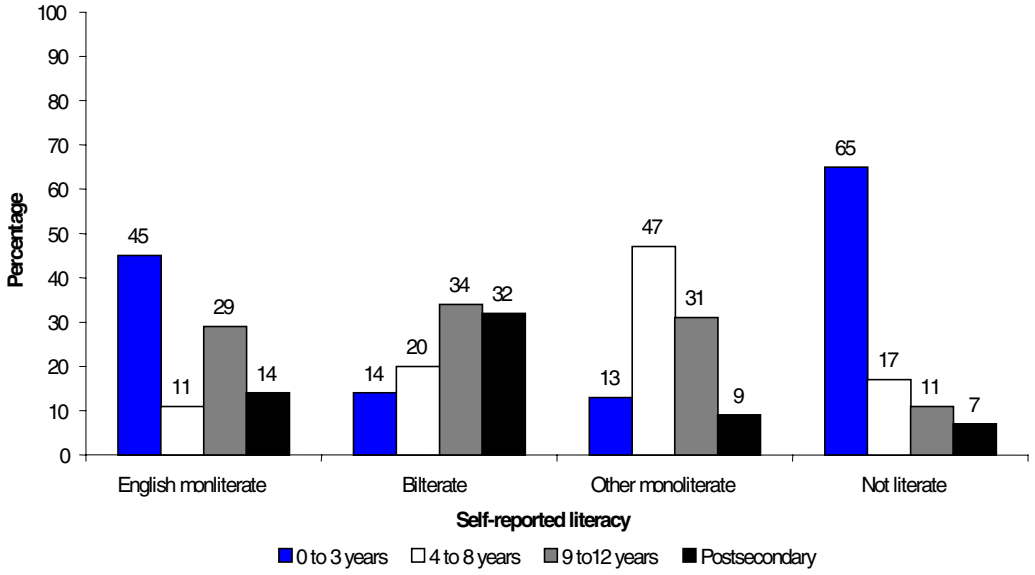
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

English or only their native language to have received some college education before immigrating (Figure 3.12). More than a quarter of the bilingual immigrants completed some college in their native countries, compared to only 16 percent of those immigrants who currently speak only English and 9 percent of those who speak only a non-English language.

Not surprisingly, the pattern was similar for self-reported literacy. Nearly a third of individuals who reported that they were literate in both English and their native language had received at least some college level education, more than twice the percentage of immigrants who reported English only literacy (Figure 3.13).

High levels of pre-immigration postsecondary education were associated with self-described bilingualism, and low levels of pre-immigration education were associated with monolingualism. Immigrants arriving in this country with little or no education tended to use either English or another language exclusively. The findings in Chapter 2 suggested that the age at arrival in the United States and language spoken

Figure 3.13: Highest level of education completed before coming to the United States by self-reported literacy among immigrants



Respondents who reported that they spoke only English before starting school and who report that they read or wrote English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

in the childhood home were primary determinants of which single language ends up being used by these immigrants when they reach adulthood.

Over 40 percent of adults who were born outside of the United States and who reported they were fluent and literate primarily in English received less than 3 years of education in their home countries. The majority of these adults arrived in this country as children. Arriving in the United States prior to or at the beginning of the primary school years was related to the exclusive adoption of English by adulthood.

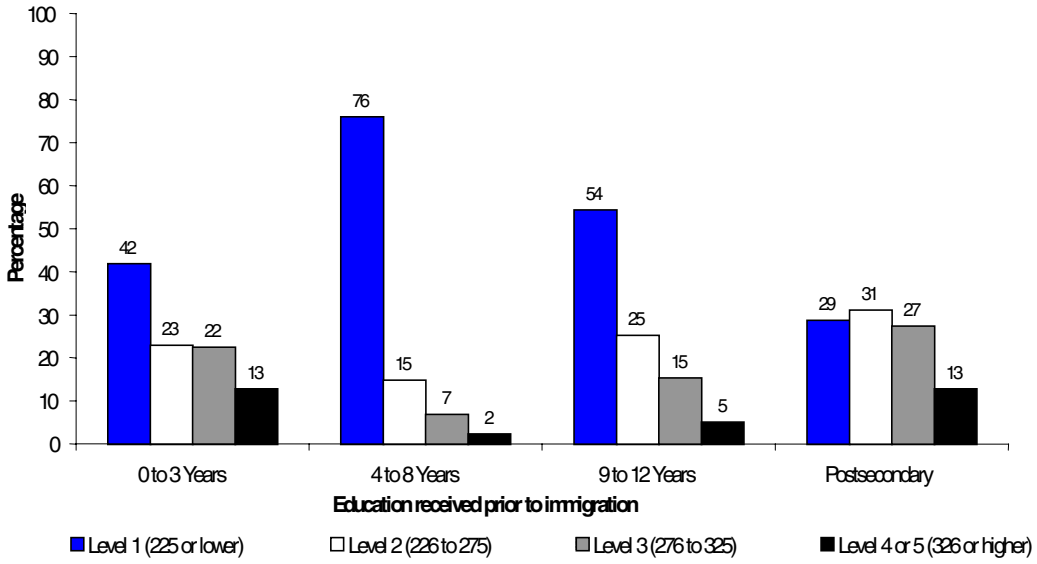
A low level of pre-immigration education was, however, also associated with continued exclusive use of a non-English language. Over 60 percent of immigrants who said they were fluent or literate primarily in their native non-English language reported having completed fewer than 9 years of schooling before their arrival. Additionally, having little or no pre-immigration education was associated with not being able to read any language. Nearly two-thirds of individuals who said they read neither English nor their native language well reported having completed three or

fewer years of schooling abroad. Most of these immigrants, who were not fluent and literate in English, or literate in any language, and who had low levels of pre-immigration education, arrived in the United States as adults.

The relationship between level of education completed before immigrating to the United States, language status, and age of arrival in the United States helps to make sense of the seemingly counterintuitive finding that high scores on the prose literacy scales were associated with both low and high levels of pre-immigration education (Figure 3.14).

The majority of immigrants with moderate levels of pre-immigration education categories read at the lowest level, Level 1. In comparison, only 42 percent of immigrants with little or no education, and only 29 percent immigrants who arrived in the United States with some college experience read at the lowest level. Extremely high and low levels of foreign education among all immigrants were equally associated with prose literacy performance at the highest level, Level 4 or 5. The immigrant groups with the highest levels of prose proficiency tended either to have arrived as children with 0-3 years of prior native country schooling or to have immigrated as adults with some prior native country postsecondary training.[3]

Figure 3.14: Prose literacy level by highest level of education completed before coming to the United States



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

[3]Analysis of document and quantitative literacy levels by the highest level of education completed before coming to the U.S. produced similar results.

The diversity of the foreign-born population of the United States precludes a simple explanation of the interrelationship between pre-immigration education, self-reported fluency and literacy, and measured English literacy. The data do suggest two successful avenues and one bumpy road that foreign-born adults travel in acquiring the types of reading skills measured by the prose literacy scale. Immigrants arriving as young children with little or no formal education, or adults arriving with high levels of formal education, were the most likely to develop high levels of English literacy. Adult immigrants arriving with little or no formal education had a much more difficult time acquiring English literacy skills.

Reasons for Not Completing High School

Given the strength of the relationship between education level and English literacy described in the three previous sections of this chapter, we now turn our attention to the relationship between English language background and the reasons individuals cite for not completing high school.

According to the National Adult Literacy Survey data, nearly 43 million U.S. adults had not completed high school in 1992. This was over one-fifth of all the adults living in the United States at that time. We saw earlier in this chapter (Figure 3.1) that a greater proportion of the foreign-born population left school prior to earning a high school diploma than did the U.S.-born population. Foreign-born individuals are, therefore, over-represented in this group; comprising 17 percent of the population not completing high school, compared to only 10 percent of the entire adult population.

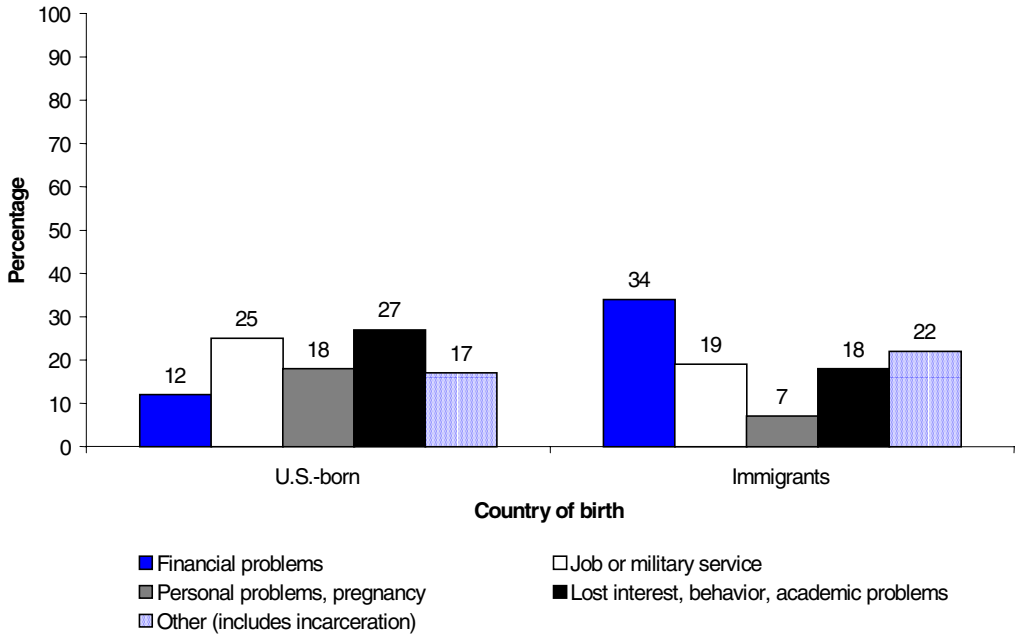
In many countries, secondary education formally ends before 12 years of school. While the questionnaire item used to measure the respondent's education reflects U.S. practice in terms of number of years of elementary and secondary education, interviewers were instructed to probe for equivalent levels of education, if a respondent indicated that he or she went to school outside the United States.

A variety of circumstances contributed to this premature exit (by U.S. standards) from formal education. The background questionnaire asked respondents who had not finished high school to indicate which of seven possible explanations was their main reason for dropping out: financial problems, went to work or into the military, pregnancy, lost interest or behavior problems in school, academic problems at school,

family or personal problems, or other. The background survey for the prison population included an eighth reason related to conviction or incarceration. For purposes of this analysis, these eight reasons were collapsed into five categories: financial problems, job or military service, personal problems (including pregnancy), school-related problems (academic, interest, or behavior), and other (including incarceration).

U.S.-born and foreign-born individuals differed significantly in the frequency with which they cited particular reasons for not staying in school (Figure 3.15). Financial problems were cited most frequently by immigrants and least frequently by people born in the United States. A third of the immigrant population cited financial problems as the reason for not completing high school compared to only 12 percent of U.S.-born population that gave this reason. U.S.-born individuals were more likely to indicate that personal problems kept them from finishing high school than were immigrants, 18 percent versus 7 percent. Native-born individuals who did not complete high school were also more likely to attribute not finishing to school-related problems and a job or military service than their foreign-born counterparts.

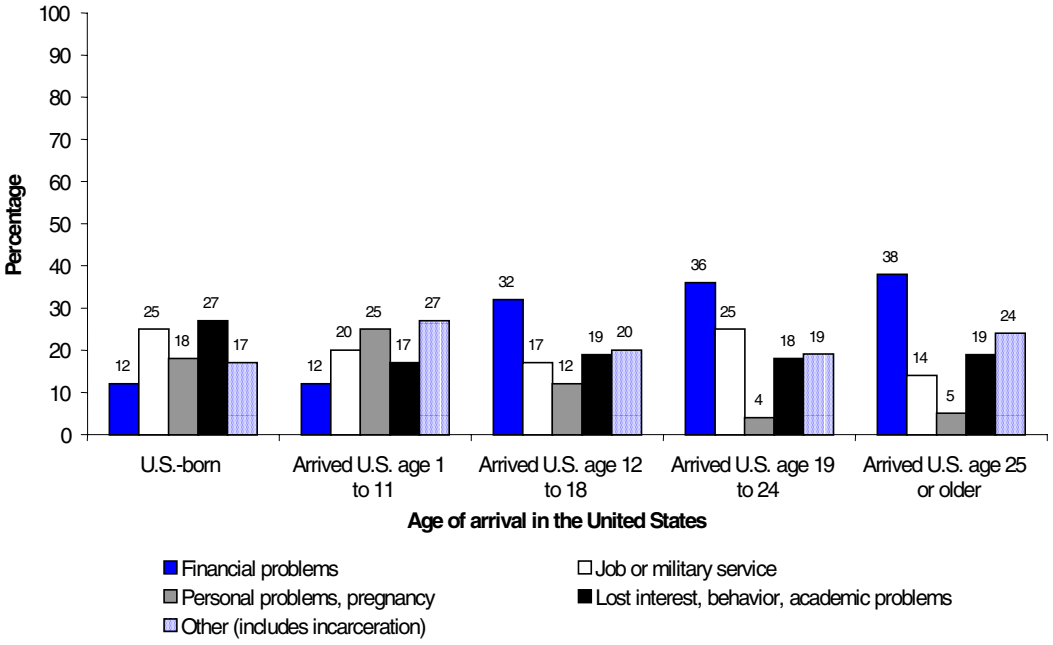
Figure 3.15: Reasons for high school noncompletion among adults born in the United States and immigrants



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Immigrating to this country at an early age tempered differences in the reasons cited for not completing high school between the foreign-born and native-born. Individuals who immigrated as young children (before 12 years of age) did not differ significantly from the their native-born counterparts in the reason they cited for not finishing high school. This finding needs to be treated with some caution as sample size was quite small (sample size = 90) for those who arrived in the United States before their twelfth birthday and subsequently did not finish high school. With so few cases, only a substantial disparity would reach statistical significance. It is important to note, however, that the propensity of the immigrant population to cite "financial reasons" for leaving school seems to be much more frequent among those who came to the United States after reaching 12 years of age (Figure 3.16).

Figure 3.16: Reasons for high school noncompletion by age of arrival in the United States



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Further analysis of the reasons individuals reported for failing to complete high school was hampered by limited sample size and the difficulty in distinguishing immigrants who left school in their native country from those who entered a U.S. school system and did not complete high school.

Training in English language skills is not limited to regular schools which this chapter has focused on until now. We turn now to two types of English language training available to U.S. adults outside of formal venues of education, English as a second language (ESL) courses and basic skills classes. While these two types of training may not lead to an education credential, they provide opportunities for members of language minorities to develop English language skills.

Participation in ESL by Individuals Who Learned a Language Other Than English Before School

The background questionnaire asked respondents who had learned a language other than English before school, "Have you ever taken a course to learn how to read and write English as a second language?" and "Have you ever taken a course to learn how to speak and understand English as a second language?" Those who indicated that they had taken such courses were then asked if they had completed them. On the basis of these responses, we categorized individuals who reported taking one or both types of classes as having taken ESL, and those who reported having completed at least one type of class as having completed ESL.

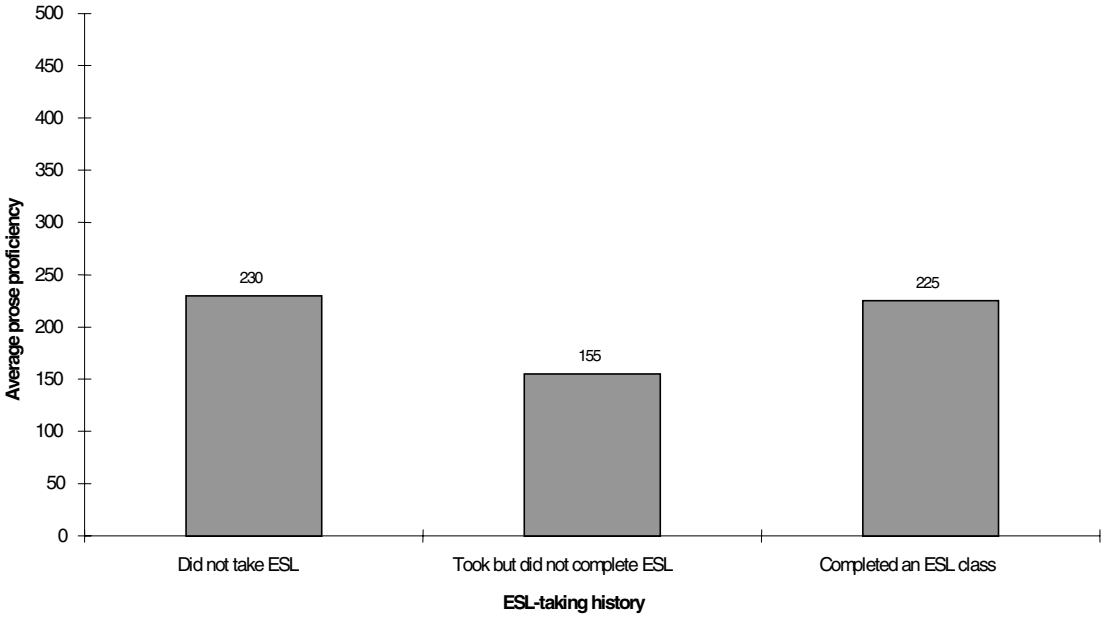
It is important to recognize that ESL courses usually lack a prescribed ending that is associated with a specified level of English mastery. The reason why individuals stop attending ESL courses range from mastering English, to the external termination of an ESL offering, to simply giving up. Whether an individual's cessation of an ESL course constituted "completion" was self-defined. Therefore, causal connections cannot be supported with these data.

Approximately 28 million adults living in the United States learned a language other than (or in addition to) English before school. About 35 percent of this language minority population reported taking an ESL class, with 24 percent completing such a class. While individuals enrolled in ESL classes presumably because they could not speak, understand, read, or write English as well as they would like to, those who did not enroll

included not only individuals who might benefit from ESL classes, but also people who had learned English in other ways. For example, individuals who learned both English and a non-English language before going to school by growing up in a bilingual household might have little need to enroll in ESL classes.

The diversity among the population that learned a non-English language prior to enrolling in school made it difficult to assess the effectiveness of ESL classes in improving the types of English literacy skills measured by the literacy scales in the National Adult Literacy Survey. The finding that the mean prose literacy scale score for those who completed an ESL (225) class was not significantly different from that of those who did not take an ESL class (230) tells us nothing about the effectiveness of ESL training on English literacy (Figure 3.17). The finding that those who completed an ESL program scored significantly higher than those who enrolled in but did not complete a class only suggests that ESL classes promote English literacy. This result could have also simply reflected an initial English skill disparity between those who were able to complete ESL classes once they enrolled and those who were not able to do so.

Figure 3.17: Average prose proficiency among adults who learned a non-English language before starting school



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Given the difficulty in assessing the effectiveness of ESL classes with cross-sectional data, this section will concentrate on describing differences in the propensity of individuals from different English language background groups to take and complete ESL courses. Results concerning ESL completion should be interpreted with some caution as these courses generally lack a definitive beginning and end. Typically, people with a wide range of English mastery are together in the same ESL classroom. The individual goals that would constitute "completion" are likely to vary among individuals based on present English proficiency. Further, as individuals begin to develop their English skills in a ESL course, they are likely to adjust their completion goals upward. Completion statistics presented below are based simply on individuals indicating that they completed an ESL course.

Most U.S.-born individuals with non-English language backgrounds learned English in addition to their family's native language before starting school and were unlikely candidates for ESL classes.[4] Only 9 percent of U.S. natives took an ESL course (Figure 3.18). In contrast, roughly half of the natives of European language and Spanish language countries and over two-thirds of the immigrants from countries in which non-European languages predominated enrolled in an ESL course.[5]

Immigrants from Spanish language countries completed ESL programs at significantly lower rates than immigrants born in non-Spanish language countries. Approximately one-half of individuals born in Spanish language countries took an ESL class, but only one-quarter completed an ESL class. In contrast, 44 percent of those from European language countries and over half of those from Asian/other language countries completed an ESL course. This disparity was not merely the result of the lower overall ESL participation rate of Spanish-speaking immigrants. Limiting comparisons to only those who had started an ESL course reveals that while roughly half of those from Spanish-speaking countries report finishing, the members of the other immigrant groups had nearly 80 percent completion rates. There was not a sufficient number of cases to support a meaningful analysis of the effectiveness of ESL programs, in terms of improving literacy scale scores, by country of origin.

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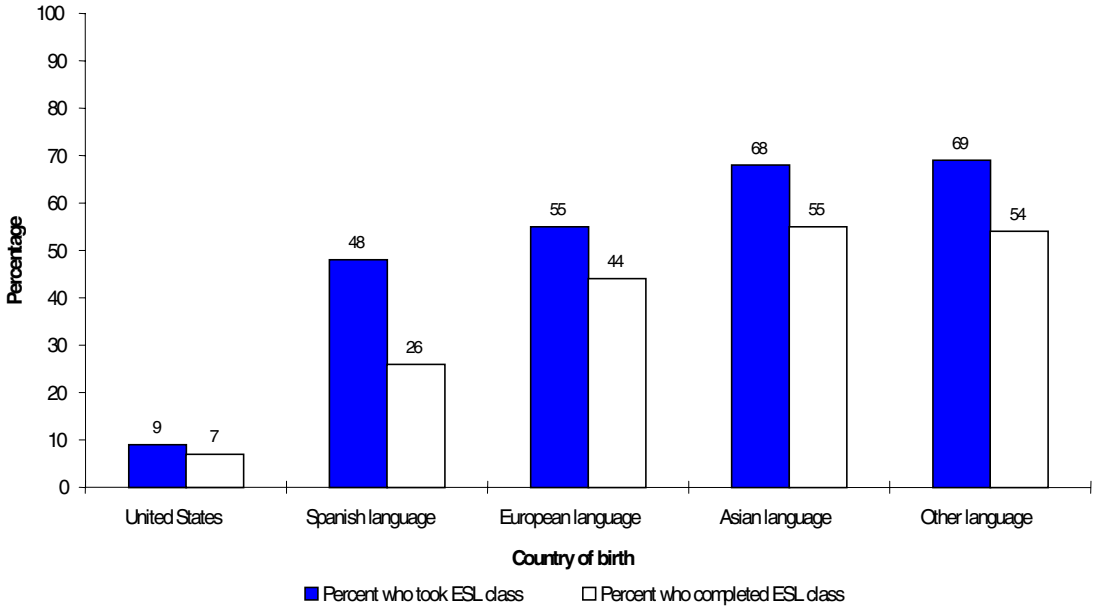
[4]Eighty-five percent of U.S. natives who learned a non-English language before school also learned English before school. Among those U.S. natives who reported the age at which they had learned English, 88 percent had learned English before the age of five.

[5]The analysis only considers individuals who reported having learned at least one language other than English before school. Thus, the sample of immigrants from European countries excludes most people who came from English-speaking countries and who learned only English before school.

Figure 3.18: Participation in ESL classes by country of birth among adults who learned a non-English language before starting school



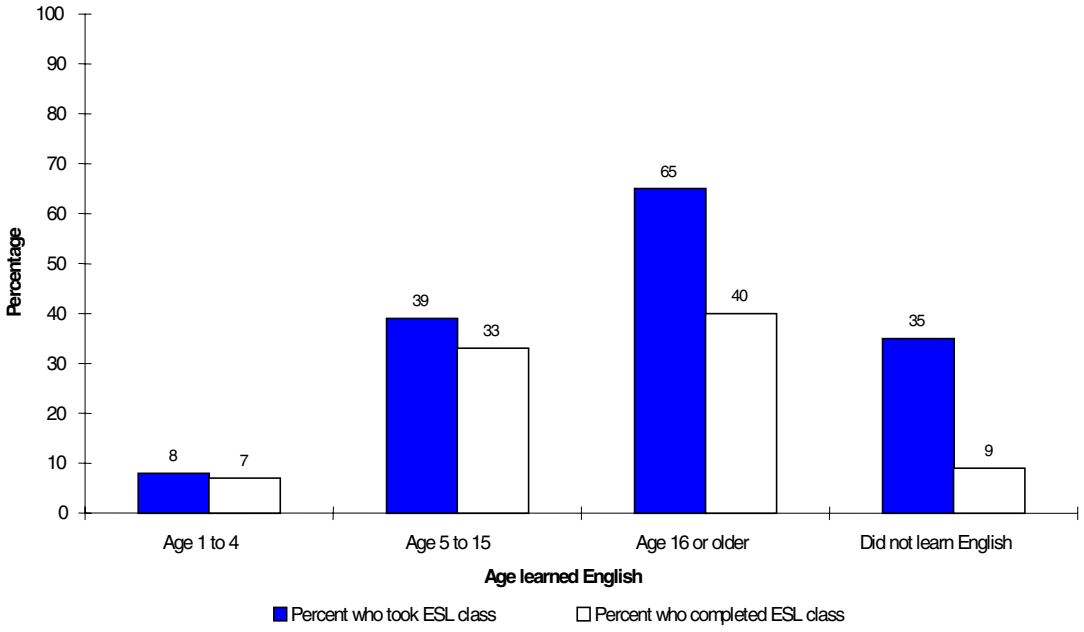
Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish-speaking and other non-English-speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

ESL participation was also related to the age at which English was learned. The later in life individuals learned English, the more likely they were to report taking an ESL class. Individuals learning English as well as another language prior to going to school (usually at age 5) were very unlikely to take—or need—an ESL course later in life. For individuals who learned English between the ages of five and fifteen, ESL participation rates reflected both instruction received in conjunction with their formal education and any additional courses. There was a potential for measurement error in the ESL participation and completion rates for those who reported learning English during their school-age years. These respondents may have taken an ESL course while in school, but not recognized it as being different from the English courses being taken by their native English-speaking peers. Adult English learners were the most likely to have reported taking an ESL class. Those who reported learning

English after reaching 16 years of age were, however, less likely to complete ESL classes once they enrolled than those who learned English at a younger age. Individuals who reported not having learned English at all represented 12 percent of the population that had learned a language other than English before school. Over one-third of this group reported having taken an ESL class, but only 9 percent reported finishing (Figure 3.19).

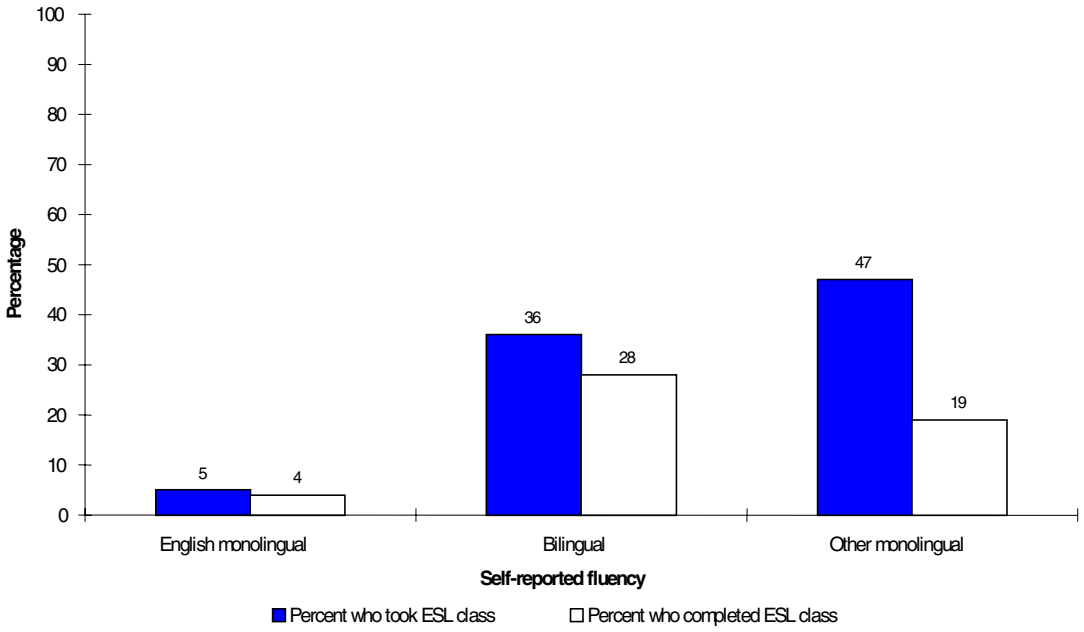
Figure 3.19: Participation in ESL classes by age learned English among adults who learned a non-English language before starting school



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

ESL participation and completion were related to respondents' self-reports of their language fluency and literacy at the time of the survey. English monolingual and English monoliterate individuals were most likely to have learned English early in life; therefore, very few of them reported participating in ESL classes. Bilingual and biliterate persons learned English at various stages of their lives and thus had varying needs to participate in formal ESL classes. While those who spoke English and another language were less likely to have taken an ESL class than those who spoke a non-English language exclusively (36 percent versus 47

Figure 3.20: Participation in ESL classes by self-reported fluency among adults who learned a non-English language before starting school

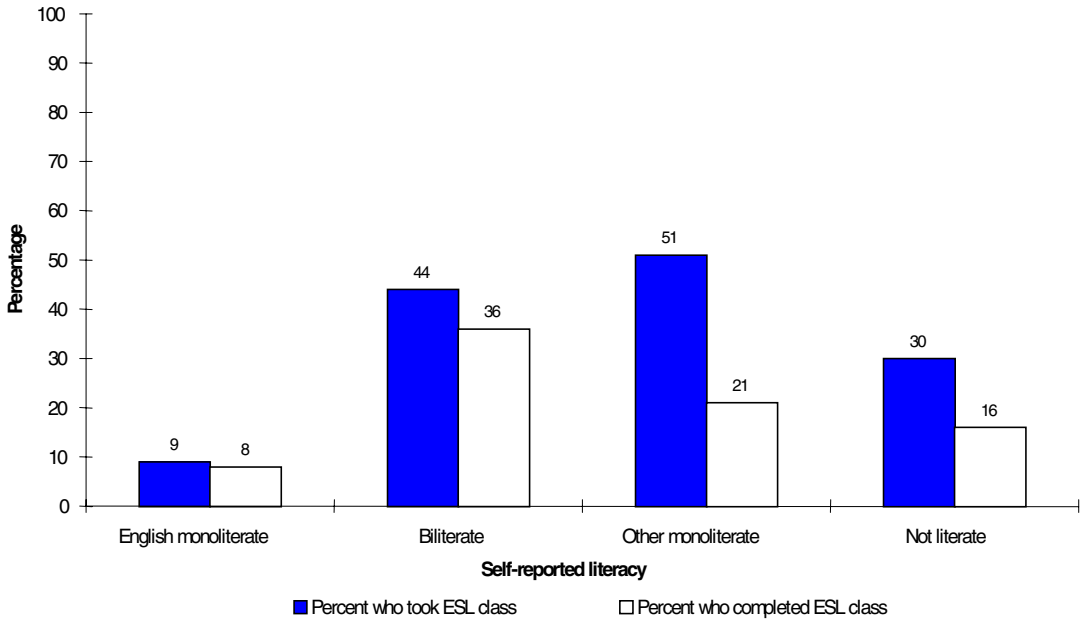


Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

percent), individuals who were bilingual or biliterate were more likely to have completed an ESL course (28 percent versus 19 percent and 36 percent versus 21 percent) (Figures 3.20 and 3.21). While information concerning ESL experiences was only solicited from individuals who indicated that they learned a non-English language prior to attending school, data on taking basic skills courses were available for the entire survey sample.

Figure 3.21: Participation in ESL classes by self-reported literacy among adults who learned a non-English language before starting school



Respondents who reported that they spoke only English before starting school and who reported that they read or wrote English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Participation in Basic Skills Classes

The background questionnaire for the household sample asked all respondents: "Are you currently enrolled in or have you ever taken part in a program other than in regular school in order to improve your basic skills, that is, basic reading, writing, and arithmetic skills?" Incarcerated individuals were asked three questions: "Since your current admission to prison, have you ever been in any education program, excluding vocational training?" and, if yes, "What kind of program was that--basic classes up to the 9th grade, high school classes to get a diploma or GED, or college level classes? (check all that apply)." They were also asked a question similar to the one asked the household sample, referring to any basic skill training received prior to their current incarceration. We coded members of the prison population as participants in basic skills classes if they had participated in a prison program involving curriculum up to the 9th grade

or if they answered yes to the question about taking basic skills classes before incarceration.

Relatively few U.S. adults (9 percent) had taken basic skills courses outside of their regular schooling. While only 12 percent of individuals who learned a language other than English prior to starting school reported receiving such training, this was a significantly greater number than the 8 percent of individuals with English only language backgrounds (Table 3.3).

There was a significant relationship between reported participation in basic skills classes and the age at which the respondent learned English (Figure 3.22). One in five adults who had learned English after reaching 16 years of age had taken a basic skills class outside of regular school, nearly twice the rate of individuals who had learned English during childhood.

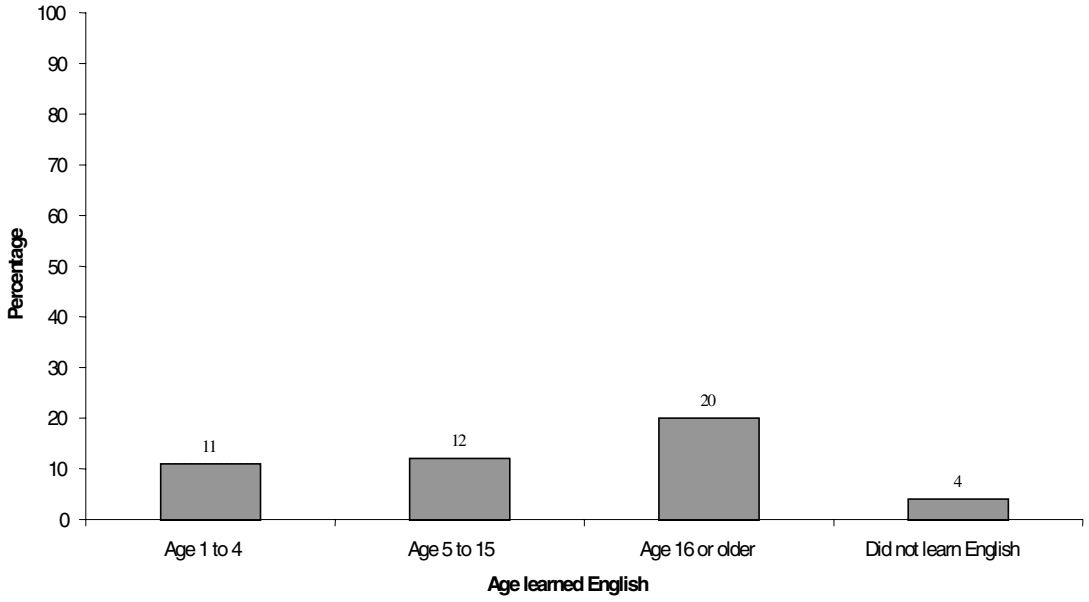
Table 3.3: Participation in basic skills classes

Percent (s.e.)	Sample size	Population /1000	Percent who took basic skills class
Total	26,034	190,787	9 (0.3)
All adults who learned a non-English language before school	4,057	28,922	12 (0.7)
All adults who learned only English before school	21,946	161,682	8 (0.3)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Only 4 percent of people who did not learn English participated in a basic skills class (Figure 3.22). While 35 percent of this group reported starting an ESL class, only 9 percent report finishing (Figure 3.19). These low participation and completion rates for non-English-speaking adults suggest a need to re-evaluate the adequacy of current supplemental educational resources that provide English language training. The approximately 3.5 million adults in this country who reported that they knew little or no English, had low levels of formal schooling and apparently tenuous connections to the English supplemental educational services that might help develop their literacy skills.

Figure 3.22: Participation in basic skills classes by age learned English among those who learned a non-English language before starting school



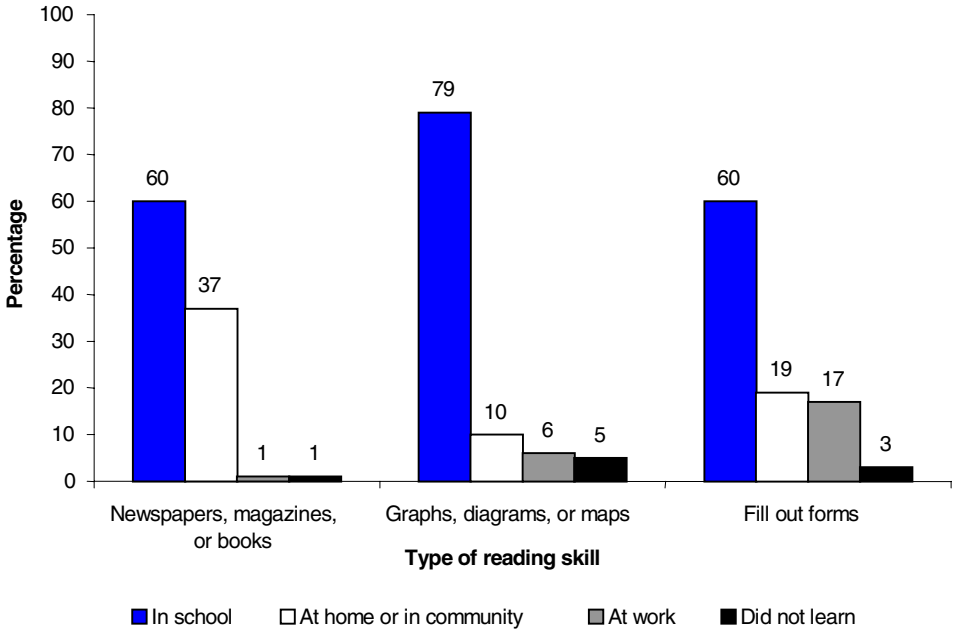
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Where Literacy Skills Were Learned

The importance of formal education in attaining literacy was further demonstrated when we examined how individuals learned various types of reading skills. A substantial majority of all groups examined in this chapter reported learning a variety of specific reading skills in school. All respondents were asked, "Where did you primarily learn to read newspapers, magazines, or books?" The background questionnaire also gathered information about where they had learned to read graphs, diagrams, or maps and where they learned to fill out forms. For these three items respondents were given the following choices: in school, at home or in the community, at work, or did not learn.

All three types of reading skills were learned primarily in school. This was particularly the case for learning to read graphs, diagrams, and maps, the types of reading skills measured by the quantitative literacy scale. U.S. adults were significantly more likely to indicate that they learned quantitative reading skills in school than they were to reply that they learned document or prose reading skills in school (Figure 3.23).

Figure 3.23: Location learned specific types of reading skills



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Summary

The analyses of the National Adult Literacy Study presented in this chapter demonstrated the fundamental relationship between formal education and English literacy. Both data from the background questionnaire and the three literacy scales supported this connection. The three literacy scales exhibited a consistently positive relationship with education level. When asked where they learned various types of reading skills, respondents overwhelmingly identified school as the locale of learning.

An especially important finding concerns the role education received in native countries plays in current language use among the foreign-born. Bilingual and biliterate individuals tended to have received a substantial level of formal education in their native country before immigrating to the United States. Immigrants who arrived in this country with little or no formal education tended to either completely adopt English or retain exclusive use of their native language. The age at arrival in the United States was the primary predictor of which language

through the formal education they received in the United States. Those who arrived later in life, without the benefit of a substantial amount of education received in their native country, were the least likely to develop English language skills. The low participation and completion rates of those most in need of supplemental English language training and ESL and adult basic skills classes raise concerns. Social policy efforts to address these concerns face the challenge that many in need of ESL and basic skill training have had little or no formal education in any language.

CHAPTER 4

Employment and Earnings, Language Background, and Literacy Proficiency

In this chapter, we explore the relationship between employment and country of birth, language fluency and literacy. We show that fluency in English and literacy in any language are related to the probability that an individual is employed. We also show that there is a relationship between literacy in English and the probability that a person is employed in a high-paying occupation that is likely to offer continuous employment throughout the year.

Additionally, the data presented in this chapter show that although employed people who are bilingual have lower prose, document, and quantitative literacy scores than employed people who were raised in homes where only English was spoken or who speak only English now, this does not translate into lower earnings for people who are bilingual.

All analyses in this chapter are based only on the household sample, since prisoners are excluded from the labor force. Analyses are done separately for immigrants, most of whom are non-native English speakers and Hispanics, the racial/ethnic group with the largest number of non-native English speakers. The sample size for non-native English speakers was not large enough to present results for any racial/ethnic group other than Hispanics.

Employment Status by Country of Birth and Self-Reported Fluency and Literacy

According to the National Adult Literacy Survey, approximately 62 percent of the total population age 16 or older was employed in 1992, seven percent was unemployed, and 31 percent was out of the labor force (Table 4.1).[1] There was no significant variation in employment status

[1] This employment rate of 62 percent is consistent with the rate published by the Department of Labor of 61.5 percent for 1992. However, the National Adult Literacy Survey unemployment rate of seven percent for the total population age 16 or older translates into an unemployment rate of ten percent for the population in the labor force. This is higher than the Department of Labor estimate that 7.5 percent of people in the labor force were unemployed in 1992. The National Adult Literacy Survey estimates of the population not in the labor force are approximately three percentage points lower than the Department of Labor estimates of the percentage of the population not in the labor force in 1992. (continued on next page)

between immigrants and people born in the United States (Table 4.1). Among immigrants, there were no significant differences in employment status based on the language spoken in their country of birth (Table 4.1).

Differences in employment status did exist among people with different language fluency. As shown in Table 4.1, among the total population, 52 percent of people who spoke only a language other than English were employed, compared with 63 percent of people who were raised in homes where only English was spoken or who spoke only English fluently as adults. Non-English speakers were no more likely to be unemployed than English monolinguals. Rather, they were more likely to remain out of the labor force (Table 4.1). Some may have given up on finding a job, possibly because their English skills were lacking. Others may never have been motivated to learn English because they did not want or need to work.

(continued from previous page) The difference between Department of Labor estimate of the unemployment rate for 1992 and the National Adult Literacy Survey estimate of the unemployment rate in 1992 is caused by differences in the definitions of unemployed and out of the labor force between the National Adult Literacy Survey and the Department of Labor. The National Adult Literacy Survey asks people who are not currently employed whether or not they looked for a job at any time in the past four weeks. If they reply yes, they are considered to be in the labor force and unemployed. No follow up questions are asked.

The Department of Labor bases its estimates of unemployment on the monthly Current Population Survey. The Current Population Survey asks respondents about specific activities they have pursued while looking for a job, and only codes people who are determined to be actively seeking a job as unemployed. For example, people who read the employment ads in the paper one Sunday may reply that they have looked for a job during the past four weeks. Therefore, the National Adult Literacy Survey would code those people as unemployed. However, unless they did something more active than simply read employment ads, the Department of Labor would consider them out of the labor force rather than unemployed. In addition, the Current Population Survey asks respondents if they were available to work during the prior week. Respondents who answer no, even if they have actively looked for a job during the past four weeks, are coded as being out of the labor force. The National Adult Literacy Survey does not ask about availability for work during the past week.

Additionally, the Current Population Survey permits proxy responses by other members of the household, while the National Adult Literacy Survey requires a response from the person himself or herself.

Although the unemployment rates and labor force participation rates calculated from the National Adult Literacy Survey differ somewhat from the unemployment rates and labor force participation rates calculated by the Department of Labor, the coding for employment status is consistent for all respondents to the survey. Therefore, the pattern of differences across groups based on immigration and language status, which is the focus of this chapter, should not be affected by the fact that a somewhat different definition of employment status was used by the National Adult Literacy Survey than was used by the Current Population Survey. Additionally, all differences between the National Adult Literacy Survey and the Current Population Survey affect coding only for the categories unemployed and out of the labor force. The category employed includes the same population in each survey. (end of footnote)

Table 4.1: Employment status by country of birth and self-reported fluency

Row percent (s.e.)	Sample size	Population /1000	Employed	Unemployed	Not in the labor force
Total population	24,933	190,462	62 (0.4)	7 (0.2)	31 (0.4)
Country of birth					
United States	22,178	170,388	63 (0.4)	7 (0.3)	30 (0.4)
Spanish language	1,543	9,600	59 (2.1)	9 (1.0)	31 (2.1)
European language	506	4,817	57 (3.6)	6 (1.4)	37 (3.5)
Asian language	275	2,763	65 (3.8)	7 (1.7)	28 (4.0)
Other	431	2,896	64 (3.4)	7 (1.6)	28 (4.0)
Total population	24,933	190,462	62 (0.4)	7 (0.2)	31 (0.4)
Bilingual	2,655	19,937	56 (1.3)	8 (0.7)	37 (1.3)
English monolingual	21,450	164,782	63 (0.5)	7 (0.2)	30 (0.4)
Other monolingual	821	5,687	52 (2.9)	9 (2.9)	39 (3.1)
All immigrants	2,755	20,075	60 (1.7)	8 (0.7)	32 (1.8)
Bilingual	1,435	10,686	63 (2.1)	7 (0.9)	29 (2.3)
English monolingual	514	3,786	63 (2.6)	9 (1.4)	28 (2.7)
Other monolingual	802	5,559	53 (2.9)	9 (1.4)	38 (3.0)
All Hispanics	2,914	18,334	59 (1.4)	11 (1.1)	30 (1.2)
Bilingual	1,492	9,088	60 (1.6)	11 (1.3)	30 (1.6)
English monolingual	684	4,599	65 (2.3)	13 (2.4)	22 (2.0)
Spanish monolingual	734	4,628	52 (3.0)	9 (1.2)	39 (3.2)
Total Population	24,933	190,462	62 (0.4)	7 (0.2)	31 (0.4)
Biliterate	1,761	12,781	62 (1.3)	7 (0.8)	31 (1.4)
English monoliterate	22,073	169,812	63 (0.4)	7 (0.2)	30 (0.4)
Other monoliterate	895	6,335	55 (3.1)	10 (1.6)	36 (2.8)
Not literate	202	1,491	36 (4.5)	6 (1.6)	58 (5.1)
All Immigrants	2,755	20,075	60 (1.7)	8 (0.7)	32 (1.8)
Biliterate	1,145	8,393	65 (2.0)	6 (0.8)	29 (2.1)
English monoliterate	617	4,625	61 (2.4)	8 (1.4)	31 (2.8)
Other monoliterate	864	6,084	56 (3.2)	10 (1.6)	34 (2.8)
Not literate	129	972	44 (5.2)	7 (1.9)	49 (5.5)
All Hispanics	2,914	18,334	59 (1.4)	11 (1.1)	30 (1.2)
Biliterate	1,029	6,371	62 (1.6)	10 (1.1)	28 (1.4)
English monoliterate	944	6,035	62 (1.9)	13 (1.9)	25 (2.0)
Other monoliterate	780	4,884	55 (3.1)	10 (1.7)	35 (2.9)
Not literate	161	1,043	39 (4.4)	9 (2.1)	52 (4.9)

Respondents who reported that they spoke only English before starting school were coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

This pattern was also found among Hispanics. Fifty-two percent of Hispanics who spoke only Spanish were employed, compared with 65 percent of Hispanics who were raised in homes where only English was spoken or who were fluent only in English as adults (Table 4.1). The difference between the two groups was not due to higher unemployment among Spanish-speaking Hispanics, but rather was caused by the fact that 39 percent of Hispanics who spoke only Spanish were not in the labor force, compared with 22 percent of Hispanics who were raised in homes where only English was spoken or who spoke only English as adults (Table 4.1). Although it looks as though the same pattern applied to all immigrants, the differences in employment status among immigrants with different oral language fluency were small enough that they could have occurred by chance.

As shown in Table 4.1, people who were not literate in any language had the lowest employment rates of all (36 percent). Again, these people were not more likely to be unemployed. Only six percent of people who reported they were not literate in any language were not employed and had looked for work during the past four weeks, the criteria for being classified as unemployed. Fully 58 percent of not literate people were not in the labor force at all. They had either given up looking for a job, or never looked in the first place. Although it looks as though people who were literate only in a language other than English had lower rates of employment than people who were literate in English, the difference between the two groups was not any larger than could have occurred by chance.

Hispanics followed the same employment patterns with regard to literacy as the general population. Hispanics who were not literate in any language were less likely to be employed and more likely to be out of the labor force than Hispanics who read either Spanish or English or both languages (Table 4.1). Among immigrants, those who were not literate were less likely to be employed than those who were literate, only in English or in English and another language.

Thus, people who were able to read only a language other than English were just as likely to be employed as people who read English exclusively or as their native language. People who did not speak English were less likely to be employed than people who spoke English exclusively or as their native language. This was probably because people who were unable to communicate verbally in English could not have done the vast majority of jobs in the United States in 1992. Apparently, relatively fewer jobs required that incumbents read and write English.

Not being literate in any language is a barrier to employment. Illiteracy is often an indication that an individual's education was extremely limited or non-existent. Schooling is important as more than just as a source of literacy training. Schools teach discipline, organization, and other skills that are necessary in the work place. Therefore, not being literate at all is an indicator that a person may lack other skills necessary to be successful in a job, even a job that does not require literacy. This may explain why it is more important that a person be literate in any language when they are looking for employment in the United States, than that they be literate in English. However, as we discuss later in this chapter, literacy in English does have an effect on the type of job an individual is able to obtain.

Continuity of Employment by Country of Birth and Self-Reported Fluency and Literacy

National Adult Literacy Survey data indicate that although 62 percent of the adult population of the United States was employed at some time in 1992, only 53 percent of the adult population worked for 40 or more weeks during the year (Table 4.2). Since some people, such as school employees, are seasonal workers who nonetheless have stable long-term jobs, we chose 40 weeks rather than 52 weeks as a cut-off point to indicate stable employment. Seventeen percent of the adult population worked 39 or fewer weeks, and 30 percent of the population, approximately the same percentage as indicated that they were not employed and not looking for a job, did not work at all (Table 4.2). No significant relationship existed between country of birth and an individual's continuity of employment.

Oral language ability is related to an individual's continuity of employment. As illustrated in Table 4.2, 42 percent of people who spoke only a language other than English were employed for 40 or more weeks during the past year compared with 54 percent of people who spoke only English. People who spoke only a language other than English were more likely not to work at all than people who spoke only English (39 percent versus 29 percent). Hispanics who spoke only English were less likely to be unemployed during the entire year than Hispanics who spoke only Spanish (26 percent versus 39 percent). However, although Hispanics who spoke only English appear to be somewhat more likely to have worked for 40 or more weeks during the year than Hispanics who

Table 4.2: Weeks worked during past year by country of birth and self-reported fluency

Row percent (s.e.)	Sample size	Population /1000	0 weeks	1 to 39 weeks	40 or more weeks
Total population	24,944	190,524	30 (0.4)	17 (0.3)	53 (0.4)
Country of birth					
United States	22,187	170,434	30 (0.4)	17 (0.3)	53 (0.4)
Spanish language	1,544	9,613	33 (1.8)	19 (1.4)	48 (1.7)
European language	507	4,818	36 (3.1)	18 (2.0)	46 (3.2)
Asian language	275	2,763	27 (3.4)	15 (2.2)	58 (3.6)
Other	431	2,896	28 (3.3)	21 (2.6)	52 (2.7)
Total population	24,944	190,524	30 (0.4)	17 (0.3)	53 (0.4)
Bilingual	2,655	19,937	37 (1.3)	17 (1.0)	47 (1.3)
English monolingual	21,456	64,805	29 (0.5)	17 (0.3)	54 (0.5)
Other monolingual	822	5,700	39 (2.6)	20 (2.0)	42 (2.1)
All immigrants	2,757	20,090	32 (1.4)	18 (1.1)	49 (1.4)
Bilingual	1,435	10,686	31 (1.9)	18 (1.3)	52 (2.2)
English monolingual	515	3,787	29 (2.6)	18 (2.1)	54 (3.3)
Other monolingual	803	5,573	38 (2.5)	20 (2.1)	43 (2.1)
All Hispanics	2,915	18,347	32 (1.2)	20 (1.1)	47 (1.3)
Bilingual	1,492	9,088	32 (1.7)	18 (1.5)	50 (1.8)
English monolingual	684	4,599	26 (2.1)	25 (2.5)	49 (2.8)
Spanish monolingual	735	4,641	39 (2.6)	20 (2.1)	41 (2.0)
Total population	24,944	190,524	30 (0.4)	17 (0.3)	53 (0.4)
Biliterate	1,761	12,781	32 (1.2)	17 (1.3)	51 (1.3)
English monoliterate	22,079	169,835	29 (0.4)	17 (0.3)	53 (0.4)
Other monoliterate	896	6,348	37 (2.5)	18 (1.7)	45 (2.8)
Not literate	202	1,491	56 (5.1)	14 (2.7)	30 (3.9)
All immigrants	2,757	20,090	32 (1.4)	18 (1.1)	49 (1.4)
Biliterate	1,145	8,393	30 (1.7)	17 (1.5)	53 (2.0)
English monoliterate	618	4,627	30 (2.2)	19 (2.3)	50 (2.5)
Other monoliterate	865	6,098	35 (2.5)	18 (1.7)	46 (2.8)
Not literate	129	972	46 (5.6)	20 (3.6)	34 (4.8)
All Hispanics	2,915	18,347	32 (1.2)	20 (1.1)	47 (1.3)
Biliterate	1,029	6,371	30 (1.6)	18 (1.5)	51 (1.8)
English monoliterate	944	6,035	28 (1.7)	25 (2.0)	48 (2.3)
Other monoliterate	781	4,898	36 (2.4)	19 (1.9)	45 (2.1)
Not literate	161	1,043	52 (5.0)	14 (2.5)	34 (4.4)

Respondents who reported that they spoke only English before starting school were coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

People not in the labor force were included in this table.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

spoke only Spanish, the difference is not statistically significant. Among immigrants, none of the differences in employment categories based on self-reported fluency are statistically significant.

Fewer than one-third of people who were not literate reported that they worked 40 or more weeks during the previous year, while approximately half the literate population worked 40 or more weeks (Table 4.2). Over half of people who were not literate did not work at all during the previous year, substantially more than the 32 percent of the biliterate and 29 percent of the English monoliterate population that did not work during the previous year (Table 4.2). Among immigrants, people who were not literate were less likely to have worked 40 or more weeks during the previous year than people who were literate only in English or people who were biliterate (Table 4.2). The differences in employment continuity between Hispanics who were not literate and Hispanics who were literate only in English were within the survey's margin of error. The difference in continuous employment (40 or more weeks during the year) between Hispanics or immigrants who were not literate and those who were literate only in a language other than English was not bigger than could have occurred by chance.

Hispanics who were not literate were less likely than Hispanics who were literate only in English to have worked intermittently, 1 to 39 weeks, during the previous year (14 percent versus 25 percent, Table 4.2). However, this difference could be attributed to the fact that 52 percent of Hispanics who were not literate did not work at all during the previous year, compared with only 30 percent of Hispanics who were biliterate and 28 percent of Hispanics who were English monoliterate (Table 4.2).

Thus, people who were fluent in English were more likely to have been continuously employed (40 or more weeks) during the previous year and more likely to have been employed at any one point in time than people who were not fluent in English. People who were not literate were less likely to have been continuously employed (40 or more weeks) during the previous year and more likely not to have been employed at any point during the year than people who were literate in any language. However, when we looked only at Hispanics, literacy in English seemed to be somewhat more important than in the population as a whole. Hispanics who were literate only in Spanish were not more likely to have been employed continuously during the previous year than Hispanics who were not literate. Hispanics who were literate in English

were more likely to have been employed continuously during the previous year than Hispanics who were not literate.

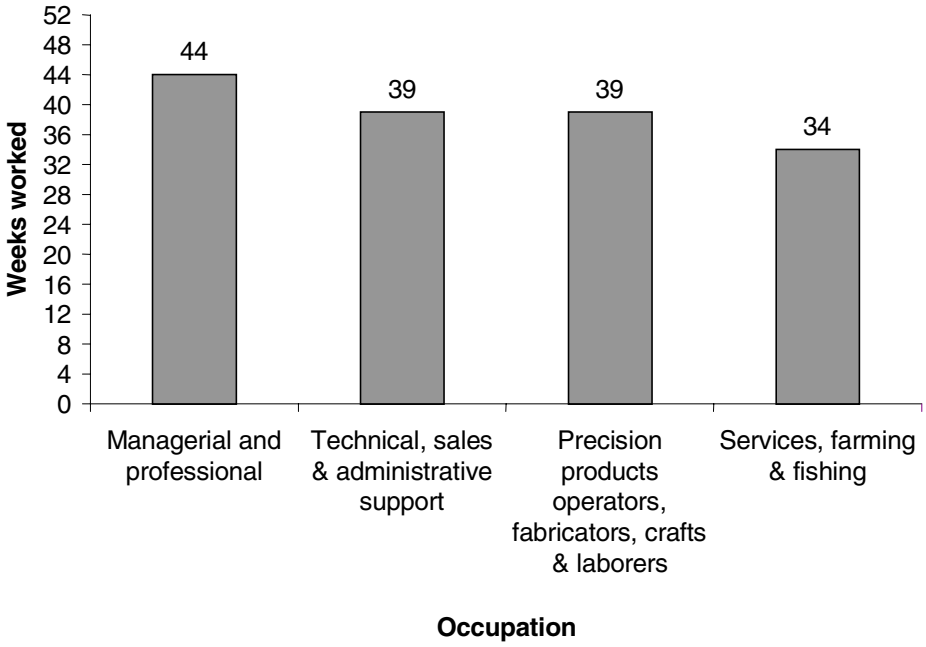
Occupation by Country of Birth and Self-Reported Fluency and Literacy

Although being employed on a regular schedule is important, some jobs are more desirable than others. We divided occupations into four categories: (1) managerial and professional; (2) technical, sales and administrative support; (3) precision product operators, fabricators, crafts and laborers (referred to as blue collar for the remainder of this report); and (4) services, farming and fishing. (See Appendix D for a discussion of how these categories were constructed.) As illustrated in Figure 4.1, people who worked in services, farming, and fishing were employed, on average, the least number of weeks, only 34 weeks during the previous year. People who worked in managerial and professional occupations were employed the greatest number of weeks, 44 weeks during the year prior to the survey. Therefore, in terms of employment continuity, managerial and professional jobs were the most desirable, and services, farming and fishing jobs were the least desirable. The other two job categories fell in the middle with regard to employment continuity.

As illustrated in Figure 4.2, people in managerial and professional jobs also had the highest average salaries. The average salary of a manager or a professional in the National Adult Literacy Survey was $39,791 during the previous year, more than double the approximately $18,000 earned by technical, sales, and administrative support workers or blue collar workers, and almost four times as much as the $10,566 earned by people who worked in services, farming, and fishing occupations (Figure 4.2). Therefore, in terms of both salary and employment continuity, managerial and professional jobs were the most desirable and services, farming, and fishing jobs were the least desirable.

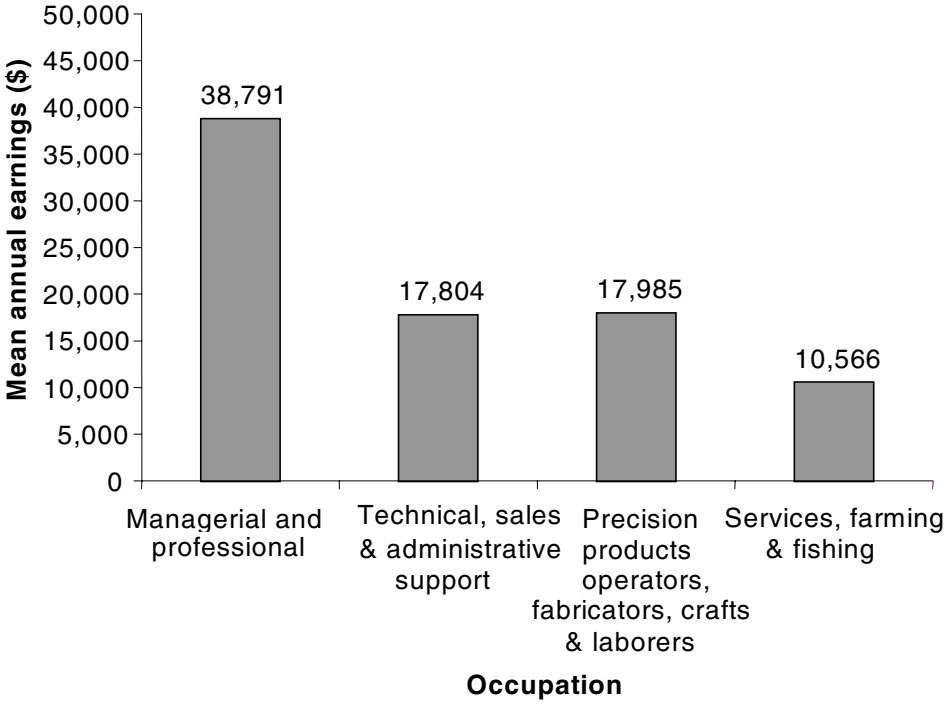
Slightly over one fifth of adults who were employed during the three years before they answered the National Adult Literacy Survey in 1992 worked in managerial and professional positions; 32 percent worked in technical, sales and administrative support; 26 percent worked in blue collar occupations; and 22 percent worked in services, farming and fishing (Table 4.3). Immigrants were less likely to be employed in managerial and professional positions than the average worker born in the United States. Only 16 percent of immigrants were employed as managers or professionals (Table 4.3). Only six percent of people born in

Figure 4.1: Mean weeks worked by occupation among people who worked for pay during the past 12 months



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Figure 4.2: Mean annual earnings by occupation among people who worked for pay during the past 12 months



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Spanish language countries and nine percent of all Hispanics were employed as managers or professionals (Table 4.3). However, immigrants born in European, Asian or other countries were as likely to be managers or professionals as people born in the United States, so the preponderance of Hispanics among the immigrant population might explain why immigrants were less likely than people born in the United States to be managers or professionals (Table 4.3). (The difference in employment patterns between immigrants from Spanish language countries and immigrants from other countries may be due at least partially to the fact that the background questionnaire was only available in English and Spanish, so the samples are not comparable.)

Hispanics were somewhat more likely to be employed in the lowest paying occupations of services, farming and fishing, than the average person born in the United States (Table 4.3). Only 21 percent of people born in the United States were employed in these occupations, compared with 29 percent of Hispanics. Just over one-fourth of immigrants were employed in services, farming, and fishing (Table 4.3).

Self-reported fluency was related to occupation (Table 4.3). As discussed above, people who spoke only a language other than English were more likely not to be employed than people who spoke English, and if they were employed they were more likely to be employed for only part of the year than their English-speaking counterparts. This same group, the people who spoke only a language other than English, was generally employed in the occupations that were least desirable in terms of continuity of employment and salary when they did find work. Almost 40 percent of people who spoke only a language other than English were employed in services, farming, and fishing, the least desirable occupations in terms of continuity of employment and salary, while 22 percent of the total population was employed in these occupations (Table 4.3). Only two percent of non-English speakers were employed in managerial and professional jobs, the most desirable occupations in terms of continuity of employment and salary (Table 4.3). People who reported they were fluent in both English and their native language (bilinguals) did not differ in their occupational distribution from native English speakers (English monolinguals). English language fluency was also important for employment in technical, sales, and administrative support jobs. Only nine percent of the population who was not fluent in English worked in these jobs, compared with 32 percent of the population that did speak English (Table 4.3). However, English fluency was less necessary for blue collar jobs. About half of the

Table 4.3: Occupation by country of birth and self-reported fluency among people who have held a paying job within the last three years

Row percent (s.e.)	Sample size	Population /1000	Managerial & Professional	Technical, sales & admin. support	Prec. Prod., operators, fabricators, craft, laborers	Services, farming & fishing
Total population	19,985	146,423	21 (0.3)	32 (0.5)	26 (0.6)	22 (0.4)
Country of birth						
United States	17,853	131,327	21 (0.3)	32 (0.5)	25 (0.6)	21 (0.4)
Spanish language	1,140	7,145	6 (1.0)	21 (1.5)	40 (2.1)	32 (2.3)
European language	394	3,337	29 (2.5)	26 (2.2)	29 (2.5)	16 (1.9)
Asian language	236	2,277	21 (3.4)	32 (3.6)	24 (4.7)	24 (4.9)
Other	362	2,337	24 (2.9)	37 (3.5)	16 (2.1)	22 (2.6)
Total population	19,985	146,423	21 (0.3)	32 (0.5)	26 (0.6)	22 (0.4)
Bilingual	2,032	14,269	20 (1.2)	32 (1.2)	26 (1.3)	23 (1.3)
English monolingual	17,403	128,272	21 (0.3)	32 (0.5)	25 (0.6)	21 (0.4)
Other monolingual	548	3,869	2 (0.8)	9 (1.4)	50 (3.0)	39 (3.3)
All immigrants	2,132	15,096	16 (1.2)	26 (1.2)	32 (1.4)	26 (1.5)
Bilingual	1,161	8,321	20 (1.8)	31 (1.6)	28 (1.7)	21 (1.7)
English monolingual	426	2,920	24 (2.6)	35 (3.4)	18 (2.1)	23 (3.0)
Other monolingual	544	3,850	2 (0.8)	9 (1.4)	50 (3.0)	39 (3.3)
All Hispanics	2,207	13,892	9 (0.8)	29 (1.2)	33 (1.4)	29 (1.5)
Bilingual	1,154	6,987	10 (1.1)	33 (1.9)	31 (2.0)	26 (1.7)
English monolingual	565	3,777	14 (2.1)	38 (2.4)	25 (2.4)	23 (2.6)
Spanish monolingual	486	3,115	2 (0.8)	9 (1.7)	48 (3.4)	41 (3.6)
Total population	19,985	146,423	21 (0.3)	32 (0.5)	26 (0.6)	22 (0.4)
Biliterate	1,390	9,754	23 (1.7)	35 (1.5)	22 (1.5)	20 (1.5)
English monoliterate	17,841	131,462	21 (0.3)	32 (0.5)	25 (0.6)	21 (0.4)
Other monoliterate	641	4,468	2 (0.5)	9 (1.2)	52 (2.6)	37 (2.5)
Not literate	113	738	3 (1.9)	9 (3.4)	48 (5.2)	40 (5.9)
All imigrants	2,132	15,096	16 (1.2)	26 (1.2)	32 (1.4)	26 (1.5)
Biliterate	914	6,593	23 (2.2)	34 (2.0)	24 (1.9)	20 (1.9)
English monoliterate	510	3,553	23 (2.2)	37 (2.9)	18 (2.1)	21 (2.7)
Other monoliterate	626	4,382	2 (0.5)	9 (1.2)	52 (2.6)	37 (2.6)
Not literate	82	568	4 (2.5)	9 (4.3)	47 (6.5)	41 (7.1)
All Hispanics	2,207	13,892	9 (0.8)	29 (1.2)	33 (1.4)	29 (1.5)
Biliterate	801	4,974	12 (1.9)	38 (2.6)	26 (2.2)	24 (2.1)
English monoliterate	760	4,853	13 (1.7)	37 (2.1)	25 (2.0)	25 (2.1)
Other monoliterate	555	3,493	2 (0.5)	9 (1.4)	51 (3.1)	38 (3.0)
Not literate	91	572	1 (1.2)	4 (1.7)	52 (6.6)	43 (7.3)

Respondents who reported that they spoke only English before starting school were coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

population that was not fluent in English was employed in these jobs, significantly more than the 26 percent of the population that was bilingual and 25 percent of the population that was English monolingual (Table 4.3). These jobs fell in the middle of our four categories in terms of salary and continuity of employment.

The same pattern held true for Hispanics and immigrants. Hispanics and immigrants who were fluent only in a language other than English were less likely to be employed as managers or professionals than Hispanics and immigrants who were bilingual or fluent only in English (Table 4.3). Hispanics and immigrants who did not speak English well were more likely to be employed in services, farming, and fishing than Hispanics and immigrants who were fluent in English (Table 4.3). Hispanics and immigrants who did not speak English were less likely than the general population to be employed in technical, sales, and administrative support jobs, and more likely to be employed in blue collar occupations (Table 4.3).

Although, as we discussed earlier in this chapter, people who were literate only in a language other than English were no less likely to be employed than people who were literate only in English, they were less likely to be employed in certain occupations. Although people who were literate only in a language other than English were more likely to be employed than people who were not literate in any language, when they were employed their occupational patterns were similar. Very few people who were not literate in English (including people who were not literate in any language) were employed in managerial and professional occupations, and approximately 40 percent were employed in service, farming, and fishing occupations (Table 4.3). People who were not literate in any language and people who were literate in a language other than English were more likely to be employed in blue collar occupations than people who were biliterate or literate only in English, and they were less likely to be employed in technical, sales, and administrative support occupations (Table 4.3).

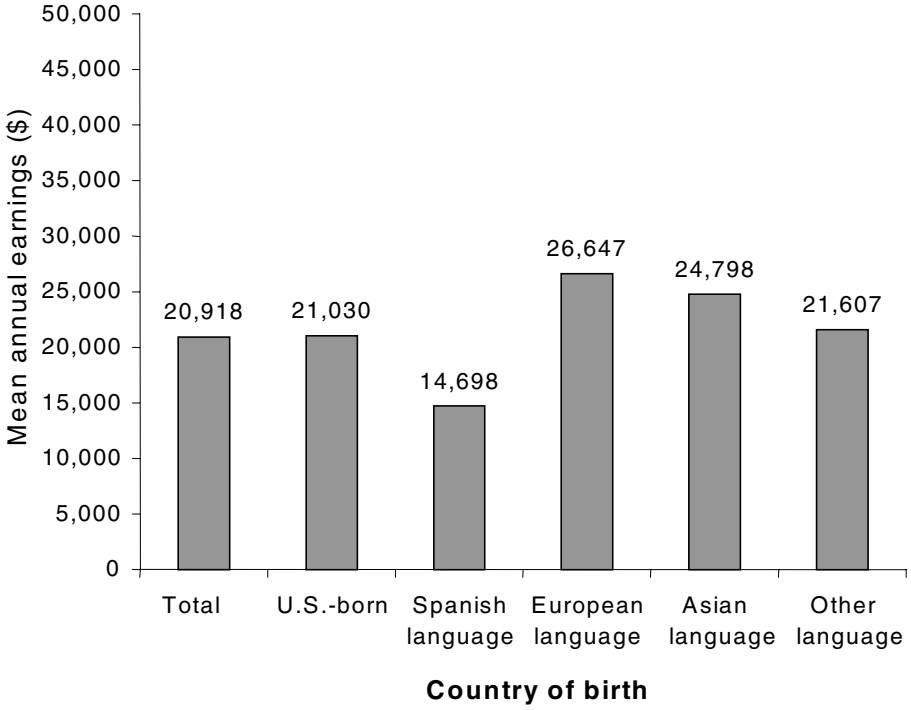
Thus, although being literate in any language indicated that a person was as likely as someone who was literate in English to obtain continuous employment throughout the year, people who were literate only in a language other than English were less likely to obtain the best paying, most secure jobs, and they were more likely to obtain lower paying, less secure jobs. People who were not literate in any language were even more disadvantaged. They were less likely to obtain employment than people who were literate, and when they were employed, they also were less likely to have high-paying, secure jobs.

People who were not fluent in English were also doubly disadvantaged. People who were fluent only in a language other than English were less likely to be employed than people who were fluent in English, and they were also less likely to be employed for 40 or more weeks during the year. When they were employed, they were less likely than people who were fluent in English to be employed in the highest paying jobs, and more likely to be employed in the lowest paying, least secure jobs.

Mean Annual Earnings by Country of Birth and Self-Reported Fluency

The mean annual earnings of the population that was employed at any time during 1992 was $20,918 (Figure 4.3). Immigrants from European language countries other than Spanish-speaking countries had average annual earned incomes of $26,647 in 1992, which was higher than the $21,030 average earned incomes of people born in the United States (Figure 4.3). People born in Spanish language countries had average annual earned incomes of $14,698 in 1992, which was lower than the

Figure 4.3: Mean annual earnings by country of birth among people who worked for pay during the past 12 months



Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish-speaking and other non-English-speaking adults may not be accurate, since the samples are not comparable for these populations

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

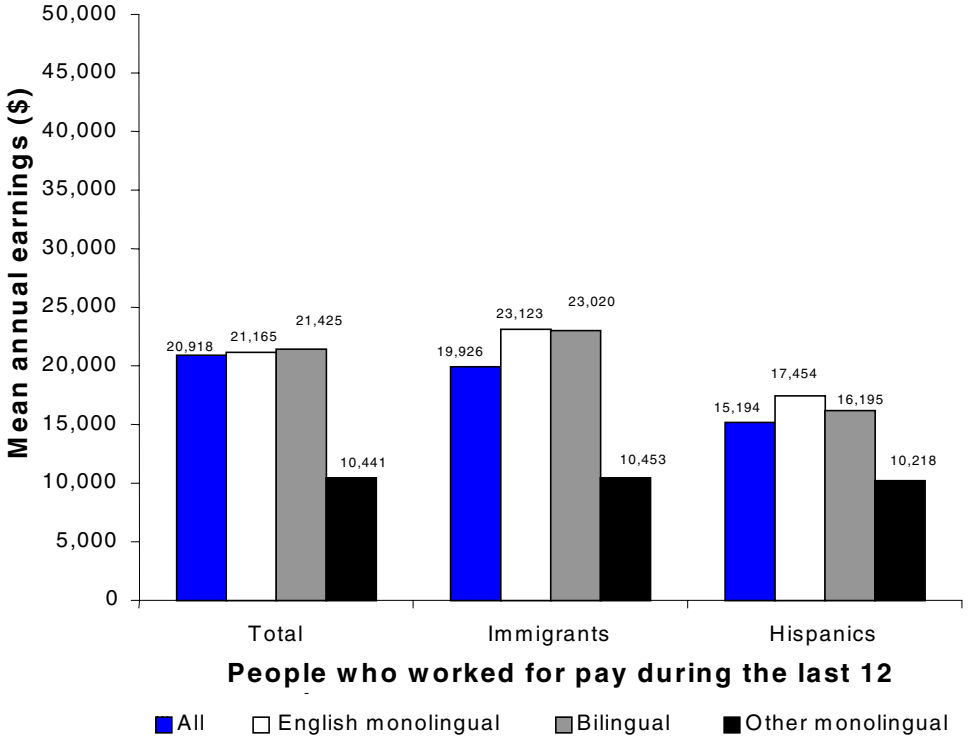
average earned incomes of people born in the United States (Figure 4.3). It was not unexpected that Spanish language immigrants had lower earnings, since, as discussed earlier in this chapter, immigrants from Spanish language countries were more likely than people born in the United States to work in low-paying occupations (services, farming and fishing) and less likely to work in high-paying occupations (managerial and professional). Also, since the background questionnaire was available in Spanish, the sample of Spanish-speaking immigrants included people with lower levels of English literacy than the samples of other immigrant groups.

The average earned income of all immigrants was not statistically different from the earned income of people born in the United States (Figure 4.4). Hispanics did have somewhat lower average annual earned incomes, $14,698, than the earned incomes of the total population, $20,918 (Figure 4.4).

Self-reported fluency was an important predictor of earnings. We have already discussed the fact that people who were not fluent in English were less likely to be employed continuously throughout the year than people who spoke English, and when they were employed they were less likely to be employed in high paying occupations than people who spoke English. Therefore, we expected their average earnings for the year to be lower than the average earnings of English speakers, even though we excluded from our calculations the average income of people who did not work at all during the previous year. In fact, the average earnings of people who were not fluent in English were only $10,441 during 1992, approximately half the average earnings of the total population (Figure 4.4). People who were bilingual had earnings almost identical to the earnings of people who spoke only English (Figure 4.4).

This same pattern also applied to immigrants and Hispanics. As illustrated in Figure 4.4, people in those two groups who were fluent only in a language other than English earned significantly less than people who were fluent in English. There was no difference in earnings between people who were bilingual and people who spoke only English (Figure 4.4). However, Hispanics who were bilingual earned less, on average, than all immigrants who were bilingual (Figure 4.4). Some of this difference was probably due to the fact that while 20 percent of bilingual immigrants were employed in managerial and professional occupations, only ten percent of bilingual Hispanics were employed in these occupations (Table 4.3).

Figure 4.4: Mean annual earnings by self-reported fluency among people who worked for pay during past 12 months



Respondents who reported that they spoke only English before starting school were coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

As we discussed above, although people who were literate in English were no more likely to be employed continuously during the year than people who were literate only in a language other than English, people who were literate only in a language other than English were unlikely to have managerial and professional jobs, the highest paying occupations. Therefore, it was not unexpected that people who were literate only in a language other than English had earned incomes of only $11,911 in 1992 (Figure 4.5). People who were not literate in any language also had very low earned incomes, $10,081 (Figure 4.5). The average earned incomes of people who were biliterate and people who were literate only in English did not differ much from each other (Figure 4.5).

When we looked at Hispanics and all immigrants separately, the same pattern was evident. Hispanics and immigrants who were not literate, or who were literate only in a language other than English, had earned incomes lower than Hispanics and immigrants who were literate in English (Figure 4.5).

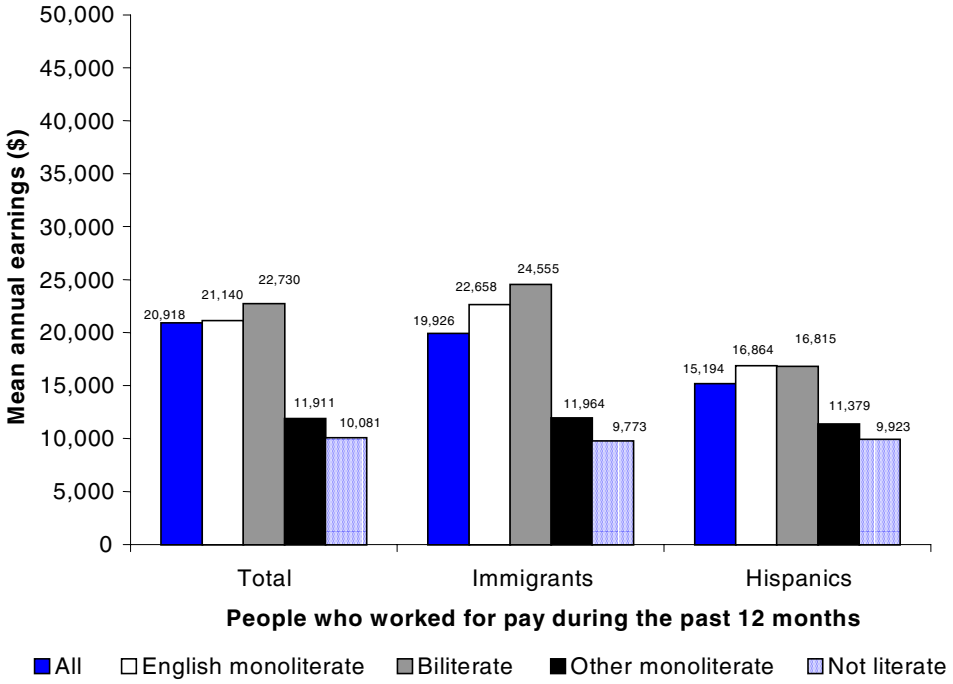
Average Literacy Proficiencies by Employment Status, Country of Birth and Self-Reported Fluency and Literacy

People who were employed had, on average, higher scores on all three National Adult Literacy Survey literacy scales than people who were unemployed; and people who were unemployed had, on average, higher scores on all three scales than people who were not in the labor force (Table 4.4). Although it looks as though this was also true of the various sub-groups of the population we analyzed, most of the differences within each sub-group in literacy between the employed, the unemployed and people not in the labor force were within the survey's margin of error.

Among the employed, those people born in Spanish language countries had much lower average scores on all three scales than people born in the United States, or in European, Asian, or other countries (Table 4.4). These lower literacy scores may have been at least part of the cause of the lower earnings among people born in Spanish language countries that we discussed earlier in this chapter. These lower literacy scores among employed immigrants from Spanish language countries may have also provided at least part of the explanation of why immigrants from Spanish language countries were less likely to be employed as managers and professionals than immigrants from other countries, and more likely to be employed in low paying service, farming and fishing occupations. (The difference in literacy scores between immigrants from Spanish language countries and immigrants from other countries may be due at least partially to the fact that the background questionnaire was only available in English and Spanish, so the samples are not comparable.)

Employed people who were bilingual had lower literacy scores on all three scales than employed people who were fluent only in English (Table 4.4). Interestingly, as we have seen, this did not translate into lower earnings for people who were bilingual.

Figure 4.5: Mean annual earnings by self-reported literacy among people who worked for pay during the past 12 months



Respondents who reported that they spoke only English before starting school and who reported that they read or wrote English well or very well were coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Average Literacy Proficiencies by Continuity of Employment and Self-Reported Fluency and Literacy

People who worked 40 or more weeks during the previous year had somewhat higher scores on all three literacy scales than people who worked 1 to 39 weeks (Table 4.5). People who did not work at all during the previous year had much lower scores on all three literacy scales than people who worked either 1 to 39 or 40 or more weeks (Table 4.5). Among people who worked 40 or more weeks during the previous year, those people born in Spanish language countries had lower scores on all three literacy scales than people born in the United States or

Table 4.4: Average literacy proficiencies by employment status, country of birth, and self-reported fluency

Average proficiency (s.e.)	Sample size	Population /1000	Prose		
			Employed	Unemployed	Not in labor force
Total population	24,933	190,462	287 (0.7)	260 (2.1)	246 (1.1)
All immigrants	2,755	20,075	223 (2.8)	204 (7.1)	192 (4.0)
All Hispanics	2,914	18,334	227 (2.7)	225 (5.9)	190 (4.0)
Country of birth					
United States	22,178	170,388	295 (0.9)	267 (2.2)	252 (1.1)
Spanish language	1,543	9,600	186 (3.6)	178 (8.7)	160 (4.4)
European language	506	4,817	270 (5.0)	- - -	227 (7.9)
Asian language	275	2,763	241 (10.0)	- - -	187 (18.0)
Other	431	2,896	250 (4.9)	- - -	241 (8.7)
Total population					
Bilingual	2,655	19,937	253 (2.3)	241 (6.1)	221 (3.6)
English monolingual	21,450	164,782	295 (0.9)	268 (2.2)	255 (1.1)
All immigrants					
Bilingual	1,435	10,686	239 (2.8)	224 (8.4)	217 (5.1)
English monolingual	514	3,786	293 (4.0)	266 (14.4)	259 (6.1)
All Hispanics					
Bilingual	1,492	9,088	239 (3.0)	236 (6.7)	210 (4.3)
English monolingual	684	4,599	283 (3.0)	272 (7.8)	253(5.5)
Total population					
Biliterate	1,761	12,781	261 (2.3)	248 (6.4)	231 (3.2)
English monoliterate	22,073	169,812	295 (0.8)	268 (2.2)	254 (1.1)
All immigrants					
Biliterate	1,145	8,393	251 (3.0)	231 (8.4)	226 (4.5)
English monoliterate	617	4,625	290 (3.7)	268 (13.0)	255 (6.1)
All Hispanics					
Biliterate	1,029	6,371	253 (3.1)	249 (6.9)	222 (4.5)
English monoliterate	944	6,035	277 (2.7)	264 (6.8)	244 (4.5)

Respondents who reported that they spoke only English before starting school were coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups, and comparisons between Spanish-speaking and other non-English-speaking groups may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Literacy Survey, 1992.

Table 4.4: Average literacy proficiencies by employment status, country of birth, and self-reported fluency (Continued)

Document			Quantitative		
Employed	Unemployed	Not in labor force	Employed	Unemployed	Not in labor force
283 (0.8)	257 (1.7)	237(1.3)	288 (0.7)	256 (1.9)	241 (1.6)
224 (2.9)	203 (7.1)	189 (3.6)	229 (3.2)	205 (8.5)	187 (4.7)
227 (2.9)	223 (6.6)	184 (4.0)	227 (2.9)	218 (7.1)	180 (4.2)
289 (0.8)	264 (1.7)	243 (1.3)	295 (0.8)	262 (1.7)	248 (1.5)
188 (3.9)	177 (8.7)	150 (4.4)	190 (4.2)	178 (10.1)	146 (4.6)
266 (4.5)	- - -	226 (7.3)	274 (4.3)	- - -	225 (10.3)
249 (8.4)	- - -	200 (15.6)	258 (10.0)	- - -	206 (19.0)
247 (5.2)	- - -	238 (11.0)	255 (4.5)	- - -	239 (10.3)
254 (2.3)	241 (6.1)	216 (3.2)	260 (2.2)	239 (7.1)	220 (4.9)
290 (0.9)	265 (1.8)	246 (1.3)	295 (0.8)	263 (1.8)	251 (1.5)
244 (3.0)	227 (8.4)	218 (4.7)	251 (2.8)	231 (10.3)	219 (6.6)
283 (3.9)	253 (13.3)	248 (6.9)	287 (3.5)	251 (14.6)	254 (8.0)
242 (3.0)	236 (6.5)	208 (4.7)	243 (3.0)	232 (7.0)	209 (4.9)
280 (3.2)	269 (7.6)	250 (5.7)	280 (3.9)	259 (7.5)	244 (5.4)
263 (2.3)	246 (6.9)	225 (3.4)	269 (2.5)	251 (7.2)	230 (4.5)
289 (0.8)	264 (1.7)	245 (1.3)	295 (0.7)	262 (1.7)	250 (1.5)
255 (3.2)	232 (9.9)	226 (4.6)	263 (3.4)	242 (10.3)	230 (5.6)
281 (3.6)	257 (11.8)	247 (6.4)	285 (3.3)	256 (12.8)	251 (7.2)
255 (2.7)	248 (6.8)	217 (5.4)	256 (3.1)	250 (7.2)	221 (5.1)
273 (3.0)	262 (5.8)	241 (4.6)	273 (3.6)	251 (6.6)	237 (4.3)

Table 4.5: Average literacy proficiencies by weeks employed in the past 12 months, country of birth, and self-reported fluency

Average proficiency (s.e.)	Sample size	Population /1000	Prose			Document			Quantitative		
			0 weeks	1 to 39 weeks	40 or more weeks	0 weeks	1 to 30 weeks	40 or more weeks	0 weeks	1 to 30 weeks	40 or more weeks
Total population	24,944	190,524	241 (1.1)	276 (1.5)	289 (0.8)	233 (1.3)	273 (1.4)	284 (0.8)	237 (1.7)	274 (1.5)	290 (0.8)
All immigrants	2,757	20,090	191 (3.7)	215 (5.3)	224 (3.1)	187 (3.4)	216 (5.1)	225 (3.0)	186 (4.5)	220 (5.9)	230 (3.1)
All Hispanics	2,915	18,347	193 (2.9)	222 (5.2)	227 (2.7)	187 (3.5)	221 (5.3)	228 (3.0)	184 (3.5)	218 (5.5)	229 (2.9)
Country of birth											
United States	22,187	170,434	248 (1.1)	284 (1.3)	296 (0.9)	239 (1.3)	280 (1.4)	291 (0.9)	243 (1.6)	281 (1.3)	297 (0.9)
Spanish Language	1,544	9,613	164 (4.1)	174 (6.6)	187 (4.0)	155 (4.7)	175 (6.2)	190 (4.2)	152 (5.0)	173 (7.0)	193 (4.3)
European Language	507	4,818	224 (8.4)	262 (11.6)	271 (4.6)	222 (6.9)	263 (9.2)	266 (3.8)	223 (10.9)	272 (9.9)	272 (3.8)
Asian Language	275	2,763	185 (18.7)	241 (16.3)	239 (12.0)	197 (16.6)	249 (13.7)	247 (10.2)	203 (19.0)	267 (13.9)	253 (12.5)
Other	431	2,896	231 (7.4)	249 (11.5)	254 (6.5)	226 (7.3)	251 (11.3)	251 (6.4)	230 (8.1)	253 (10.7)	258 (5.8)
Total population											
Bilingual	2,655	19,937	217 (3.5)	249 (4.3)	255 (2.6)	212 (3.2)	252 (4.5)	256 (2.6)	216 (4.7)	254 (4.5)	262 (2.5)
English monolingual	21,456	164,805	251 (1.1)	285 (1.4)	297 (0.9)	241 (1.3)	281 (1.4)	292 (0.9)	246 (1.5)	283 (1.4)	297 (0.9)
Immigrants											
Bilingual	1,435	10,686	214 (5.5)	238 (6.0)	240 (3.2)	215 (4.8)	245 (5.9)	243 (3.3)	218 (6.4)	251 (5.6)	250 (3.2)
English monolingual	515	3,787	253 (6.8)	286 (4.5)	294 (4.6)	241 (7.3)	279 (4.8)	284 (3.6)	248 (8.9)	282 (4.8)	286 (3.7)
Hispanics											
Bilingual	1,492	9,088	209 (4.6)	238 (5.6)	241 (3.5)	208 (4.9)	239 (5.4)	244 (3.5)	209 (4.9)	237 (6.1)	244 (3.2)
English monolingual	684	4,599	258 (5.9)	276 (4.8)	283 (3.4)	253 (6.2)	274 (5.4)	280 (3.8)	247 (6.0)	269 (5.6)	282 (4.1)
Total Population											
Biliterate	1,761	12,781	229 (3.5)	254 (5.3)	263 (2.5)	222 (3.5)	257 (5.5)	265 (2.6)	229 (4.6)	261 (4.8)	270 (2.8)
English monoliterate	22,079	169,835	250 (1.1)	284 (1.3)	297 (0.9)	241 (1.3)	280 (1.4)	291 (0.9)	245 (1.6)	282 (1.4)	297 (0.8)
Immigrants											
Biliterate	1,145	8,393	224 (5.1)	244 (6.6)	253 (3.1)	223 (4.8)	251 (6.7)	256 (3.4)	229 (5.9)	258 (6.2)	263 (3.7)
English monoliterate	618	4,627	250 (6.8)	281 (4.4)	293 (4.2)	239 (6.6)	275 (5.7)	284 (3.4)	245 (8.4)	279 (4.8)	286 (3.4)
Hispanics											
Biliterate	1,029	6,371	221 (4.6)	250 (7.8)	255 (2.9)	216 (5.2)	250 (7.0)	258 (2.8)	222 (5.1)	249 (8.0)	259 (3.1)
English monoliterate	944	6,035	249 (5.2)	266 (4.7)	277 (3.3)	245 (4.8)	263 (4.7)	275 (3.2)	240 (4.7)	258 (5.1)	276 (3.8)

Respondents who reported that they spoke only English before starting school were coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups, and comparisons between Spanish-speaking and other non-English-speaking groups may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Literacy Survey, 1992.

in European, Asian, or other countries (Table 4.5). As we discussed above, people born in Spanish language countries also had lower earnings than people born in European, Asian, or other countries. Some of this difference may be due to sampling.

Whether we looked at the total population, all immigrants, or all Hispanics, people who were fluent or literate only in English and who were employed 40 or more weeks during the previous year, had higher literacy scores on all three scales than people who were bilingual or biliterate and were employed 40 or more weeks during the previous year (Table 4.5). As we discussed above, there was no difference in average earned income between the people who were biliterate and people who were literate only in English, and the bilingual and people who spoke only English.

Average Literacy Proficiencies by Occupation, Country of Birth and Self-Reported Fluency and Literacy

Managers and professionals had the highest average scores on all three literacy scales, followed by people employed in technical, sales, and administrative support occupations (Table 4.6). People employed in blue collar and service, farming and fishing occupations had the lowest scores (Table 4.6). As we discussed earlier, employment followed the same pattern. People who were not fluent or literate in English were most likely to be employed in blue collar or service, farming and fishing occupations and least likely to be employed in managerial and professional or technical, sales and administrative support occupations.

People born in Spanish language countries had lower average literacy scores on all three scales than people born in the United States, or people born in European, Asian, or other countries employed in the same occupational group (Table 4.6). Immigrants and Hispanics had lower scores on all three scales than people born in the United States who were employed in the same occupational group (Table 4.6). However, as shown in Table 4.6, the gap in literacy scores between immigrants and Hispanics, and people born in the United States, was bigger for the lowest paying occupations (services, farming and fishing), than it was for the highest paying occupations (managerial and professional).

This large gap in literacy scores between immigrants and non-immigrants who were employed in service, farming and fishing

Table 4.6: Average literacy proficiencies by occupation, country of birth, and self-reported fluency among people who held a paying job during the past 12 months

Average proficiency (s.e.)	Sample Size	Population /1000	Prose: Managerial & professional	Prose: Tech, sales, admin. support	Prose: Prec prod operators, fabricators, crafts, laborers	Prose: Services, farming & fishing
Total population	19,985	146,423	325 (1.2)	295 (1.0)	257 (1.3)	260 (1.3)
All immigrants	2,132	15,096	293 (4.6)	257 (3.1)	182 (4.5)	185 (6.2)
All Hispanics	2,207	13,892	290 (5.5)	259 (3.5)	195 (4.2)	201 (5.9)
Country of birth						
United States	17,853	131,327	328 (1.1)	298 (1.0)	268 (1.4)	270 (1.2)
Spanish language	1,140	7,145	261 (9.6)	230 (5.8)	164 (4.8)	163 (6.4)
European language	394	3,337	316 (7.6)	285 (5.6)	216 (9.4)	242 (11.4)
Asian language	236	2,277	283 (8.8)	269 (6.8)	198 (21.9)	189 (22.5)
Other	362	2,337	288 (5.5)	266 (7.2)	211 (11.8)	219 (9.8)
Total population						
Bilingual	2,032	14,269	298 (3.8)	264 (3.0)	221 (3.8)	229 (5.7)
English monolingual	17,403	128,272	328 (1.2)	299 (1.0)	269 (1.4)	271 (1.1)
Immigrants						
Bilingual	1,161	8,321	287 (4.3)	256 (3.7)	208 (6.2)	206 (5.7)
English monolingual	426	2,920	318 (9.2)	297 (5.4)	262 (8.6)	266 (10.2)
Hispanics						
Bilingual	1,154	6,987	287 (8.1)	257 (3.7)	214 (4.7)	221 (6.0)
English monolingual	565	3,777	308 (9.4)	284 (4.3)	264 (6.7)	269 (4.6)
Total population						
Biliterate	1,390	9,754	296 (4.6)	265 (2.9)	232 (4.3)	232 (6.2)
English monoliterate	17,841	131,462	328 (1.2)	299 (1.0)	268 (1.4)	271 (1.1)
Immigrants						
Biliterate	914	6,593	288 (4.9)	257 (3.4)	225 (5.4)	216 (6.7)
English monoliterate	510	3,553	317 (8.1)	294 (4.6)	261 (8.2)	264 (9.9)
Hispanics						
Biliterate	801	4,974	291 (7.4)	261 (4.2)	235 (4.3)	231 (7.5)
English monoliterate	760	4,853	302 (7.9)	279 (4.2)	255 (5.7)	262 (4.5)

Respondents who reported that they spoke only English before starting school were coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who spoke or understood both that language and English well or very well as adults were coded bilingual. Respondents who spoke a language other than English before starting school and who read or wrote both that language and English well or very well as adults were coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups, and comparisons between Spanish-speaking and other non-English-speaking groups may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Literacy Survey, 1992.

Table 4.6: Average literacy proficiencies by occupation, country of birth, and self-reported fluency among people who held a paying during the past 12 months (Continued)

Document				Quantitative			
Managerial & professional	Tech, sales, admin. Support	Precis prod, operators, fabricators, crafts, laborers	Services, farming & fishing	Managerial & professional	Tech, sales, admin. Support	Precis prod, operators, fabricators, crafts, laborers	Services, farming & fishing
317 (1.2)	290 (1.0)	255 (1.2)	257 (1.4)	325 (1.1)	294 (1.1)	261 (1.2)	257 (1.6)
288 (3.5)	257 (3.5)	185 (5.0)	187 (6.3)	301 (4.5)	263 (3.3)	188 (4.8)	186 (7.5)
285 (5.3)	259 (3.2)	198 (4.6)	200 (6.1)	292 (5.0)	259 (3.5)	198 (4.3)	196 (6.5)
319 (1.2)	293 (1.0)	266 (1.3)	267 (1.2)	327 (1.1)	297 (1.1)	272 (1.4)	267 (1.3)
258 (8.0)	234 (4.7)	167 (5.0)	163 (6.5)	271 (11.4)	239 (6.2)	169 (4.5)	160 (7.2)
305 (5.3)	281 (6.2)	220 (7.9)	240 (11.8)	315 (6.8)	285 (5.2)	227 (7.1)	246 (10.2)
289 (6.0)	268 (7.9)	201 (25.5)	207 (16.8)	305 (9.1)	281 (6.9)	203 (27.4)	212 (22.3)
283 (6.5)	265 (6.9)	208 (12.9)	216 (11.6)	298 (5.1)	269 (6.1)	216 (11.0)	216 (10.8)
295 (3.9)	264 (3.0)	226 (4.0)	231 (5.6)	308 (3.7)	368 (3.2)	230 (4.3)	232 (5.5)
319 (1.2)	294 (1.1)	266 (1.4)	267 (1.2)	327 (1.1)	298 (1.1)	273 (1.4)	268 (1.3)
285 (4.6)	259 (4.0)	217 (6.3)	213 (6.8)	302 (4.6)	264 (4.0)	220 (6.3)	217 (6.8)
308 (5.9)	290 (4.6)	251 (9.8)	258 (8.9)	312 (7.9)	294 (4.5)	258 (8.7)	253 (7.3)
284 (7.6)	256 (3.3)	221 (5.0)	223 (5.9)	292 (9.3)	258 (4.0)	221 (4.7)	220 (5.6)
302 (9.3)	283 (5.2)	263 (5.4)	262 (4.6)	308 (8.7)	280 (5.4)	263 (6.9)	258 (5.8)
292 (4.3)	265 (3.0)	238 (5.0)	235 (6.2)	306 (4.2)	269 (3.2)	241 (4.2)	237 (6.3)
319 (1.2)	293 (1.0)	266 (1.3)	267 (1.2)	326 (1.1)	297 (1.1)	272 (1.3)	268 (1.2)
286 (5.2)	260 (3.7)	232 (6.2)	224 (7.3)	302 (5.1)	266 (4.1)	236 (5.4)	229 (7.7)
307 (6.1)	287 (4.7)	253 (8.5)	255 (8.8)	312 (7.5)	292 (4.1)	261 (8.9)	250 (7.3)
286 (7.2)	260 (3.9)	242 (5.5)	233 (7.2)	295 (8.2)	262 (4.8)	244 (4.9)	230 (7.0)
297 (8.6)	277 (4.4)	254 (5.1)	258 (4.3)	302 (8.3)	275 (4.9)	252 (6.2)	253 (5.1)

occupations was caused by the fact that, as discussed in Chapter 2 of this report, a much larger proportion of immigrants than non-immigrants had very low English literacy. The immigrants with very low English literacy clustered in the occupations that required the least English literacy. The gap was not as large in occupations requiring high literacy, because immigrants with few or no English literacy skills were not employed in those occupations.

Mean Annual Earnings by Literacy Levels

The National Adult Literacy Survey classified respondents performance on the literacy tasks that made up the assessment into five levels for each scale: *Level 1* (0 to 225), *Level 2* (226 to 275), *Level 3* (276 to 325), *Level 4* (326 to 375), and *Level 5* (376 to 500). Performance in Level 1 on the prose scale indicates the individual could, at most, locate a single piece of information in a relatively short text written in English that did not include any distracting incorrect information located near the correct information. Performance in Level 5 on the prose scale indicates that the individual was able to search for information in a dense text written in English, which contained a number of plausible distractors. The individual was able to make high-level inferences, use specialized background knowledge, and contrast complex information presented in English. Performance at each level indicates greater proficiency than performance at the previous level. (See Appendix A for a complete discussion of the levels on all five scales.)

For the total population, an increase from one level to the next on the prose scale correlated with an increase in average salary (Table 4.7).[2] People at Level 1 who worked at some point during the year before they answered the National Adult Literacy Survey earned an average of $12,815 during the year. People at Level 2 earned $15,989, people at Level 3 earned $20,669, people at Level 4 earned $28,045, and people at Level 5 earned $38,215. The survey's sampling error was too large to say whether or not people born in countries other than the United States earned more at each increasing literacy level.

Although people born in Spanish language countries had lower average earned incomes than people born in other countries, immigrants from Spanish language countries who scored at Level 3 on the prose literacy scale had incomes that were not statistically different from those

[2] The discussion in this section focuses on the prose scale. However, the findings are nearly identical if either of the other two scales is substituted for the prose scale.

Table 4.7: Mean annual earnings by country of birth and prose literacy level among people who worked for pay during the past 12 months

Annual earnings (s.e.)	Sample size	Population /1000	Level 1	Level 2	Level 3	Level 4	Level 5	All
Total population	16,916	123,638	$12,815 (449)	$15,989 (531)	$20,669 (517)	$28,045 (675)	$38,215 (2,327)	$20,918 (207)
All immigrants	1,789	12,551	$12,596 (881)	$21,202 (2,869)	$27,166 (3,484)	$32,156 (4,486)	---	$19,926 (940)
All Hispanics	1,839	11,624	$11,054 (515)	$15,217 (1,235)	$19,661 (2,452)	$24,141 (3,705)	---	$15,194 (604)
Country of birth								
United States	15,127	111,087	$12,940 (647)	$15,424 (517)	$20,295 (469)	$27,870 (618)	$37,404 (2,168)	$21,030 (215)
Spanish language	953	5,953	$11,153 (400)	$16,169 (1,911)	$29,140 (7,647)	---	---	$14,698 (835)
European language	326	2,795	$16,420 (3,533)	$23,679 (4,776)	$25,928 (3,930)	$32,223 (5,537)	---	$26,647 (1,957)
Asian language	200	1,863	$16,470 (4,542)	$29,277 (12,530)	$33,312 (13,935)	---	---	$24,798 (4,386)
Other	310	1,940	$13,658 (3,863)	$22,304 (6,363)	$21,994 (4,021)	---	---	$21,607 (2,243)
Total population								
Bilingual	1,686	11,749	$14,078 (1,490)	$19,898 (2,105)	$25,586 (3,061)	$31,886 (3,526)	---	$21,425 (1,099)
English monolingual	14,777	108,756	$13,151 (637)	$15,448 (511)	$20,312 (493)	$27,838 (657)	$37,987 (2,265)	$21,165 (242)
Other monolingual	451	3,120	---	---	---	---	---	$10,441 (401)
Immigrants								
Bilingual	968	6,916	$14,904 (1,856)	$22,995 (3,665)	$30,648 (5,536)	$36,505 (7,598)	---	$23,020 (1,635)
English monolingual	371	2,521	---	$16,084 (1,937)	$22,247 (5,093)	$27,678 (4,393)	---	$23,133 (2,485)
Other monolingual	449	3,109	---	---	---	---	---	$10,453 (401)
Hispanics								
Bilingual	954	5,732	$12,622 (1,001)	$15,436 (1,408)	$19,766 (2,629)	$26,271 (6,148)	---	$16,195 (906)
English monolingual	476	3,256	$8,879 (1,745)	$14,904 (1,702)	$19,650 (4,282)	$22,333 (3,330)	---	$17,454 (1,847)
Other monolingual	407	2,623	---	---	---	---	---	$10,218 (370)
Total population								
Biliterate	1,155	8,117	$14,854 (2,288)	$21,130 (2,623)	$26,766 (3,862)	$31,332 (4,345)	---	$22,730 (1,335)
English monoliterate	15,136	111,270	$13,048 (596)	$15,486 (511)	$20,332 (492)	$27,917 (643)	$38,050 (2,234)	$21,140 (233)
Other monoliterate	532	3,635	---	---	---	---	---	$11,911 (729)
Not literate	93	617	---	---	---	---	---	$10,081 (735)
Immigrants								
Biliterate	759	5,452	$15,439 (2,753)	$24,206 (4,109)	$30,790 (5,715)	$36,387 (7,752)	---	$24,555 (1,812)
English monoliterate	438	3,026	$14,284 (2,050)	$15,550 (1,972)	$22,269 (4,429)	$28,890 (4,362)	---	$22,658 (2,120)
Other monoliterate	523	3,585	---	---	---	---	---	$11,964 (740)
Not literate	69	489	---	---	---	---	---	$9,773 (743)
Hispanics								
Biliterate	659	4,087	$13,049 (1,602)	$15,584 (1,652)	$18,782 (3,219)	$27,437 (6,384)	---	$16,815 (1,102)
English monoliterate	639	4,157	$10,071 (1,473)	$14,856 (1,260)	$19,463 (3,732)	$21,859 (3,292)	---	$16,864 (1,517)
Other monoliterate	468	2,921	---	---	---	---	---	$11,379 (695)
Not literate	73	459	---	---	---	---	---	$9,923 (651)

Respondents who reported that they spoke only English before starting school and who read English materials at least once a week were coded as regularly reading only English, even if they learned to read another language in school or as an adult and read that language regularly. Respondents who spoke a language other than English before starting school and who regularly read both that language and English were coded as regularly reading two languages.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups, and comparisons between Spanish-speaking and other non-English-speaking groups may not be accurate, since the samples are not comparable for these populations.

--- Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

of people born in the United States who score at Level 3 on the prose literacy scale (Table 4.7). Hispanics' incomes at each of the five prose levels were comparable to the incomes of the total population at each level, indicating that Hispanics' lower average earnings and concentration in less desirable jobs may have been related to their low English literacy levels (Table 4.7). (Hispanics' low average literacy levels are attributable, at least in part, to the fact that Spanish was the only language other than English in which the background questionnaire was administered.) Immigrants' incomes at each level were also comparable to the income of people born in the United States (Table 4.7). Being bilingual or biliterate was not correlated with any measurable difference in an individual's income at any of the five prose levels.

Summary

There was a positive relationship between literacy proficiency and earnings in 1992. Employed individuals who were raised in homes where a language other than English was spoken and who currently speak both that language and English scored lower on all three literacy scales of the National Adult Literacy Survey than employed individuals who were raised in homes where only English was spoken and people who speak only English now. Therefore, we would expect people who were bilingual to have had lower average earnings than people who spoke only English as children and people who spoke only English as adults in 1992. However, the lower literacy scores of the bilingual population did not translate into lower average earnings. The bilingual population may have been providing employers with other important skills that compensated for their lower measured English literacy proficiency.

We have no data that allow us to measure what skills other than literacy the bilingual population brings to the work place. It is possible that people in some occupations in the United States were economically rewarded for knowing two languages, and it is also possible that the skills and attitudes necessary to learn to speak two languages well translated into other skills and attitudes necessary for succeeding at work. This is an interesting topic for future research.

Although the job market did not penalize the bilingual population for their lower English literacy levels, people who did not speak English or who spoke English poorly were less likely to be employed and more likely to be completely out of the labor force than people who were fluent in English. People who did not speak English well were also less likely to

have been employed 40 or more weeks during the previous year than other people living in the United States. When they were employed, people who spoke English poorly or not at all earned less money than people who were fluent in English. Blue collar jobs, and service, fishing, and farming jobs provided the majority of employment opportunities for people who were not fluent in English.

Interestingly, although people who were not literate were less likely to be employed than people who were literate, people who were literate only in a language other than English were no less likely to be employed than people who were literate in English. However, people who were literate only in a language other than English earned less money than people who were literate in English, and they were more likely to be employed intermittently during the year.

CHAPTER 5

Conclusion

Most adults living in the United States, including adults who were raised in non-English-speaking homes, are fluent and literate in English. However, a small minority of adults who were raised in non-English-speaking homes never develop fluency and literacy in English, even after many years of residence in the United States.

The research presented in Chapters 2 and 3 of this report shows that certain demographic factors are highly correlated with the probability that an individual living in the United States will not develop English language skills. Virtually everyone who was born in the United States or immigrated to the United States before age 12 is fluent and literate in English as an adult. Adults living in the United States who cannot read or speak English are primarily immigrants who arrived in the United States after age 12 with low levels of formal education.

The research presented in Chapter 4 of this report shows that adults living in the United States who do not become fluent and literate in English face substantial obstacles to integration into the economy of the United States. On average, they tend to be employed irregularly in low paying jobs.

Importance of Formal Education in the Acquisition of English Language Skills

Formal education in school plays an important role in the acquisition of English fluency and literacy for individuals who were raised in non-English-speaking homes, regardless of whether they are immigrants or native born. When asked where they learned various types of reading skills, National Adult Literacy Survey respondents overwhelmingly identified school as the locale of their learning. Among immigrants who arrived in the United States before age 12, almost all of whom are fluent and literate in English as adults, the education they received in American schools played a primary role in their development of English language skills. Many immigrants who arrived in the United States before age 12

completely adopted English and abandoned the use of their native language.

For adults who arrived in the United States at age 12 or older, the level of formal education they obtained in their native country is highly correlated with whether or not they adopted English as a second language. Immigrants who arrived in the United States at age 12 or older with little or no formal education were the least likely group to have or develop English language skills. However, immigrants who arrived in the United States at age 12 or older with high levels of formal education tended to learn English and also retain fluency and literacy in their native language.

Importance of Learning English for Economic Success in the United States

Proficiency in English is an important prerequisite for successful integration into the economy of the United States. Adults living in the United States who are not fluent and literate in English, primarily immigrants who arrived after age 12 with little or no formal education, face extra challenges in their day-to-day lives. They are less likely to be employed, and when they are employed they earn lower wages than individuals who are fluent and literate in English.

However, fluency in English at the level of a native speaker is not necessary for successful integration into the American economy. The average income and continuity of employment of individuals who learned English as their second language do not differ from the average income and continuity of employment of individuals who were raised in English-speaking homes.

Despite the successful integration of English as a second language learners into the U.S. economy, important differences do remain between native and non-native English speakers. Bilingual and biliterate individuals who learn English after having first learned another language have lower average levels of English literacy, as measured by the National Adult Literacy Survey, than native English speakers, despite the fact that they have higher average levels of education. They may bring other skills to the workplace that compensate for their lower levels of English literacy and allow them to have employment patterns and earnings comparable to native English speakers, despite their lower levels of literacy.

Summary and Implications

Overall, the findings in this report highlight the importance of formal education in the development of English fluency and literacy among non-native English speakers. Non-native English speakers who were born in the United States or arrived in this country as young children are almost indistinguishable from native English speakers in terms of measured English literacy levels. These individuals completed most of their formal education in American schools. Many individuals in this group are fluent and literate only in English as adults and have dropped all use of their native language.

Non-native English speakers who immigrated to the United States as teenagers or adults, but who completed at least high school in their native countries, have lower levels of English literacy than native English speakers. However, on average they were able to master enough English to have earnings and employment patterns comparable to native English speakers. Almost all individuals in this group retained their fluency and literacy in their native language.

It is primarily non-native English speakers with low levels of formal education who are truly disadvantaged by their lack of native English language skills. Non-native English speakers with little or no education do not, on average, acquire high enough levels of English fluency and literacy to be able to obtain high paying managerial and professional occupations, or even to obtain jobs with regular hours and paychecks.

Thus, the language in which education is received does not appear to be particularly important in determining whether or not non-native English speakers achieve economic success and at least a minimal mastery of the English language. Rather, what is critical for non-native English speakers is completing more than a few years of formal education in any language. That background of formal education appears to give non-native English speakers the necessary learning skills to acquire English language fluency and literacy when it is necessary for their well-being.

APPENDIX A

Interpreting the Literacy Scales[1]

Building on the two earlier literacy surveys conducted by Educational Testing Service (ETS), the performance results from the National Adult Literacy Survey are reported on three literacy scales — prose, document, and quantitative — rather than on a single conglomerate scale. Each of the three literacy scales ranges from 0 to 500.

The purpose of this section of the report is to give meaning to the literacy scales — or, more specifically, to interpret the numerical scores that are used to represent adults' proficiencies on these scales. Toward this end, the section begins with a brief summary of the task development process and of the way in which the literacy levels are defined. A detailed description of the prose, document, and quantitative scales is then provided. The five levels on each scale are defined, and the skills and strategies needed to successfully perform the tasks in each level are discussed. Sample tasks are presented to illustrate the types of materials and task demands that characterize the levels on each scale. The section ends with a brief summary of the probabilities of successful performance on tasks within each level for individuals who demonstrated different proficiencies.

Building the Literacy Tasks

The literacy scales make it possible not only to summarize the literacy proficiencies of the total population and of various subpopulations, but also to determine the relative difficulty of the literacy tasks administered in the survey. That is, just as an individual receives a score according to his or her performance on the assessment tasks, each task receives a value according to its difficulty as determined by the performance of the adults who participated in the survey. Previous research conducted at ETS has shown that the difficulty of a literacy task, and therefore its placement on a particular literacy scale, is determined by three factors: the structure or

[1] This chapter originally appeared in the first report on the National Adult Literacy Survey, I.S. Kirsch, A. Jungeblut, L. Jenkins, and A. Kolstad (September 1993). *Adult Literacy in America: A First Look at the Results of the National Adult Literacy Survey*. Washington, D.C.: U.S. Department of Education.

linguistic format of the material, the content and/or the context from which it is selected, and the nature of the task, or what the individual is asked to do with the material.

Materials. The materials selected for inclusion in NALS reflect a variety of linguistic formats that adults encounter in their daily activities. Most of the prose materials used in the survey are expository — that is, they describe, define, or inform — since most of the prose that adults read is expository in nature; however, narratives and poetry are included, as well. The prose materials include an array of linguistic structures, ranging from texts that are highly organized both topically and visually to those that are loosely organized. They also include texts of varying lengths, from multiple-page magazine selections to short newspaper articles. All prose materials included in the survey were reproduced in their original format.

The document materials represent a wide variety of structures, which are characterized as tables, charts and graphs, forms, and maps, among other categories. Tables include matrix documents in which information is arrayed in rows and columns — for example, bus or airplane schedules, lists, or tables of numbers. Documents categorized as charts and graphs include pie charts, bar graphs, and line graphs. Forms are documents that require information to be filled in, while other structures include such materials as advertisements and coupons.

The quantitative tasks require the reader to perform arithmetic operations using numbers that are embedded in print. Since there are no materials that are unique to quantitative tasks, these tasks were based on prose materials and documents. Most quantitative tasks were, in fact, based on document structures.

Content and/or Contexts. Adults do not read printed or written materials in a vacuum. Rather, they read within a particular context or for a particular purpose. Accordingly, the NALS materials represent a variety of contexts and contents. Six such areas were identified: home and family; health and safety; community and citizenship; consumer economics; work; and leisure and recreation.

In selecting materials to represent these areas, efforts were made to include as broad a range as possible, as well as to select universally relevant contexts and contents. This was to ensure that the materials would not be so specialized as to be familiar only to certain groups. In this way, disadvantages for individuals with limited background knowledge were minimized.

Types of Tasks. After the materials were selected, tasks were developed to accompany the materials. These tasks were designed to simulate the ways in which people use various types of materials and to require different strategies for successful task completion. For both the prose and document scales, the tasks can be organized into three major categories: *locating, integrating*, and *generating* information. In the locating tasks, readers are asked to match information that is given in a question or directive with either literal or synonymous information in the text or document. Integrating tasks require the reader to incorporate two or more pieces of information located in different parts of the text or document. Generating tasks require readers not only to process information located in different parts of the material, but also to go beyond that information by drawing on their knowledge about a subject or by making broad text-based inferences.

Quantitative tasks require readers to perform arithmetic operations — addition, subtraction, multiplication, or division — either singly or in combination. In some tasks, the type of operation that must be performed is obvious from the wording of the question, while in other tasks the readers must infer which operation is to be performed. Similarly, the numbers that are required to perform the operation can, in some cases, be easily identified, while in others, the numbers that are needed are embedded in text. Moreover, some quantitative tasks require the reader to explain how the problem would be solved rather than perform the calculation, and on some tasks the use of a simple four-function calculator is required.

Defining the Literacy Levels

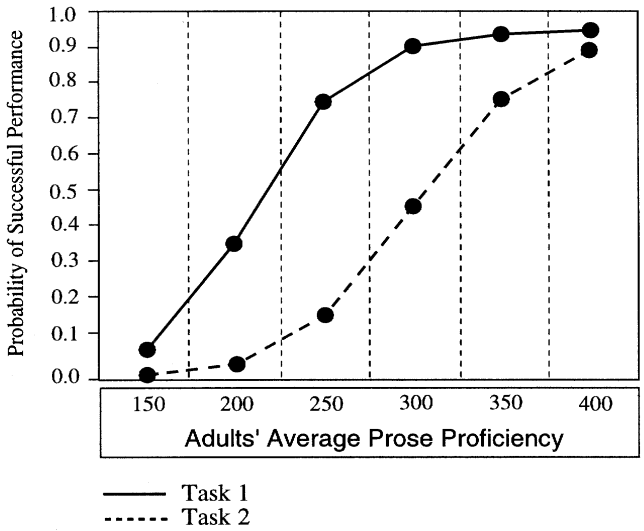
The relative difficulty of the assessment tasks reflects the interactions among the various task characteristics described here. As shown in Figure 1 in the Introduction to this report, the score point assigned to each task is the point at which the individuals with that proficiency score have a high probability of responding correctly. In this survey, an 80 percent probability of correct response was the criterion used. While some tasks were at the very low end of the scale and some at the very high end, most had difficulty values in the 200 to 400 range.

By assigning scale values to both the individuals and tasks, it is possible to see how well adults with varying proficiencies performed on tasks of varying difficulty. While individuals with low proficiency tend to perform well on tasks with difficulty values equivalent to or below their

level of proficiency, they are less likely to succeed on tasks with higher difficulty values. This does not mean that individuals with low proficiency can never succeed on more difficult literacy tasks — that is, on tasks whose difficulty values are higher than their proficiencies. They may do so some of the time. Rather, it means that their probability of success is not as high. In other words, the more difficult the task relative to their proficiency, the lower their likelihood of responding correctly.

The response probabilities for two tasks on the prose scale are displayed in Figure A.1. The difficulty of the first task is measured at the 250 point on the scale, and the second task is at the 350 point. This means that an individual would have to score at the 250 point on the prose scale to have an 80 percent chance (that is, a .8 probability) of responding correctly to Task 1. Adults scoring at the 200 point on the prose scale have only a 40 percent chance of responding correctly to this task, whereas those scoring at the 300 point and above would be expected to rarely miss this task and others like it.

Figure A.1: Probabilities of successful performance on two prose tasks by individuals at selected points on the prose scale



Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

In contrast, an individual would need to score at the 350 point to have an 80 percent chance of responding correctly to Task 2. While individuals performing at the 250 point would have an 80 percent chance

of success on the first task, their probability of answering the more difficult second task correctly is only 20 percent. An individual scoring at the 300 point is likely to succeed on this more difficult task only half the time.

An analogy may help clarify the information presented for the two prose tasks. The relationship between task difficulty and individual proficiency is much like the high jump event in track and field, in which an athlete tries to jump over a bar that is placed at increasing heights. Each high jumper has a height at which he or she is proficient. That is, he or she is able to clear the bar at that height with a high probability of success, and can clear the bar at lower levels almost every time. When the bar is higher than their level of proficiency, however, they can be expected to have a much lower chance of clearing it successfully.

Once the literacy tasks are placed on their respective scales, using the criterion described here, it is possible to see how well the interactions among the task characteristics explain the placement of various tasks along the scales.[2] In investigating the progression of task characteristics across the scales, certain questions are of interest. Do tasks with similar difficulty values (that is, with difficulty values near one another on a scale) have certain shared characteristics? Do these characteristics differ in systematic ways from tasks in either higher or lower levels of difficulty? Analyses of the interactions between the materials read and the tasks based on these materials reveal that an ordered set of information-processing skills appears to be called into play to perform the range of tasks along each scale.

To capture this ordering, each scale was divided into five levels that reflect the progression of information-processing skills and strategies: Level 1 (0 to 225), Level 2 (226 to 275), Level 3 (276 to 325), Level 4 (326 to 375), and Level 5 (376 to 500). These levels were determined not as a result of any statistical property of the scales, but rather as a result of shifts in the skills and strategies required to succeed on various tasks along the scales, from simple to complex.

The remaining pages of this section describe each scale in terms of the nature of the task demands at each of the five levels. After a brief introduction to each scale, sample tasks in each level are presented and the factors contributing to their difficulty are discussed. The aim of these discussions is to give meaning to the scales and to facilitate interpretation of the results provided in the first and second sections of this report.

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[2] I.S. Kirsch, P.B. Mosentlal (1990). *"Exploring Document Literacy: Variables Underlying the Performance of Young Adults,"* Reading Research Quarterly, 25. pp 5-30. .

Interpreting the Literacy Levels

Prose Literacy

The ability to understand and use information contained in various kinds of textual material is an important aspect of literacy. Most of the prose materials administered in this assessment were expository — that is, they inform, define, or describe — since these constitute much of the prose that adults read. Some narrative texts and poems were included, as well. The prose materials were drawn from newspapers, magazines, books, brochures, and pamphlets and reprinted in their entirety, using the typography and layout of the original source. As a result, the materials vary widely in length, density of information, and the use of structural or organizational aids such as section or paragraph headings, italic or bold face type, and bullets.

Each prose selection was accompanied by one or more questions or directives which asked the reader to perform specific tasks. These tasks represent three major aspects of information-processing: locating, integrating, and generating. Locating tasks require the reader to find information in the text based on conditions or features specified in the question or directive. The match may be literal or synonymous, or the reader may need to make a text-based inference in order to perform the task successfully. Integrating tasks ask the reader to compare or contrast two or more pieces of information from the text. In some cases the information can be found in a single paragraph, while in others it appears in different paragraphs or sections. In the generating tasks, readers must produce a written response by making text-based inferences or drawing on their own background knowledge.

In all, the prose literacy scale includes 41 tasks with difficulty values ranging from 149 to 468. It is important to remember that the locating, generating, and integrating tasks extend over a range of difficulty as a result of interactions with other variables including:

- the number of categories or features of information that the reader must process;
- the number of categories or features of information in the text that can distract the reader, or that may seem plausible but are incorrect;
- the degree to which information given in the question is obviously related to the information contained in the text; and
- the length and density of the text.

The five levels of prose literacy are defined, and sample tasks provided, in the following pages.

Prose Level 1 Scale range: 0 to 225

Most of the tasks in this level require the reader to read relatively short text to locate a single piece of information which is identical to or synonymous with the information given in the question or directive. If plausible but incorrect information is present in the text, it tends not to be located near the correct information.

Average difficulty value of tasks in this level: 198
Percentage of adults performing in this level: 21%

Tasks in this level require the reader to locate and match a single piece of information in the text. Typically the match between the question or directive and the text is literal, although sometimes synonymous matches may be necessary. The text is usually brief or has organizational aids such as paragraph headings or italics that suggest where in the text the reader should search for the specified information. The word or phrase to be matched appears only once in the text.

One task in Level 1 with a difficulty value of 210 asks respondents to read a newspaper article about a marathon swimmer and to underline the sentence that tells what she ate during a swim. Only one reference to food is contained in the passage, and it does not use the word "ate." Rather, the article says the swimmer "kept up her strength with banana and honey sandwiches, hot chocolate, lots of water and granola bars." The reader must match the word "ate" in the directive with the only reference to foods in the article.

Underline the sentence that tells what Ms. Chanin ate during the swim.

Swimmer completes Manhattan marathon

The Associated Press

NEW YORK-University of Maryland senior Stacy Chanin on Wednesday became the first person to swim three 28-mile laps around Manhattan.

Chanin, 23, of Virginia, climbed out of the East River at 96th Street at 9:30 p.m. She began the swim at noon on Tues-day.

A spokesman for the swimmer, Roy Brunett, said Chanin had kept up her strength with "banana and honey" sandwiches, hot chocolate, lots of water and granola bars."

Chanin has twice circled Manhattan before and trained for the new feat by swimming about 28.4 miles a week. The Yonkers native has competed as a swim-mer since she was 15 and hoped to persuade Olympic authorities to add a long-distance swimming event.

The Leukemia Society of America solicited pledges for each mile she swam.

In July 1983, Julie Ridge became the first person to swim around Manhattan twice. With her three laps, Chanin came up just short of Diana Nyad's distance record, set on a Florida-to-Cuba swim.

Prose Level 2 Scale range: 226 to 275

Some tasks in this level require readers to locate a single piece of information in the text; however, several distractors or plausible but incorrect pieces of information may be present, or low-level inferences may be required. Other tasks require the reader to integrate two or more pieces of information or to compare and contrast easily identifiable information based on a criterion provided in the question or directive.

Average difficulty value of tasks in this level: 259
Percentage of adults performing in this level: 27%

Like the tasks in Level 1, most of the tasks in this level ask the reader to locate information. However, these tasks place more varied demands on the reader. For example, they frequently require readers to match more than a single piece of information in the text and to discount information that only partially satisfies the question. If plausible but incomplete information is included in the text, such distractors do not

appear near the sentence or paragraph that contains the correct answer. For example, a task based on the sports article reproduced earlier asks the reader to identify the age at which the marathon swimmer began to swim competitively. The article first provides the swimmer's current age of 23, which is a plausible but incorrect answer. The correct information, age 15, is found toward the end of the article.

In addition to directing the reader to locate more than a single piece of information in the text, low-level inferences based on the text may be required to respond correctly. Other tasks in Level 2 (226 to 275) require the reader to identify information that matches a given criterion. For example, in one task with a difficulty value of 275, readers were asked to identify specifically what was wrong with an appliance by choosing the most appropriate of four statements describing its malfunction.

A manufacturing company provides its customers with the following instructions for returning appliances for service:

> When returning appliance for servicing, include a note telling as clearly and as specifically as possible what is wrong with the appliance.

A repair person for the company receives four appliances with the following notes attached. Circle the letter next to the note which best follows the instructions supplied by the company.

A
> The clock does not run correctly on this clock radio. I tried fixing it, but I couldn't.

C
> The alarm on my clock radio doesn't go off at the time I set. It rings 15-30 minutes later.

B
> My clock radio is not working. It stopped working right after I used it for five days.

D
> This radio is broken. Please repair and return by United Parcel Service to the address on my slip.

Readers in this level may also be asked to infer a recurring theme. One task with a difficulty value of 262 asks respondents to read a poem that uses several metaphors to represent a single, familiar concept and to identify its theme. The repetitiveness and familiarity of the allusions appear to make this "generating" task relatively easy.

Prose Level 3 Scale range: 276 to 325

Tasks in this level tend to require readers to make literal or synonymous matches between the text and information given in the task, or to make matches that require low-level inferences. Other tasks ask readers to integrate information from dense or lengthy text that contains no organizational aids such as headings. Readers may also be asked to generate a response based on information that can be easily identified in the text. Distracting information is present, but is not located near the correct information.

Average difficulty value of tasks in this level: 298
Percentage of adults performing in this level: 32%

One of the easier Level 3 tasks requires the reader to write a brief letter explaining that an error has been made on a credit card bill. This task is at 288 on the prose scale. Other tasks in this level require the reader to search fairly dense text for information. Some of the tasks ask respondents to make a literal or synonymous match on more than a single feature, while other tasks ask them to integrate multiple pieces of information from a long passage that does not contain organizational aids.

One of the more difficult Level 3 tasks (with a difficulty value of 316) requires the reader to read a magazine article about an Asian-American woman and to provide two facts that support an inference made from the text. The question directs the reader to identify what Ida Chen did to help resolve conflicts due to discrimination.

List two things that Chen became involved in or has done to help resolve conflicts due to discrimination.

IDA CHEN is the first Asian-American woman to become a judge of the Commonwealth of Pennsylvania.

She understands discrimination because she has experienced it herself.

Soft-spoken and eminently dignified, Judge Ida Chen prefers hearing about a new acquaintance rather than talking about herself. She wants to know about career plans, hopes, dreams, fears. She gives unsolicited advice as well as encouragement. She instills confidence.

Her father once hoped that she would become a professor. And she would have also made an outstanding social worker or guidance counselor. The truth is that Chen wears the caps of all these professions as a Family Court judge of the Court of Common Pleas of Philadelphia County, as a participant in public advocacy for minorities, and as a particularly sensitive, caring person.

She understands discrimination because she has experienced it herself. As an elementary school student, Chen tried to join the local Brownie troop. ''You can't be a member,'' she was told. ''Only American girls are in the Brownies.''

Originally intent upon a career as a journalist, she selected Temple University because of its outstanding journalism department and affordable tuition. Independence being a personal need, she paid for her tuition by working for Temple's Department of Criminal Justice. There she had her first encounter with the legal world and it turned her career plans in a new direction — law school.

Through meticulous planning, Chen was able to earn her undergraduate degree in two and a half years and she continued to work three jobs. But when she began her first semester as a Temple law student in the fall of 1973, she was barely able to stay awake. Her teacher Lynne Abraham, now a Common Pleas Court judge herself, couldn't help but notice Chen yawning in the back of the class, and when she determined that this student was not a party animal but a workhorse, she arranged a teaching assistant's job for Chen on campus.

After graduating from Temple Law School in 1976, Chen worked for the U.S. Equal Employment Opportunity Commission where she was a litigator on behalf of plaintiffs who experienced discrimination in the workplace, and then moved on to become the first Asian-American to serve on the Philadelphia Commission on Human Relations.

Appointed by Mayor Wilson Goode, Chen worked with community leaders to resolve racial and ethnic tensions and also made time to contribute free legal counsel to a variety of activist groups.

The ''Help Wanted'' section of the newspaper contained an entry that aroused Chen's curiosity — an ad for a judge's position. Her application resulted in her selection by a state judicial committee to fill a seat in the state court. And in July of 1988, she officially became a judge of the Court of Common Pleas. Running as both a Republican and Democratic candidate, her position was secured when she won her seat on the bench at last November's election.

At Family Court, Chen presides over criminal and civil cases which include adult sex crimes, domestic violence, juvenile delinquency, custody, divorce and support. Not a pretty picture.

Chen recalls her first day as judge, hearing a juvenile dependency case — ''It was a horrifying experience. I broke down because the cases were so depressing,'' she remembers.

Outside of the courtroom, Chen has made a name for herself in resolving interracial conflicts, while glorying in her Chinese-American identity. In a 1986 incident involving the desecration of Korean street signs in a Philadelphia neighborhood, Chen called for a meeting with the leaders of that community to help resolve the conflict.

Chen's interest in community advocacy is not limited to Asian communities. She has been involved in Hispanic, Jewish and Black issues, and because of her participation in the Ethnic Affairs Committee of the Anti-Defamation League of B'nai B'rith, Chen was one of 10 women nationwide selected to take part in a mission to Israel.

With her recently won mandate to judicate in the affairs of Pennsylvania's citizens, Chen has pledged to work tirelessly to defend the rights of its people and contribute to the improvement of human welfare. She would have made a fabulous Brownie.

— Jessica Schultz

Prose Level 4 Scale range: 326 to 375

These tasks require readers to perform multiple-feature matches and to integrate or synthesize information from complex or lengthy passages. More complex inferences are needed to perform successfully. Conditional information is frequently present in tasks in this level and must be taken into consideration by the reader.

Average difficulty value of tasks in this level: 352
Percentage of adults performing in this level: 17%

A prose task with a difficulty value of 328 requires the reader to synthesize the repeated statements of an argument from a newspaper column in order to generate a theme or organizing principle. In this instance, the supporting statements are elaborated in different parts of a lengthy text.

A more challenging task (with a difficulty value of 359) directs the reader to contrast the two opposing views stated in the newspaper feature reprinted here that discusses the existence of technologies that can be used to produce more fuel-efficient cars.

Contrast Dewey's and Hanna's views about the existence of technologies that can be used to produce more fuel-efficient cars while maintaining the size of the cars.

Face-Off: Getting More Miles Per Gallon

Demand cars with better gas mileage

By Robert Dewey
Guest columnist

WASHINGTON — Warning: Automakers are resurrecting their heavy-metal dinosaurs, aka gas guzzlers.

Government reports show that average new-car mileage has declined to 28.2 miles per gallon — the 1986 level. To reverse this trend, Congress must significantly increase existing gas-mileage standards.

More than half our Nobel laureates and 700 members of the National Academy of Sciences recently called global warming "the most serious environmental threat of the 21st century." In 1989, oil imports climbed to a near-record 46% of U.S. consumption. Increasing gas mileage is the single biggest step we can take to reduce oil imports and curb global warming. Greater efficiency also lowers our trade deficit (oil imports represent 40% of it) and decreases the need to drill in pristine areas.

Bigger engines and bigger cars mean bigger profits for automakers, who offer us the products they want us to buy. More than ever, Americans want products that have less of an environmental impact. But with only a few fuel-efficient cars to choose from, how do we find ones that meet all our needs?

Government studies show automakers have the technology to dramatically improve gas mileage — while maintaining the 1987 levels of comfort, performance and size mix of vehicles. Automakers also have the ability to make their products safer. The cost of these improvements will be offset by savings at the gas pump!

Cars can average 45 mpg and light trucks 35 mpg primarily by utilizing engine and transmission technologies already on a few cars today. Further improvements are possible by using technologies like the two-stroke engine and better aerodynamics that have been developed but not used.

When the current vehicle efficiency standards were proposed in 1974, Ford wrongly predicted that they "would require either all sub-Pinto-sized vehicles or some mix of vehicles ranging from a sub-subcompact to perhaps a Maverick." At that time, Congress required a 100% efficiency increase; raising gas mileage to 45 mpg requires only a 60% increase.

Americans want comfortable, safe and efficient cars. If automakers won't provide them, Congress must mandate them when it considers the issue this summer.

Let's hope lawmakers put the best interest of the environment and the nation ahead of the automakers' lobbyists and political action committees.

Robert Dewey is a conservation analyst for the Environmental Action Foundation.

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Don't demand end to cars people want

By Thomas H. Hanna
Guest columnist

DETROIT — Do Americans look forward to the day when they'll have to haul groceries, shuttle the kids to and from school or take family vacations in compact and subcompact cars?

I doubt it — which is why U.S. and import carmakers oppose the 40-miles-per-gallon to 45 mpg corporate average fuel economy mandates that some are pushing in Congress, either to curb tailpipe carbon dioxide emissions because of alleged global warming or for energy conservation.

Since the mid-1970s, automakers have doubled the fleet average fuel economy of new cars to 28 mpg — and further progress will be made.

Compact and subcompact cars with mileage of 40 mpg or better are now available, yet they appeal to only 5% of U.S. car buyers.

But to achieve a U.S. fleet average of 40 mpg to 45 mpg, carmakers would have to sharply limit the availability of family-size models and dramatically trim the size and weight of most cars.

There simply are not magic technologies to meet such a standard.

Almost every car now sold in the USA would have to be drastically downsized, and many would be obsolete.

As a result, Americans each year would be unable to buy the vehicles most suited for their needs: mid- and family-size models, luxury automobiles, mini-vans, small trucks and utility vehicles.

The fleet shift to compacts and subcompacts could also force the closing of assembly plants, supplier firms and dealerships, at a cost of thousands of U.S. jobs.

Although a growing number of scientists are skeptical of global warming, the issue deserves thorough international scientific evaluation, not premature unilateral U.S. action.

Carbon dioxide emissions from U.S. vehicles total less than 2.5% of worldwide "greenhouse" gases. Even doubling today's corporate average fuel economy for U.S. cars — if technically possible — would cut those gases about .5%

Whatever the motivation — alleged global warming or energy conservation — the stakes are high for millions of Americans and thousands of U.S. jobs in unrealistic corporate average fuel economy mandates.

Thomas H. Hanna is president and chief executive officer of the Motor Vehicle Manufacturers Association of the United States.

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Two other tasks in Level 4 on the prose scale require the reader to draw on background knowledge in responding to questions asked about two poems. In one they are asked to generate an unfamiliar theme from a short poem (difficulty value of 362), and in the other they are asked to compare two metaphors (value of 374).

Prose Level 5 Scale range: 376 to 500

Some tasks in this level require the reader to search for information in dense text which contains a number of plausible distractors. Others ask readers to make high-level inferences or use specialized background knowledge. Some tasks ask readers to contrast complex information.

Average difficulty value of tasks in this level: 423
Percentage of adults performing in this level: 3%

Two tasks in Level 5 require the reader to search for information in dense text containing several plausible distractors. One such task (difficulty value of 410) requires the respondent to read information about jury selection and service. The question requires the reader to interpret information to identify two ways in which prospective jurors may be challenged.

Identify and summarize the two kinds of challenges that attorneys use while selecting members of a jury.

DO YOU HAVE A QUESTION?

QUESTION: What is the new program for scheduling jurors?

ANSWER: This is a new way of organizing and scheduling jurors that is being introduced all over the country. The goals of this program are to save money, increase the number of citizens who are summoned to serve and decrease the inconvenience of serving.

The program means that instead of calling jurors for two weeks, jurors now serve only one day, or for the length of one trial if they are selected to hear a case. Jurors who are not selected to hear a case are excused at the end of the day, and their obligations to serve as jurors are fulfilled for three years. The average trial lasts two days once testimony begins.

An important part of what is called the One Day – One Trial program is the "standby" juror. This is a person called to the Courthouse if the number of cases to be tried requires more jurors than originally estimated. Once called to the Courthouse, the standby becomes a "regular" juror, and his or her service is complete at the end of one day or one trial, the same as everyone else.

Q. How was I summoned?

A. The basic source for names of eligible jurors is the Driver's License list which is supplemented by the voter registration list. Names are chosen from these combined lists by a computer in a completely random manner.

Once in the Courthouse, jurors are selected for a trial by this same computer and random selection process.

Q. How is the Jury for a particular trial selected?

A. When a group of prospective jurors is selected, more than the number needed for a trial are called. Once this group has been seated in the courtroom, either the Judge or the attorneys ask questions. This is called *voir dire*. The purpose of questions asked during *voir dire* is to ensure that all of the jurors who are selected to hear the case will be unbiased, objective and attentive.

In most cases, prospective jurors will be asked to raise their hands when a particular question applies to them. Examples of questions often asked are: Do you know the Plaintiff, Defendant or the attorneys in this case? Have you been involved in a case similar to this one yourself? Where the answer is yes, the jurors raising hands may be asked additional questions, as the purpose is to guarantee a fair trial for all parties. When an attorney believes that there is a legal reason to excuse a juror, he or she will challenge the juror for cause. Unless both attorneys agree that the juror should be excused, the Judge must either sustain or override the challenge.

After all challenges for cause have been ruled upon, the attorneys will select the trial jury from those who remain by exercising peremptory challenges. Unlike challenges for cause, no reason need be given for excusing a juror by peremptory challenge. Attorneys usually exercise these challenges by taking turns striking names from a list until both are satisfied with the jurors at the top of the list or until they use up the number of challenges allowed. Challenged jurors and any extra jurors will then be excused and asked to return to the jury selection room.

Jurors should not feel rejected or insulted if they are excused for cause by the Court or peremptorily challenged by one of the attorneys. The *voir dire* process and challenging of jurors is simply our judicial system's way of guaranteeing both parties to a lawsuit a fair trial.

Q. Am I guaranteed to serve on a jury?

A. Not all jurors who are summoned actually hear a case. Sometimes all the Judges are still working on trials from the previous day, and no new jurors are chosen. Normally, however, some new cases begin every day. Sometimes jurors are challenged and not selected.

A somewhat more demanding task (difficulty value of 423) involves the magazine article on Ida Chen reproduced earlier. This more challenging task requires the reader to explain the phrase "recently won mandate" used at the end of the text. To explain this phrase, the reader needs to understand the concept of a political mandate as it applies to Ida Chen and the way she is portrayed in this article.

Document Literacy

Another important aspect of being literate in modern society is having the knowledge and skills needed to process information from documents. We often encounter tables, schedules, charts, graphs, maps, and forms in everyday life, both at home and at work. In fact, researchers have found that many of us spend more time reading documents than any other type of material.[3] The ability to locate and use information from documents is therefore essential.

Success in processing documents appears to depend at least in part on the ability to locate information in complex arrays and to use this information in the appropriate ways. Procedural knowledge may be needed to transfer information from one source or document to another, as is necessary in completing applications or order forms.

The NALS document literacy scale contains 81 tasks with difficulty values that range from 69 to 396 on the scale. By examining tasks associated with various proficiency levels, we can identify characteristics that appear to make certain types of document tasks more or less difficult for readers. Questions and directives associated with these tasks are basically of four types: *locating, cycling, integrating,* and *generating*. Locating tasks require the readers to match one or more features of information stated in the question to either identical or synonymous information given in the document. Cycling tasks require the reader to locate and match one or more features, but differ in that they require the reader to engage in a series of feature matches to satisfy conditions given in the question. The integrating tasks typically require the reader to compare and contrast information in adjacent parts of the document. In the generating tasks, readers must produce a written response by processing information found in the document and also making text-based inferences or drawing on their own background knowledge.

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[3] J.T. Guthrie, M. Seifert, and I.S. Kirsch (1986). "*Effects of Education, Occupation, and Setting on Reading Practices.*" American Educational Research Journal, 23. pp. 151-160.

As with the prose tasks, each type of question or directive extends over a range of difficulty as a result of interactions among several variables or task characteristics that include:

- the number of categories or features of information in the question that the reader has to process or match;
- the number of categories or features of information in the document that can serve to distract the reader or that may seem plausible but are incorrect;
- the extent to which the information asked for in the question is obviously related to the information stated in the document; and
- the structure of the document.
- A more detailed discussion of the five levels of document literacy is provided in the following pages.

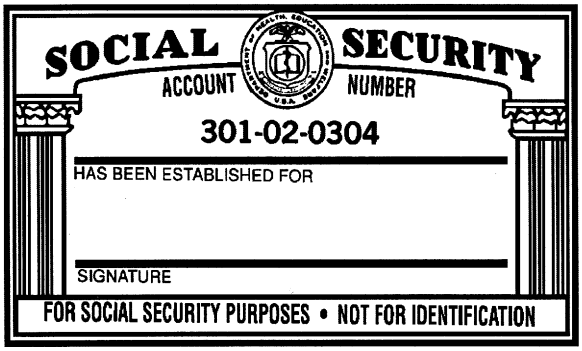
Document Level 1 Scale range: 0 to 225

Tasks in this level tend to require the reader either to locate a piece of information based on a literal match or to enter information from personal knowledge onto a document. Little, if any, distracting information is present.

Average difficulty value of tasks in this level: 195
Percentage of adults performing in this level: 23%

Some of the Level 1 tasks require the reader to match one piece of information in the directive with an identical or synonymous piece of information in the document. For example, readers may be asked to write a piece of personal background information — such as their name or age — in the appropriate place on a document. One task with a difficulty value of 69 directs individuals to look at a Social Security card and sign their name on the line marked "signature." Tasks such as this are quite simple, since only one piece of information is required, it is known to the respondent, and there is only one logical place on the document where it may be entered.

Here is a Social Security card. Sign your name on the line that reads "signature."



Other tasks in this level are slightly more complex. For example, in one task, readers were asked to complete a section of a job application by providing several pieces of information. This was more complicated than the previous task described, since respondents had to conduct a series of one-feature matches. As a result, the difficulty value of this task was higher (218).

You have gone to an employment center for help in finding a job. You know that this center handles many different kinds of jobs. Also, several of your friends who have applied here have found jobs that appeal to you.

The agent has taken your name and address and given you the rest of the form to fill out. Complete the form so the employment center can help you get a job.

Birth date _____ Age _____ Sex: Male ___ Female___

Height _____ Weight_____ Health _____

Last grade completed in school _____

Kind of work wanted:

Part-time _____ Summer _____

Full-time _____ Year-round _____

Other tasks in this level ask the reader to locate specific elements in a document that contains a variety of information. In one task, for

example, respondents were given a form providing details about a meeting and asked to indicate the date and time of the meeting, which were stated in the form. The difficulty values associated with these tasks were 183 and 180, respectively. The necessary information was referred to only once in the document.

Document Level 2 Scale range: 226 to 275

Tasks in this level are more varied than those in Level 1. Some require the reader to match a single piece of information; however, several distractors may be present, or the match may require low-level inferences. Tasks in this level may also ask the reader to cycle through information in a document or to integrate information from various parts of a document.

Average difficulty value of tasks in this level: 249
Percentage of adults performing in this level: 28%

Some tasks in Level 2 ask readers to match two pieces of information in the text. For example, one task with a difficulty value of 261 directs the respondent to look at a pay stub and to write "the gross pay for this year to date." To perform the task successfully, respondents must match both "gross pay" and "year to date" correctly. If readers fail to match on both features, they are likely to indicate an incorrect amount.

What is the gross pay for this year to date?

HOURS			
REGULAR	2ND SHIFT	OVERTIME	TOTAL
50.0			50.0

PERIOD ENDING	REGULAR	OVERTIME	GROSS	DEF. ANN	NET PAY
03/15/85					
CURRENT	625.00		625.00		459.88
YEAR TO DATE			4268.85		

TAX DEDUCTIONS

	FED. W/H	STATE W/H	CITY W/H	FICA
CURRENT	108.94	13.75		38.31
YEAR TO DATE	734.98	82.50		261.67

OTHER DEDUCTIONS

CR UNION		UNITED FD	PERS INS.	MISC.	MISC CODE

NON-NEGOTIABLE

OTHER DEDUCTIONS

CODE	TYPE	AMOUNT	CODE	TYPE	AMOUNT
07	DEN	4.12			

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A second question based on this document — What is the current net pay? — was also expected to require readers to make a two-feature

match. Accordingly, the difficulty values of the two items were expected to be similar. The task anchored at about the 200 point on the scale, however, and an analysis of the pay stub reveals why its difficulty was lower than that of the previous task. To succeed on the second task, the reader only needs to match on the feature "net pay." Since the term appears only once on the pay stub and there is only one number in the column, this task requires only a one-feature match and receives a difficulty value that lies within the Level 1 range on the document scale.

Tasks in Level 2 may also require the reader to integrate information from different parts of the document by looking for similarities or differences. For example, a task with a difficulty value of 268 asks respondents to study a line graph showing a company's seasonal sales over a three-year period, then predict the level of sales for the following year, based on the seasonal trends shown in the graph.

You are a marketing manager for a small manufacturing firm. This graph shows your company's sales over the last three years. Given the seasonal pattern shown on the graph, predict the sales for Spring 1985 (in thousands) by putting an "x" on the graph.

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Document Level 3 Scale range: 276 to 325

Some tasks in this level require the reader to integrate multiple pieces of information from one or more documents. Others ask readers to cycle through rather complex tables or graphs which contain information that is irrelevant or inappropriate to the task.

Average difficulty value of tasks in this level: 302
Percentage of adults performing in this level: 31%

Tasks within the range for Level 3 ask the reader to locate particular features in complex displays, such as tables that contain nested information. Typically, distractor information is present in the same row or column as the correct answer. For example, the reader might be asked to use a table that summarizes appropriate uses for a variety of products, and then choose which product to use for a certain project. One such task had a difficulty value of 305. To perform this task successfully, the respondent uses a table containing nested information to determine the type of sandpaper to buy if one needs "to smooth wood in preparation for sealing and plans to buy garnet sandpaper." This task requires matching not only on more than a single feature of information but also on features that are not always superordinate categories in the document. For example, "preparation for sealing" is subordinated or nested under the category "wood," while the type of sandpaper is under the main heading of "garnet." In addition, there are three other types of sandpaper that the reader might select that partially satisfy the directive.

You need to smooth wood in preparation for sealing and plan to buy garnet sandpaper. What type of sandpaper should you buy?

ABRASIVE SELECTION GUIDE

MATERIAL & OPERATION	PRODUCTION™					GARNET				WETORDRY™				FRE-CUT™		EMERY		
	EC	C	M	F	EF	C	M	F	EF	VF	EF	SF	UF	VF	EF	C	M	F
WOOD																		
Paint Removal	■	■																
Heavy Stock Removal	■	■				■												
Moderate Stock Removal			■				■											
Preparation for Sealing				■				■										
After Sealer					■				■		■							
Between Coats											■	■			■			
After Final Coat												■	■					
METAL																		
Rust and Paint Removal	■	■														■		
Light Stock Removal	■	■																
Preparation for Priming			■	■										■			■	
Finishing and Polishing					■					■	■	■	■					■
After Primer					■						■	■			■			
Between Coats												■			■			
After Final Coat													■					
PLASTIC & FIBERGLASS																		
Shaping	■	■																
Light Stock Removal			■															
Finishing & Scuffing				■	■					■				■				

EC = Extra Coarse C = Coarse M = Medium F = Fine VF = Very Fine EF = Extra Fine SF = Super Fine UF = Ultra Fine

SAFETY INFORMATION:
n Wear approved safety goggles when sanding.
n Use particle/dust mask or other means to prevent inhalation of sanding dust.
n When using power tools, follow manufacturer's recommended procedures and safety instructions.

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At the same level of difficulty (306), another task directs the reader to a stacked bar graph depicting estimated power consumption by source for four different years. The reader is asked to select an energy source that will provide more power in the year 2000 than it did in 1971. To succeed on this task, the reader must first identify the correct years and then compare each of the five pairs of energy sources given.

Document Level 4 Scale range: 326 to 375

Tasks in this level, like those in the previous levels, ask readers to perform multiple-feature matches, cycle through documents, and integrate information; however, they require a greater degree of inferencing. Many of these tasks require readers to provide numerous responses but do not designate how many responses are needed. Conditional information is also present in the document tasks in this level and must be taken into account by the reader.

Average difficulty value of tasks in this level: 340

Percentage of adults performing in this level: 15%

One task in this level (348) combines many of the variables that contribute to difficulty in Level 4. These include: multiple feature matching, complex displays involving nested information, numerous distractors, and conditional information that must be taken into account in order to arrive at a correct response. Using the bus schedule shown here, readers are asked to select the time of the next bus on a Saturday afternoon, if they miss the 2:35 bus leaving Hancock and Buena Ventura going to Flintridge and Academy. Several departure times are given, from which respondents must choose the correct one.

On Saturday afternoon, if you miss the 2:35 bus leaving Hancock and Buena Ventura going to Flintridge and Academy, how long will you have to wait for the next bus?

ROUTE **5**

VISTA GRANDE

This bus line operates Monday through Saturday providing *"local service"* to most neighborhoods in the northeast section.

Buses run thirty minutes apart during the morning and afternoon rush hours Monday through Friday.

Buses run one hour apart at all other times of day and Saturday.

No Sunday, holiday or night service.

	OUTBOUND from Terminal						INBOUND toward Terminal					*You can transfer from this bus to another headed anywhere else in the city bus system*	
	Leave Downtown Terminal	Leave Hancock and Buena Ventura	Leave Citadel	Leave Rustic Hills	Leave North Carefree and Oro Blanco	Arrive Flintridge and Academy	Leave Flintridge and Academy	Leave North Carefree and Oro Blanco	Leave Rustic Hills	Leave Citadel	Leave Hancock and Buena Ventura	Arrive Downtown Terminal	
AM							6:15	6:27	6:42	6:47	6:57	7:15	
							6:45	**6:57**	**7:12**	**7:17**	**7:27**	**7:45**	**Monday through Friday only**
	6:20	6:35	6:45	6:50	7:03	7:15	7:15	7:27	7:42	7:47	7:57	8:15	
	6:50	**7:05**	**7:15**	**7:20**	**7:33**	**7:45**	**7:45**	**7:57**	**8:12**	**8:17**	**8:27**	**8:45**	**Monday through Friday only**
	7:20	7:35	7:45	7:50	8:03	8:15	8:15	8:27	8:42	8:47	8:57	9:15	
	7:50	**8:05**	**8:15**	**8:20**	**8:33**	**8:45**	**8:45**	**8:57**	**9:12**	**9:17**	**9:27**	**9:45**	**Monday through Friday only**
	8:20	8:35	8:45	8:50	9:03	9:15	9:15	9:27	9:42	9:47	9:57	10:15	
	8:50	**9:05**	**9:15**	**9:20**	**9:33**	**9:45**	**9:45**	**9:57**	**10:12**	**10:17**	**10:27**	**10:45**	**Monday through Friday only**
	9:20	9:35	9:45	9:50	10:03	10:15	10:15	10:27	10:42	10:47	10:57	11:15	
	10:20	10:35	10:45	10:50	11:03	11:15	11:15	11:27	11:42	11:47	11:57	12:15	
	11:20	11:35	11:45	11:50	12:03	12:15	12:15	12:27	12:42 p.m.	12:47 p.m.	12:57 p.m.	1:15 p.m.	
PM	12:20	12:35	12:45	12:50	1:03	1:15	1:15	1:27	1:42	1:47	1:57	2:15	
	1:20	1:35	1:45	1:50	2:03	2:15	2:15	2:27	2:42	2:47	2:57	3:15	
	2:20	2:35	2:45	2:50	3:03	3:15	3:15	3:27	3:42	3:47	3:57	4:15	
	2:50	**3:05**	**3:15**	**3:20**	**3:33**	**3:45**	**3:45**	**3:57**	**4:12**	**4:17**	**4:27**	**4:45**	**Monday through Friday only**
	3:20	3:35	3:45	3:50	4:03	4:15	4:15	4:27	4:42	4:47	4:57	5:15	
	3:50	**4:05**	**4:15**	**4:20**	**4:33**	**4:45**	**4:45**	**4:57**	**4:12**	**4:17**	**5:27**	**5:45**	**Monday through Friday only**
	4:20	4:35	4:45	4:50	5:03	5:15	5:15	5:27	5:42	5:47	5:57	6:15	
	4:50	**5:05**	**5:15**	**5:20**	**5:33**	**5:45**	**5:45**	**5:57**	**6:12**	**6:17**	**6:27**	**6:45**	**Monday through Friday only**
	5:20	5:35	5:45	5:50	6:03	6:15							
	5:50	**6:05**	**6:15**	**6:20**	**6:33**	**6:45**							**Monday through Friday only**
	6:20	6:35	6:45	6:50	7:03	7:15							

To be sure of a smooth transfer tell the driver of this buss the name of the second bus you need.

Other tasks involving this bus schedule are found in Level 3. These tasks require the reader to match on fewer features of information and do not involve the use of conditional information.

Document Level 5 Scale range: 376 to 500

Tasks in this level require the reader to search through complex displays that contain multiple distractors, to make high-level text-based inferences, and to use specialized knowledge.

Average difficulty value of tasks in this level: 391
Percentage of adults performing in this level: 3%

A task receiving a difficulty value of 396 involves reading and understanding a table depicting the results from a survey of parents and teachers evaluating parental involvement in their school. Respondents were asked to write a brief paragraph summarizing the results. This particular task requires readers to integrate the information in the table to compare and contrast the viewpoints of parents and teachers on a selected number of
school issues.

Using the information in the table, write a brief paragraph summarizing the extent to which parents and teachers agreed or disagreed on the statements about issues pertaining to parental involvement at their school.

Parents and Teachers Evaluate Parental Involvement at Their School

Do you agree or disagree that . . . ?

	Total	Level of School: Elementary	Junior High	High School
		percent agreeing		
Our school does a good job of encouraging parental involvement in sports, arts, and other nonsubject areas				
Parents	77	76	74	79
Teachers	77	73	77	85
Our school does a good job of encouraging parental involvement in educational areas				
Parents	73	82	71	64
Teachers	80	84	78	70
Our school only contacts parents when there is a problem with their child				
Parents	55	46	62	63
Teachers	23	18	22	33
Our school does not give parents the opportunity for any meaningful roles				
Parents	22	18	22	28
Teachers	8	8	12	7

Source: The Metropolitan Life Survey of the American Teacher, 1987

Quantitative Literacy

Since adults are often required to perform numerical operations in everyday life, the ability to perform quantitative tasks is another important aspect of literacy. These abilities may seem, at first glance, to be fundamentally different from the types of skills involved in reading prose and documents and, therefore, to extend the concept of literacy beyond its traditional limits. However, research indicates that the processing of printed information plays a critical role in affecting the difficulty of tasks along this scale.[4]

[4] I.S. Kirsch, A. Jungeblut, (1986). *Literacy: Profiles of America's Young Adults, Final Report.* Princeton, NJ: Educational Testing Service. I.S. Kirsch, A. Jungeblut (1992). *Beyond the School Doors: The Literacy Needs of Job Seekers served by the U.S. Department of Labor.* Princeton, NJ: Educational Testing Service.

The quantitative literacy scale contains some 39 tasks with difficulty values that range from 191 to 436. The difficulty of these tasks appears to be a function of several factors, including:

- the particular arithmetic operation called for;
- the number of operations needed to perform the task ;
- the extent to which the numbers are embedded in printed materials; and
- the extent to which an inference must be made to identify the type of operation to be performed.

In general, it appears that many individuals can perform simple arithmetic operations when both the numbers and operations are made explicit. However, when the numbers to be used must be located in and extracted from different types of documents that contain similar but irrelevant information, or when the operations to be used must be inferred from printed directions, the tasks become increasingly difficult.

A detailed discussion of the five levels of quantitative literacy is provided on the following pages.

Quantitative Level 1 Scale range: 0 to 225

Tasks in this level require readers to perform single, relatively simple arithmetic operations, such as addition. The numbers to be used are provided and the arithmetic operation to be performed is specified.

Average difficulty value of tasks in this level: 206
Percentage of adults performing in this level: 22%

The least demanding task on the quantitative scale (191) requires the reader to total two numbers on a bank deposit slip. In this task, both the numbers and the arithmetic operation are judged to be easily identified and the operation involves the simple addition of two decimal numbers that are set up in column format.

You wish to use the automatic teller machine at your bank to make a deposit. Figure the total amount of the two checks being deposited. Enter the amount on the form in the space next to TOTAL.

Availability of Deposits

Funds from deposits may not be available for immediate withdrawal. Please refer to your institution's rules governing funds availability for details.

Crediting of deposits and payments is subject to verification and collection of actual amounts deposited or paid in accordance with the rules and regulations of your financial institution.

PLEASE PRINT

YOUR MAC CARD NUMBER (No PINs PLEASE)
111 222 333 4

YOUR FINANCIAL INSTITUTION
Union Bank

YOUR ACCOUNT NUMBER
987 555 674

YOUR NAME
Chris Jones

CHECK ONE ☐ DEPOSIT or ☐ PAYMENT

CASH	$	00
LIST CHECKS BY BANK NO.	ENDORSE WITH NAME & ACCOUNT NUMBER	
	557	19
	75	00
TOTAL		

DO NOT DETACH TICKET

DO NOT FOLD NO COINS OR PAPER CLIPS PLEASE

Quantitative Level 2 Scale range: 226 to 275

Tasks in this level typically require readers to perform a single operation using numbers that are either stated in the task or easily located in the material. The operation to be performed may be stated in the question or easily determined from the format of the material (for example, an order form).

Average difficulty value of tasks in this level: 251
Percentage of adults performing in this level: 25%

In the easier tasks in Level 2, the quantities are also easy to locate. In one such task at 250 on the quantitative scale, the cost of a ticket and bus is given for each of two shows. The reader is directed to determine how much less attending one show will cost in comparison to the other.

The price of one ticket and bus for "Sleuth" costs how much less than the price of one ticket and bus for "On the Town"?

THEATER TRIP

A charter bus will leave from the bus stop (near the Conference Center) at 4 p.m., giving you plenty of time for dinner in New York. Return trip will start from West 45th Street directly following the plays. Both theaters are on West 45th Street. Allow about 1½ hours for the return trip.

Time:	4 p.m., Saturday, November 20		
Price:	"On the Town"	Ticket and bus	$11.00
	"Sleuth"	Ticket and bus	$8.50
Limit:	Two tickets per person		

In a more complex set of tasks, the reader is directed to complete an order form for office supplies using a page from a catalogue. No other specific instructions as to what parts of the form should be completed are given in the directive. One task (difficulty value of 270) requires the reader to use a table on the form to locate the appropriate shipping charges based on the amount of a specified set of office supplies, to enter the correct amount on an order form, and then to calculate the total price of the supplies.

Quantitative Level 3 Scale range: 276 to 325

In tasks in this level, two or more numbers are typically needed to solve the problem, and these must be found in the material. The operation(s) needed can be determined from the arithmetic relation terms used in the question or directive.

Average difficulty value of tasks in this level: 293
Percentage of adults performing in this level: 31%

In general, tasks within the range for Level 3 ask the reader to perform a single operation of addition, subtraction, multiplication, or division. However, the operation is not stated explicitly in the directive or made clear by the format of the document. Instead, it must be inferred

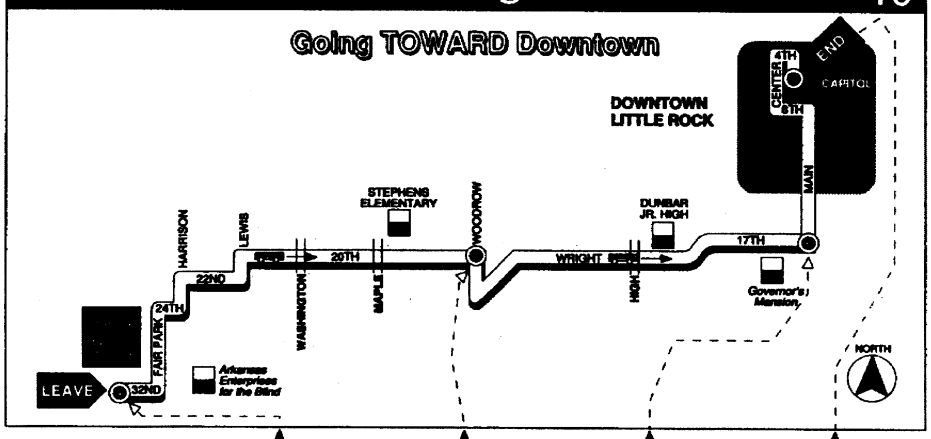
from the terms used in the directive. These tasks are also more difficult because the reader must locate the numbers in various parts of the document in order to perform the operation.

From a bar graph showing percentages of population growth for two groups across six periods, a task at the 278 point on the scale directs the reader to calculate the difference between the groups for one of the years.

A more difficult task in Level 3 (321) requires the use of a bus schedule to determine how long it takes to travel from one location to another on a Saturday. To respond correctly, the reader must match on several features of information given in the question to locate the appropriate times.

Suppose that you took the 12:45 p.m. bus from U.A.L.R. Student Union to 17th and Main on a Saturday. According to the schedule, how many minutes is the bus ride?

16 South Highland 16



4	5	6	7
BUS LEAVES from U.A.L.R. Student Union	**Bus arrives** at 20th & Woodrow	**Bus arrives** at 17th & Main	**BUS ENDS** at Capitol & Louisiana

WEEKDAYS

A.M.	♿	5:38	5:51	6:00	6:09
		6:11	6:25	6:35	6:45
	♿	6:41	6:55	7:05	7:15
		7:11	7:25	7:35	7:45
	♿	7:41	7:55	8:05	8:15
		8:11	8:25	8:35	8:45
	♿	8:41	8:55	9:05	9:15
		9:14	9:27	9:36	9:45
	♿	9:44	9:57	10:06	10:15
		10:14	10:27	10:36	10:45
	♿	10:44	10:57	11:06	11:15
		11:14	11:27	11:36	11:45
	♿	11:44	11:57	12:06	12:15
P.M.		12:14	12:27	12:36	12:45
	♿	12:44	12:57	1:06	1:15
		1:14	1:27	1:36	1:45
	♿	1:44	1:57	2:06	2:15
		2:14	2:27	2:36	2:45
	♿	2:44	2:57	3:06	3:15
		3:14	3:27	3:36	3:45
	♿	3:43	3:56	4:05	4:15
		4:13	4:26	4:35	4:45
	♿	4:43	4:56	5:05	5:15
		5:13	5:26	5:35	5:45
	♿	5:45	5:58	6:07	6:17
		6:11	6:22	6:30	–
	♿	6:46	6:57	7:05	–

SATURDAY

A.M.	♿	5:38	5:51	6:00	6:09
	♿	6:45	6:57	7:06	7:15
	♿	7:45	7:57	8:06	8:15
	♿	8:45	8:57	9:06	9:15
	♿	9:45	9:57	10:06	10:15
	♿	10:45	10:57	11:06	11:15
	♿	11:45	11:57	12:06	12:15
P.M.	♿	12:45	12:57	1:06	1:15
	♿	1:45	1:57	2:06	2:15
	♿	2:45	2:57	3:06	3:15
	♿	3:45	3:57	4:06	4:15
	♿	4:45	4:57	5:06	5:15
	♿	5:45	5:57	6:06	6:15
	♿	6:44	6:56	7:05	–

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Quantitative Level 4 Scale range: 326 to 375

These tasks tend to require readers to perform two or more sequential operations or a single operation in which the quantities are found in different types of displays, or the operations must be inferred from semantic information given or drawn from prior knowledge.

Average difficulty value of tasks in this level: 349
Percentage of adults performing in this level: 17%

One task in this level, with a difficulty value of 332, asks the reader to estimate, based on information in a news article, how many miles per day a driver covered in a sled-dog race. The respondent must know that to calculate a "per day" rate requires the use of division.

A more difficult task (355) requires the reader to select from two unit price labels to estimate the cost per ounce of creamy peanut butter. To perform this task successfully, readers may have to draw some information from prior knowledge.

Estimate the cost per ounce of the creamy peanut butter. Write your estimate on the line provided.

Unit price	**You pay**
11.8¢ per oz.	1.89
rich chnky pnt bt	
10693	16 oz.

Unit price	**You pay**
1.59 per lb.	1.99
creamy pnt butter	
10732	20 oz.

Quantitative Level 5 Scale range: 376 to 500

These tasks require readers to perform multiple operations sequentially. They must disembed the features of the problem from text or rely on background knowledge to determine the quantities or operations needed.

Average difficulty value of tasks in this level: 411
Percentage of adults performing in this level: 4%

One of the most difficult tasks on the quantitative scale (433) requires readers to look at an advertisement for a home equity loan and then, using the information given, explain how they would calculate the total amount of interest charges associated with the loan.

You need to borrow $10,000. Find the ad for Home Equity Loans on page 2 in the newspaper provided. Explain to the interviewer how you would compute the total amount of interest charges you would pay under this loan plan. Please tell the interviewer when you are ready to begin.

FIXED RATE • FIXED TERM

HOME EQUITY LOANS

14.25%

Annual Percentage Rate
Ten Year Term

SAMPLE MONTHLY REPAYMENT SCHEDULE

Amount Financed	Monthly Payment
$10,000	$156.77
$25,000	$391.93
$40,000	$627.09

120 Months 14.25% APR

Estimating Performance Across the Literacy Levels

The literacy levels not only provide a way to explore the progression of information-processing demands across the scales; they can also be used to explore the likelihood that individuals in each level will succeed on tasks of varying difficulty.

The following graphs (Figure A.2) display the probability that individuals performing at selected points on each scale will give a correct response to tasks with varying difficulty values. We see, for example, that a person whose prose proficiency is 150 has less than a 50 percent chance of giving a correct response to the Level 1 tasks. Individuals whose proficiency scores were at the 200 point, on the other hand, have an almost 80 percent probability of responding correctly to these tasks.

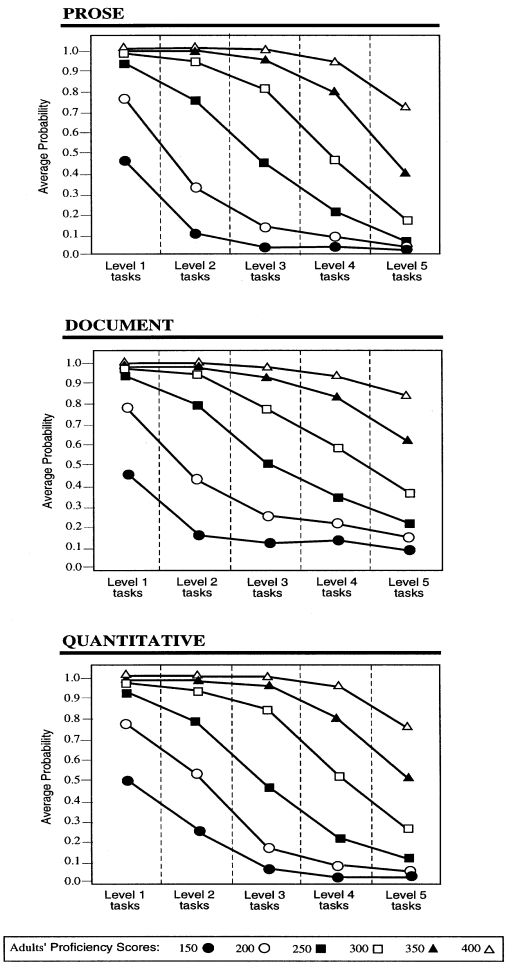
In terms of task demands, we can infer that adults performing at the 200 point on the prose scale are likely to be able to locate a single piece of information in a brief piece of text where there is no distracting information, or when any distracting information is located apart from the desired information. They are likely to have far more difficulty with the types of tasks that occur in Levels 2 through 5, however. For example, they would have only about a 30 percent chance of performing the average task in Level 2 correctly and only about a 10 percent chance of success, or less, on the more challenging tasks found in Levels 3, 4, and 5.

In contrast, readers at the 300 point on the prose scale have an 80 percent (or higher) likelihood of success on tasks in Levels 1, 2, and 3. This means that they demonstrate skill identifying information in fairly dense text without organizational aids. They can also integrate, compare, and contrast information that is easily identified in the text. On the other hand, they are likely to have difficulty with tasks that require them to make higher level inferences, to take conditional information into account, and to use specialized knowledge. The probabilities of their performing these Level 4 tasks successfully are just under 50 percent, and on the Level 5 tasks their likelihood of responding correctly falls to under 20 percent.

Similar interpretations can be made using the performance results on the document and quantitative scales. For example, an individual with a proficiency of 150 on the quantitative scale is estimated to have only a 50 percent chance of responding correctly to tasks in Level 1 and less than a 30 percent chance of responding to tasks in each of the other levels. Such an individual demonstrates little or no proficiency in performing the range of quantitative tasks found in this assessment. In contrast, someone

with a proficiency of 300 meets or exceeds the 80 percent criterion for the average tasks in Levels 1, 2, and 3. They can be expected to encounter more difficulty with tasks in Levels 4 and 5.

Figure A.2: Average Probabilities of Successful Performance by Individuals with Selected Proficiency Scores on the Tasks in Each Literacy level



Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Missing Responses to Literacy Tasks

In any educational, social, or political opinion survey, missing responses are always present. Sometimes missing data can be ignored when tabulating and reporting survey results. If the reasons the data are missing are related to the outcome of the study, however, the missing responses will bias the results unless some adjustment can be made to counter the bias. In this survey, there were reasons to believe that the literacy performance data were missing more often for adults with lower levels of literacy than for adults with higher levels. Field test evidence and experience with surveys indicated that adults with lower levels of literacy would be more likely than adults with higher proficiencies either to decline to respond to the survey at all or to begin the assessment but not to complete it. Ignoring the pattern of missing data would have resulted in overestimating the literacy skills of adults in the United States.

For this survey, several procedures were developed to reduce biases due to nonresponse, based on how much of the survey the respondent completed.[5] Individuals who refused to participate in the survey before any information about them was collected were omitted from the analyses. Because they were unlikely to know that the survey intended to assess their literacy, it was assumed that their reason for refusing was not related to their level of literacy skills.

Some individuals began the interview, but stopped before they completed at least five tasks on each literacy scale.[6] The interviewers were trained to record accurately their reasons for stopping. The reasons were subsequently classified as either related or unrelated to literacy skills. Literacy-related reasons included difficulty with reading or writing, inability to read or write in English, and mental or learning disabilities. Reasons unrelated to literacy included physical disabilities, time conflicts, and interruptions. Some adults gave no reason for stopping the assessment.

Overall, 88 percent of respondents completed the assessment (at least five tasks on each literacy scale). Twelve percent started the survey but stopped before completing five tasks. About half of these individuals,

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[5] For a full discussion of the procedures used in scoring, scaling, weighting, and handling nonresponse problems see I.S. Kirsch and others (2000). *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey.* Washington, D.C.: U.S. Department of Education.

[6] Five was the minimum number of completed tasks needed for accurate proficiency estimation. No special procedures were needed to estimate the proficiencies of those who broke off the assessment after attempting five or more tasks on each scale.

or 6 percent of the adult population, did not complete the assessment for reasons related to their literacy skills, while the other 6 percent did not complete it for reasons unrelated to literacy or for no stated reason.

The missing data were treated differently depending on whether nonrespondents' reasons were related or unrelated to their literacy skills. The missing responses of those who gave literacy-related reasons for terminating the assessment were treated as wrong answers, based on the assumption that they could not have correctly completed the literacy tasks. The missing responses of those who broke off the assessment for no stated reason or for reasons unrelated to literacy were essentially ignored, since it could not be assumed that their answers would have been either correct or incorrect. The proficiencies of such respondents were inferred from the performance of other adults with similar characteristics.

Table A.1 shows the proficiency scores resulting from these procedures. Adults who completed the assessment had average proficiencies ranging from 279 to 285 on the three literacy scales. Because the missing responses of adults who did not complete the assessment for reasons related to literacy were treated as wrong answers, the average scores of these adults were considerably lower, ranging from 114 to 124. Nearly all adults who terminated the assessment for literacy-related reasons scored in the Level 1 range (below 225). Adults who stopped for other reasons or for unstated reasons had scores between those of the other two groups, ranging from 228 to 237. These adults were not found only in the lowest literacy level, but were distributed across the five levels.

Table A.1: Percentages and average proficiencies of adults on each scale, by assessment completion status

		Literacy Scale		
Assessment completion status	**CPCT**	**Pros PROF (se)**	**Document PROF (se)**	**Quantitative PROF (se)**
Total	100	272 (0.6)	267 (0.7)	271 (0.7)
Completed assessment	88	285 (0.6)	279 (0.6)	284 (0.6)
Did not complete assessment for literacy-related reasons	6	124 (1.5)	116 (1.4).	114 (1.9)
Do not complete assessment for reasons unrelated to literacy	6	237 (3.0)	228 (2.8)	231 (3.6)

Notes: CPCT = column percentage; PROF = average proficiency; se = standard error.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

It is likely that there were some errors in classifying non-espondents' reasons for not completing the assessment. Some adults may have given an explanation that reflected badly on their literacy skills simply because they found completing the assessment too burdensome. Perhaps they could have performed better if they had they tried harder. The assumption that such adults are unable to succeed with the literacy tasks may be too strong, and the assignment of wrong answers may underestimate their skills. Other adults may have anticipated failure in the assessment, yet concealed their lack of literacy kills by citing other reasons for not responding, or by refusing to explain their reason. The assumption that these adults are just like others in their demographic group may also be too strong, and the failure to assign wrong answers may overestimate their skills. To some extent the errors can be expected to counterbalance one another, but the available data are insufficient to assess which kind of classification error occurred more often.

Performance in the Lowest Literacy Level

Level 1 is somewhat different from the other literacy levels. For Levels 2 through 5, adults who can consistently perform the tasks in a given level (that is, at least 80 percent of the time) are said to perform in that level. For example, adults in Level 2 have a high probability of success on the tasks in that level, and more than an 80 percent likelihood of success on the Level 1 tasks. Likewise, adults in Level 3 have a high probability of success on the tasks in that level, as well as on the tasks in Levels 1 and 2.

Level 1, on the other hand, includes adults with a wide range of literacy skills, including some who performed the Level 1 tasks consistently and others who did not. Individuals who do not have an 80 percent probability of success with Level 1 tasks are still grouped in Level 1. Thus, some but not all adults in this level met the relatively undemanding requirements of the Level 1 tasks. This section describes how many adults in Level 1 did not meet the demands of the tasks in this level.

The failure to perform correctly at least one of the literacy tasks can be taken as an indicator of not being able to meet the demands of tasks in Level 1. Table A.2 provides information on the size of the groups that met or did not meet the relatively undemanding requirements of the Level 1 tasks.

Most adults in the lowest literacy level on each scale performed at least one literacy task correctly. Nearly three-quarters (72 percent) of

adults in Level 1 on the prose scale performed at least one task correctly, as did 83 percent of those in Level 1 on the document scale and 66 percent of those in Level 1 on the quantitative scale. The difference in performance among the scales occurs because the least difficult document task had a value of 68, while the least difficult prose task had a value of 149 and the least difficult quantitative task had a value of 191.

Table A.2: Percentages and average proficiencies on each scale of adults in Level 1

	Literacy scale					
	Prose		Document		Quantitative	
Performance	**CPCT**	**PROF**	**CPCT**	**PROF**	**CPCT**	**PROF**
Total in Level 1	100	173	100	172	100	167
At least one task correct	72	190	83	182	66	190
No tasks correct	21	113	11	94	26	110
No performance data	7	177	6	177	8	159

Notes: CPCT = column percentage; PROF = average proficiency.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

A small proportion of adults in Level 1 did not perform any literacy tasks correctly. Some of these adults completed the survey, while others did not for literacy-related or other reasons. Those who did not succeed on any literacy tasks constitute 21 percent of adults in Level 1 on the prose scale, 11 percent of adults in Level 1 on the document scale, and 26 percent of adults in Level 1 on the quantitative scale. There are wide disparities in average proficiencies between those who performed at least one task correctly (182 to 190 across the scales) and those who did not (94 to 113 across the scales).

For some adults in Level 1 (6 to 8 percent) there are no literacy performance data because they did not respond to any of the literacy tasks for reasons unrelated to their literacy skills or for unknown reasons. These persons could not be described as either meeting or failing to meet the demands of the literacy tasks, so they are distinguished as a separate group. Their proficiencies were inferred from the performance of other adults with similar demographic backgrounds and fell in the middle range between the other two groups.Nearly all adults who correctly responded to at least one literacy task also completed the assessment. Still, some adults broke off the assessment after already having shown some initial success. Table A.3 divides adults in Level 1 who were

successful with at least one task into two groups: those who completed the assessment (at least five literacy tasks) and those who did not.

Across the scales, from 83 to 90 percent of those in Level 1 who correctly responded to at least one task also completed the assessment. Their average scores ranged from 192 to 196. The remainder (10 to 17 percent) performed at least one task correctly before breaking off the assessment. Their average scores were much lower, ranging from 132 to 153.

Table A.3: Percentages and average proficiencies of adults in Level 1 with at least one task correct, by assessment completion status

	Literacy scale					
	Prose		Document		Quantitative	
Performance	**CPCT**	**PROF**	**CPCT**	**PROF**	**CPCT**	**PROF**
Total in Level 1 with at least one task correct	100	190	100	182	100	190
Completed assessment	87	196	83	192	90	194
Did not complete assessment	13	153	17	132	10	153

Notes: CPCT = column percentage; PROF = average proficiency.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

The population of adults who scored in Level 1 on each scale includes not only those who demonstrated success with at least some of the tasks in Level 1 — who constituted the majority — but also those who did not succeed with any of the tasks in this level. Nearly all of those in Level 1 who did not perform any literacy tasks correctly also failed to complete the assessment (86 to 98 percent), as shown in Table A.4. Their average scores range from 93 to 107 across the scales. Most of these adults either did not start or broke off the assessment for literacy-related reasons, so that any literacy tasks that remained unanswered were treated as incorrect.

Table A.4: Percentages and average proficiencies of adults in Level 1 with no tasks correct, by assessment completion status

Literacy scale	Literacy scale					
	Prose		Document		Quantitative	
	CPCT	PROF	CPCT	PROF	CPCT	PROF
Total in Level 1 with no tasks correct	100	113	100	94	100	110
Completed assessment	14	148	2	---	14	146
Did not complete assessment	86	107	98	93	86	98

Notes: CPCT = column percentage; PROF = average proficiency.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Two to 14 percent of the adults in Level 1 who did not succeed on any of the literacy tasks did, in fact, complete the assessment. Their average scores were 148 on the prose scale and 146 on the quantitative scale; too few cases were available to estimate an average document score.

The pattern of Level 1 proficiencies associated with various combinations of missing and incorrect answers shows the consequences of including, rather than excluding, adults who did not complete the assessment for literacy-related reasons. In general, the very low scores of these adults bring down the average for any group in which they are a significant component. Omitting these persons from the assessment would have resulted in inflated estimates of the literacy skills of the adult population overall and particularly of certain subgroups.

Population Diversity within the Lowest Literacy Level

Certain populations of adults were disproportionately likely not to meet the demands of the Level 1 tasks. This section describes the characteristics of adults in Level 1 who did not meet the relatively undemanding requirements of the tasks in this level. Tables A.5P, D, and Q provide information on the demographic composition of the total adult population in this country, of adults in Level 1 on each literacy scale, and of those adults in Level 1 who did not succeed on any of the assessment tasks.

Table A.5P: Percentages of adults in selected groups, by membership in total U.S. population, in Level 1, and in Level 1 with no tasks correct

	Prose scale		
	Total U.S. population	Level 1 Population	Level 1, no tasks correct
Population group	**CPCT**	**CPCT**	**CPCT**
Weighted sample size			
(in millions)	191.3	40.0	8.2
Country of birth			
Born in another country	10	25 (1.3)	55 (2.2)
Highest level of education			
0 to 8 years	10	35 (1.6)	61 (2.3)
9 to 12 years	13	27 (1.3)	17 (1.5)
HS diploma or GED	30	24 (1.4)	14 (1.5)
Race/Ethnicity			
White	76	51 (0.6)	29 (2.3)
Black	11	20 (1.0)	15 (1.4)
Hispanic	10	23 (1.4)	49 (2.1)
Asian/Pacific Islander	2	4 (3.9)	5 (0.9)
Age			
16 to 24 years	18	13 (0.8)	10 (1.2)
65 years and older	16	33 (1.5)	28 (1.8)
Disability or condition			
Any condition	12	26 (1.0)	26 (1.7)
Visual difficulty	7	19 (1.5)	20 (1.5)
Hearing difficulty	7	13 (1.6)	13 (2.0)
Learning disability	3	9 (2.1)	15 (1.4)

Notes: CPCT = column percentage; se = standard error.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

While 10 percent of the adult population reported that they were born in another country, from 22 to 25 percent of the individuals who performed in Level 1 on the three scales and 54 to 67 percent of those in Level 1 who did not perform any tasks correctly were foreign born. Some of these individuals were undoubtedly recent immigrants with a limited command of English.

Table A.5D: Percentages of adults in selected groups, by membership in total U.S. population, in Level 1, and in Level 1 with no tasks correct

	Document scale		
	Total U.S. population	Level 1 population	Level 1 no tasks correct
Population group	**CPCT**	**CPCT**	**CPCT**
Weighted sample size			
(in millions)	191.3	44.0	4.7
Country of birth			
Born in another country	10	22 (1.3)	67 (3.2)
Highest level of education			
0 to 8 years	10	33 (1.5)	65 (3.1)
9 to 12 years	13	26 (1.5)	12 (1.7)
HS diploma or GED	30	26 (1.7)	13 (2.1)
Race/Ethnicity			
White	76	54 (0.7)	21 (3.0)
Black	11	20 (0.9)	9 (1.1)
Hispanic	10	21 (1.7)	62 (3.2)
Asian/Pacific Islander	2	3 (3.2)	5 (1.6)
Age			
16 to 24 years	18	11 (0.6)	11 (1.8)
65 years and older	16	35 (1.5)	25 (2.2)
Disability or condition			
Any condition	12	26 (1.2)	22 (2.5)
Visual difficulty	7	18 (1.3)	17 (2.3)
Hearing difficulty	7	13 (2.0)	12 (2.0)
Learning disability	3	8 (2.3)	14 (1.6)

Notes: CPCT = column percentage; se = standard error.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Adults who did not complete high school were also disproportionately represented at the low end of the literacy scales. While 23 percent of the adult population reported that they had not completed high school, 59 to 62 percent of adults who performed in Level 1 on the three scales and 77 to 78 percent of those in Level 1 with no tasks correct said they had not completed high school or its equivalent.

Table A.5Q: Percentages of adults in selected groups, by membership in total U.S. population, in Level 1, and in Level 1 with no tasks correct

	Quantitative scale		
	Total U.S. population	Level 1 population	Level 1 no tasks correct
Population group	**CPCT**	**CPCT**	**CPCT**
Weighted sample size			
(in millions)	191.3	42.0	10.6
Country of birth			
Born in another country	10	22 (1.2)	54 (2.0)
Highest level of education			
0 to 8 years	10	33 (1.6)	58 (2.5)
9 to 12 years	13	27 (1.5)	20 (1.5)
HS diploma or GED	30	25 (1.6)	13 (1.3)
Race/Ethnicity			
White	76	50 (0.5)	34 (2.2)
Black	11	23 (0.9)	19 (1.2)
Hispanic	10	22 (1.3)	40 (1.9)
Asian/Pacific Islander	2	3 (3.6)	5 (0.9)
Age			
16 to 24 years	18	14 (0.8)	10 (0.9)
65 years and older	16	32 (1.5)	32 (1.7)
Disability or condition			
Any condition	12	26 (1.2)	28 (1.4)
Visual difficulty	7	19 (1.4)	21 (1.4)
Hearing difficulty	7	12 (2.1)	13 (1.5)
Learning disability	3	8 (2.7)	15 (1.0)

Notes: CPCT = column percentage; se = standard error.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Relatively high percentages of the respondents in Level 1 were black, Hispanic, or Asian/Pacific Islander. The largest group among those who did not perform any tasks correctly were Hispanic. Hispanics and Asian/Pacific Islanders are more likely than others to be recent immigrants with a limited command of English.

Older adults were overrepresented in the Level 1 population as well as in the population of adults who did not meet the demands of the Level 1 tasks. While 16 percent of the total U.S. population was age 65 or

older, approximately one-third of the Level 1 population and 25 to 32 percent of the adults in Level 1 who performed no literacy tasks correctly were in this age group. In contrast, compared with their representation in the total U.S. population (18 percent), younger adults were underrepresented in Level 1 (11 to 14 percent) and in the subgroup of Level 1 that did not succeed on any of the literacy tasks (10 to 11 percent).

Disabilities are sometimes associated with low literacy performance. While 12 percent of the adult population reported having a physical, mental, or health condition that kept them from participating fully in work and other activities, 26 percent of adults who performed in Level 1 and 22 to 28 percent of those in Level 1 who did not succeed on any of the literacy tasks had such conditions. Further, while only 3 percent of the U.S. population reported having a learning disability, 8 to 9 percent of the adults who performed in Level 1 on the prose, document, and quantitative scales and 14 to 15 percent of those in Level 1 who did not succeed on any task had this type of disability.

These results show that adults in some population groups were disproportionately likely to perform in the lowest literacy level, and among those who performed in this level, were disproportionately likely not to succeed on any of the literacy tasks in the assessment.

APPENDIX B

Supplemental Tables

Table B1.1: Language spoken before starting school

Row percent (s.e.)	Sample size	Population /1000	English only	English/ Spanish	English/ European	English/ Asian	Spanish/ other	Other/ other	Spanish only	European only	Asian only	English/ other
Percentage of population speaking language before starting school	26,091	191,289	85 (0.4)	2 (0.1)	2 (0.1)	- - -	- - -	1 (0.1)	6 (0.1)	2(0.1)	1 (0.1)	1 (0.2)

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B1.2: Language spoken before starting school by racial/ethnic group

Row percent (s.e.)	Sample size	Population /1000	English only	English/ other	Other only
Racial/ethnic group:					
White	17,292	144,968	93 (0.3)	3 (0.2)	3 (0.2)
Black	4,963	21,192	96 (0.5)	1 (0.2)	2 (0.5)
Asian/Pacific Islander	438	4,116	22 (2.8)	14 (2.2)	64 (3.3)
Hispanic	3,126	18,481	23 (1.1)	16 (1.2)	60 (1.6)
Other	272	2,532	61 (7.4)	19 (6.4)	20 (6.0)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B1.3: Self-reported literacy by self-reported fluency

Row percent (s.e.)	Sample size	Population /1000	Biliterate	English monoliterate	Other monoliterate	Not literate
Bilingual	2,789	20,021	62 (1.6)	27 (1.7)	8 (.8)	3 (.5)
English monolingual	22,420	165,414	- - -	100 (0)	- - -	- - -
Other monolingual	868	5,731	6 (1.1)	0 (.1)	82 (1.6)	12 (1.3)

Respondents who reported that they spoke only English before starting school are coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who reported that they spoke only English before starting school and who report that they read or write English well or very well are coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

- - - Sample size is too small to provide a reliable estimate.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B1.4: Self-reported fluency by self-reported literacy

Row percent (s.e.)	Sample size	Population /1000	Bilingual	English monolingual	Other monolingual
Biliterate	1,845	12,834	96 (.6)	1 (.3)	3 (.5)
English monoliterate	23,077	170,499	3 (.3)	97 (.3)	- - -
Other monoliterate	946	6,381	26 (2.1)	- - -	74 (2.1)
Not literate	209	1,453	47 (5.1)	5 (1.5)	46 (4.8)

Respondents who reported that they spoke only English before starting school are coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who reported that they spoke only English before starting school and who report that they read or write English well or very well are coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.1: Self-reported fluency by racial/ethnic group

Row percent (s.e.)	Sample size	Population /1000	Bilingual	English monolingual	Other monolingual
Total population	26,078	191,207	10 (.4)	87 (.4)	3 (.1)
White	17,291	144,940	5 (.2)	95 (.2)	0 (.1)
Black	4,960	21,182	3 (.5)	97 (.5)	0 (.1)
Asian/Pacific Islander	438	4,116	59 (2.6)	26 (2.7)	15 (2.1)
Total Hispanic	3,121	18462	50 (1.3)	25 (1.2)	25 (1.2)
Mexican	1,776	10,249	48 (1.3)	25 (1.5)	27 (1.6)
Puerto Rican	405	2,190	66 (3.9)	20 (2.6)	13 (2.9)
Cuban	148	936	55 (3.5)	3 (1.3)	41 (3.7)
Central/South American	378	2,288	52 (3.6)	11 (2.2)	37 (3.8)
Other Hispanic	414	2,799	38 (5.5)	49 (4.3)	13 (2.8)
Other	268	2,506	29 (6.7)	65 (7.1)	6 (3.1)

Respondents who reported that they spoke only English before starting school are coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.2: Self-reported literacy by racial/ethnic group

Row percent (s.e.)	Sample size	Population /1000	Biliterate	English monoliterate	Other monoliterate	Not literate
Total population	26,084	191,220	7 (0.2)	89 (0.3)	3 (0.2)	1 (0.1)
White	17,291	144,927	3 (0.1)	97 (0.2)	0 (0.1)	0 (0.1)
Black	4,961	21,189	2 (0.3)	98 (0.5)	1 (0.2)	0 (0.1)
Asian/Pacific Islander	438	4,116	47 (3.4)	36 (3.2)	15 (2.0)	2 (0.7)
Total Hispanic	3,126	18,481	35 (1.3)	33 (1.6)	27 (1.4)	6 (0.6)
Mexican	1,779	10,259	30 (1.6)	34 (2.0)	29 (1.9)	7 (0.9)
Puerto Rican	405	2,190	51 (4.3)	27 (2.1)	16 (3.2)	6 (1.2)
Cuban	148	936	45 (3.7)	9 (2.6)	42 (3.6)	4 (1.3)
Central/South American	380	2,297	42 (3.3)	14 (2.7)	38 (4.0)	6 (1.5)
Other Hispanic	414	2,799	28 (3.3)	58 (3.2)	13 (2.8)	1 (0.3)
Other	268	2,506	12 (3.4)	79 (5.8)	7 (2.9)	2 (1.6)

Respondents who reported that they spoke only English before starting school and who report that they read or write English well or very well are coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.3: Self-reported fluency by racial/ethnic group and years living in the United States

Row percent (s.e.)	Sample size	Population /1000	Bilingual	English monolingual	Other monolingual
Total population					
10 or fewer	1,084	7,413	52 (2.4)	10 (1.1)	38 (2.4)
11 to 20	902	5,632	50 (2.3)	19 (1.8)	31 (2.2)
21or more	810	6,468	58 (2.1)	27 (2.1)	15 (1.7)
U.S.-born	23,181	171,018	5 (0.4)	94 (0.4)	- - -
White					
10 or fewer	126	1,058	65 (4.7)	28 (4.7)	7 (1.8)
11 to 20	101	885	43 (6.6)	50 (6.6)	8 (4.2)
21 or more	328	3,231	55 (3.1)	41 (4.1)	4 (1.9)
U.S.-born	16,687	139,502	3 (0.2)	97 (0.2)	- - -
Black					
10 or fewer	92	555	57 (6.3)	40 (7.2)	3 (1.9)
11 to 20	87	370	37 (5.7)	59 (6.9)	4 (2.8)
21 or more	42	205	- - -	- - -	- - -
U.S.-born	4,726	19.991	1 (0.2)	99 (0.2)	- - -
Asian/Pacific Islander					
10 or fewer	166	1.497	70 (3.9)	9 (3.5)	21 (3.9)
11 to 20	117	957	64 (6.3)	17 (6.2)	19 (7.1)
21or more	56	623	64 (6.9)	28 (6.2)	8 (6.0)
U.S.-born	87	851	24 (6.1)	73 (4.9)	3 (2.8)
Total Hispanic					
10 or fewer	667	4,056	41 (3.0)	1 (1.0)	58 (3.2)
11 to 20	572	3,204	50 (2.4)	5 (1.4)	44 (2.4)
21or more	380	2,357	63 (3.5)	5 (1.1)	32 (3.3)
U.S.-born	1,477	8,714	50 (2.1)	49 (2.1)	1 (0.3)
Mexican					
10 or fewer	362	2,113	30 (3.1)	2 (1.2)	68 (3.2)
11 to 20	318	1,811	49 (3.5)	2 (1.0)	48 (3.1)
21or more	125	733	49 (6.2)	5 (2.2)	46 (6.0)
U.S.-born	956	5,509	54 (1.9)	44 (1.8)	2 (0.5)
Puerto Rican					
10 or fewer	46	291	74 (9.6)	1 (1.1)	24 (9.5)
11 to 20	63	256	79 (7.7)	2 (1.5)	19 (7.5)
21or more	118	729	72 (6.0)	4 (2.8)	24 (5.9)
U.S.-born	175	898	55 (6.3)	45 (6.3)	- - -
Cuban					
10 or fewer	15	110	- - -	- - -	- - -
11 to 20	44	254	- - -	- - -	- - -
21or more	67	468	68 (7.0)	1 (1.1)	31 (7.1)
U.S.-born	21	100	- - -	- - -	- - -
Central/South American					
10 or fewer	179	1151	46 (5.3)	0 (0.3)	54 (5.3)
11 to 20	104	539	61 (5.9)	10 (4.8)	29 (5.8)
21or more	50	297	72 (7.1)	7 (2.3)	21 (7.1)
U.S.-born	43	292	- - -	- - -	- - -
Other Hispanic					
10 or fewer	65	392	58 (11.8)	1 (1.7)	40 (11.4)
11 to 20	43	243	- - -	- - -	- - -
21or more	20	131	- - -	- - -	- - -
U.S.-born	282	1,916	33 (8.3)	67 (8.3)	- - -
Other					
10 or fewer	33	246	- - -	- - -	- - -
11 to 20	25	217	- - -	- - -	- - -
21or more	4	52	- - -	- - -	- - -
U.S.-born	204	1,961	23 (8.9)	76 (8.9)	0 (0.5)

Respondents who reported that they spoke only English before starting school are coded English monolingual, even if they learned to speak another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

- - - Sample size is too small to provide a reliable estimate. Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.4: Self-reported literacy by racial/ethnic group and years living in the United States

Row percent (s.e.)	Sample size	Population /1000	Biliterate	English monoliterate	Other monoliterate	Not literate
Total population						
10 or fewer	1,086	7,425	43 (2.4)	13 (1.2)	40 (2.3)	5 (0.8)
11 to 20	903	5,633	38 (1.8)	22 (1.9)	35 (2.1)	5 (1.0)
21or more	812	6,500	45 (1.8)	34 (2.1)	17 (1.9)	4 (0.8)
U.S.-born	23,182	170,987	3 (0.1)	97 (0.2)	- - -	0 (0.1)
White						
10 or fewer	126	1,058	60 (5.5)	28 (4.7)	10 (3.7)	2 (1.4)
11 to 20	101	885	36 (5.2)	55 (5.7)	9 (3.5)	0 (0.0)
21or more	329	3,259	41 (2.6)	49 (3.9)	9 (3.2)	2 (1.1)
U.S.-born	16,686	139,461	1 (0.1)	99 (0.1)	0 (0.0)	0 (0.0)
Black						
10 or fewer	93	562	27 (6.9)	52 (7.1)	15 (5.9)	5 (2.9)
11 to 20	87	370	31 (4.3)	60 (6.9)	7 (5.4)	2 (2.1)
21or more	42	205	- - -	- - -	- - -	- - -
U.S.-born	4,726	19,991	0 (0.2)	100 (0.2)	- - -	- - -
Asian/Pacific Islander						
10 or fewer	166	1.497	61 (4.9)	17 (4.6)	18 (3.9)	4 (1.4)
11 to 20	117	957	50 (5.4)	24 (6.6)	25 (6.4)	1 (0.9)
21or more	56	623	55 (6.9)	34 (6.1)	11 (6.3)	0 (0.0)
U.S.-born	87	851	8 (2.1)	89 (4.2)	3 (2.8)	0 (0.2)
Total Hispanic						
10 or fewer	668	4,061	33 (2.9)	1 (.7)	60 (2.9)	6 (1.2)
11 to 20	573	3,204	35 (2.2)	8 (1.4)	48 (2.6)	9 (1.8)
21or more	381	2,361	51 (3.6)	9 (1.6)	32 (3.2)	8 (1.4)
U.S.-born	1,479	8,724	31 (1.9)	64 (2.0)	2 (0.4)	4 (0.7)
Mexican						
10 or fewer	362	2,113	22 (2.8)	2 (1.3)	70 (3.1)	6 (1.6)
11 to 20	319	1,811	30 (2.6)	5 (1.3)	55 (2.7)	11 (2.1)
21or more	125	733	41 (5.8)	7 (2.7)	41 (6.2)	11 (3.1)
U.S.-born	958	5,518	32 (2.2)	60 (2.3)	2 (0.6)	6 (1.1)
Puerto Rican						
10 or fewer	46	291	61 (7.1)	1 (1.1)	35 (6.8)	3 (3.0)
11 to 20	63	256	61 (8.3)	7 (3.7)	28 (8.3)	4 (3.4)
21or more	118	729	54 (9.9)	11 (3.5)	23 (9.4)	12 (3.1)
U.S.-born	175	898	41 (5.2)	55 (5.0)	0 (0.4)	3 (1.6)
Cuban						
10 or fewer	15	110	- - -	- - -	- - -	- - -
11 to 20	44	254	- - -	- - -	- - -	- - -
21or more	67	468	57 (6.2)	6 (2.0)	32 (6.2)	5 (1.4)
U.S.-born	21	100	- - -	- - -	- - -	- - -
Central/South American						
10 or fewer	180	1,156	38 (5.6)	0 (0.4)	54 (5.7)	8 (2.2)
11 to 20	104	539	49 (5.6)	13 (4.9)	28 (6.0)	9 (3.4)
21or more	51	301	59 (8.0)	11 (5.0)	28 (7.6)	1 (1.7)
U.S.-born	43	292	- - -	- - -	- - -	- - -
Other Hispanic						
10 or fewer	65	392	56 (13.0)	1 (1.7)	40 (12.5)	2 (1.2)
11 to 20	43	243	- - -	- - -	- - -	- - -
21or more	20	131	- - -	- - -	- - -	- - -
U.S.-born	282	1,916	20 (4.7)	79 (4.8)	0 (0.3)	0 (0.3)
Other						
10 or fewer	33	246	- - -	- - -	- - -	- - -
11 to 20	25	217	- - -	- - -	- - -	- - -
21or more	4	52	- - -	- - -	- - -	- - -
U.S.-born	204	1,961	5 (2.01	94 (2.2)	1 (0.6)	0 (0.6)

Respondents who reported that they spoke only English before starting school and who report that they read or write English well or very well are coded English monoliterate, even if they learned to read or write another language in school or as an adult. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate. Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.5: Language spoken before starting school by language spoken in home while growing up

Row percent (s.e.)	Sample size	Population /1000	English only	English/ other	Other only
Language spoken in home while growing up:					
English only	21,242	156,620	99 (0.1)	1 (0.1)	0 (0.1)
English/Spanish	789	4,406	31 (2.5)	48 (2.3)	21 (1.5)
English/European	1,017	8,426	51 (2.1)	41 (2.2)	7 (1.1)
English/Asian	56	394	29 (6.4)	40 (7.3)	31 (6.7)
Spanish/other	25	195	-- - -	- - -	- - -
Other/other	258	2,358	10 (2.7)	7 (2.6)	83 (3.1)
Spanish only	1,866	10,979	2 (0.7)	7 (0.7)	91 (1.1)
European only	404	4,093	5 (1.4)	9 (1.9)	86 (2.2)
Asian only	162	1,629	3 (2.0)	3 (1.3)	94 (2.6)
English/other	235	1,901	32 (3.7)	55 (5.0)	13 (3.2)

- - - Sample size is too small to provide a reliable estimate.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.6: Language usually and often spoken now by language spoken in home while growing up

Row percent (s.e.)	Sample size	Population /1000	English only	English/ other	Other only
Language spoken in home while growing up:					
English only	21,242	156,620	100 (0.0)	- - -	- - -
English/Spanish	789	4,406	42 (2.4)	57 (2.5)	1 (0.7)
English/European	1,017	8,426	83 (1.7)	17 (1.7)	- - -
English/Asian	56	394	47 (7.8)	53 (7.8)	- - -
Spanish/other	25	195	- - -	- - -	- - -
Other/other	258	2,358	20 (2.9)	73 (3.1)	7 (2.6)
Spanish only	1,866	10,979	5 (0.7)	60 (1.4)	34 (1.4)
European only	404	4,093	33 (3.3)	61 (3.5)	6 (1.6)
Asian only	162	1,629	10 (3.7)	77 (4.7)	13 (4.4)
English/other	235	1,901	58 (5.9)	42 (5.9)	- - -

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.7: Country of birth by language spoken in home while growing up

Row percent (s.e.)	Sample size	Population /1000	United States	Not United States
Language spoken in home while growing up:				
English only	21,242	156 ,620	98 (0.1)	2 (0.1)
English/Spanish	789	4,406	84 (2.1)	16 (2.1)
English/European	1,017	8,426	95 (0.9)	5 (0.9)
English/Asian	56	394	59 (6.5)	41 (6.5)
Spanish/other	25	195	- - -	- - -
Other/other	258	2,358	17 (4.0)	83 (4.0)
Spanish only	1,866	10,979	20 (1.5)	80 (1.5)
European only	404	4,093	34 (3.4)	66 (3.4)
Asian only	162	1,629	8 (2.9)	92 (2.9)
English/other	235	1,901	72 (6.1)	30 (6.1)

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.8: Average literacy proficiencies by racial/ethnic group and years living in the United States

Average proficiency (s.e.)	Sample size	Population /1000	Prose	Document	Quantitative
Total population					
10 or fewer	1,086	7,425	198 (3.8)	200 (3.9)	202 (4.3)
11 to 20	903	5,633	207 (4.4)	208 (4.1)	210 (4.8)
21or more	812	6,500	230 (4.0)	225 (3.9)	229 (4.3)
U.S.-born	23,184	171,031	280 (0.7)	273 (0.7)	278 (0.8)
White					
10 or fewer	126	1,058	273 (9.6)	272 (8.2)	282 (6.8)
11 to 20	101	885	272 (10.2)	266 (9.9)	276 (9.3)
21or more	329	3,259	248 (5.6)	244 (4.4)	247 (5.3)
U.S.-born	16,687	139,502	287 (0.8)	281 (0.9)	288 (0.9)
Black					
10 or fewer	93	562	220 (10.9)	215 (15.5)	217 (11.3)
11 to 20	87	370	238 (7.8)	234 (7.0)	234 (7.7)
21or more	42	- - -	- - -	- - -	- - -
U.S.-born	4,727	19,994	237 (1.4)	230 (1.2)	224 (1.4)
Asian/Pacific Islander					
10 or fewer	166	1,497	229 (8.6)	234 (6.6)	247 (7.6)
11 to 20	117	957	228 (16.2)	238 (12.9)	240 (19.1)
21or more	56	623	256 (18.2)	258 (14.5)	273 (15.6)
U.S.-born	87	851	280 (7.9)	271 (9.3)	285 (7.6)
Total Hispanic					
10 or fewer	668	4,061	165 (5.0)	167 (5.4)	164 (5.6)
11 to 20	573	3,204	179 (3.7)	178 (3.7)	179 (3.7)
21or more	381	2,361	199 (6.2)	190 (7.1)	193 (7.8)
U.S.-born	1,479	8,724	257 (2.3)	254 (2.3)	252 (2.5)
Mexican					
10 or fewer	362	2,113	147 (4.9)	146 (4.8)	145 (5.7)
11 to 20	319	1,812	167 (5.1)	168 (5.6)	170 (5.7)
21or more	125	733	173 (8.9)	167 (10.9)	171 (12.4)
U.S.-born	958	5,518	246 (3.2)	245 (3.0)	244 (3.1)
Puerto Rican					
10 or fewer	46	291	208 (18.9)	213 (15.9)	207 (16.3)
11 to 20	63	256	201 (12.9)	196 (12.2)	193 (10.9)
21or more	118	729	190 (16.1)	179 (15.1)	177 (19.3)
U.S.-born	175	898	250 (6.0)	250 (6.3)	245 (6.6)
Cuban					
10 or fewer	15	- - -	- - -	- - -	- - -
11 to 20	44	- - -	- - -	- - -	- - -
21or more	67	468	220 (14.7)	221 (16.0)	238 (17.3)
U.S.-born	21	- - -	- - -	- - -	- - -
Central/South American					
10 or fewer	180	1,156	175 (8.1)	177 (8.0)	171 (8.2)
11 to 20	104	539	202 (9.9)	204 (9.4)	205 (9.9)
21or more	51	301	228 (16.1)	214 (16.4)	217 (16.3)
U.S.-born	43	292	- - -	- - -	- - -
Other Hispanic					
10 or fewer	65	392	195 (19.6)	201 (25.9)	191 (25.8)
11 to 20	43	- - -	- - -	- - -	- - -
21or more	20	- - -	- - -	- - -	- - -
U.S.-born	282	1,916	283 (6.7)	277 (6.4)	273 (7.4)
Other					
10 or fewer	33	- - -	- - -	- - -	- - -
11 to 20	25	- - -	- - -	- - -	- - -
21or more	4	- - -	- - -	- - -	- - -
U.S.-born	204	1,961	255 (4.7)	254 (5.6)	252 (5.4)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B2.9: Average literacy proficiencies and literacy levels by language usually and often spoken now among adults raised in homes where a language other than English was spoken

Row percent (s.e.)	Sample size	Population /1000	Level 1 225 or lower	Level 2 226 to 275	Level 3 276 to 325	Level 4 326 to 375	Level 5 376 or higher	Average proficiency
PROSE								
English only	746	6,688	25 (2.8)	29 (2.9)	30 (2.9)	14 (2.0)	2 (0.7)	262 (3.5)
English/Spanish	1,683	9,408	49 (2.1)	30 (2.2)	16 (1.5)	4 (0.8)	0 (0.3)	217 (2.7)
English/European	435	3,918	35 (3.7)	28 (4.2)	23 (2.6)	13 (2.2)	2 (1.6)	246 (4.9)
English/Asian	159	1,506	46 (6.7)	27 (6.4)	21 (6.6)	6 (3.7)	1 (0.6)	221 (11.4)
Spanish/other	6	50	- - -	- - -	- - -	- - -	- - -	- - -
Other/other	30	238	- - -	- - -	- - -	- - -	- - -	- - -
Spanish only	624	3,742	96 (1.3)	3 (1.1)	1 (0.6)	0 (0.3)	- - -	127 (2.3)
European only	17	223	- - -	- - -	- - -	- - -	- - -	- - -
Asian only	17	214	- - -	- - -	- - -	- - -	- - -	- - -
English/other	293	2,576	39 (5.4)	30 (4.7)	24 (3.8)	7 (2.2)	1 (0.7)	234 (8.4)
DOCUMENT								
English only	746	6,688	32 (2.9)	32 (2.6)	25 (1.9)	10 (1.5)	1 (0.7)	250 (3.6)
English/Spanish	1,683	9,408	48 (2.1)	31 (2.3)	17 (2.1)	4 (0.7)	1 (0.3)	220 (3.0)
English/European	435	3,918	38 (4.1)	26 (4.1)	22 (4.2)	13 (2.3)	1 (0.8)	245 (4.3)
English/Asian	159	1,506	41 (4.9)	28 (4.0)	22 (3.1)	8 (2.6)	1 (1.4)	228 (9.4)
Spanish/other	6	50	- - -	- - -	- - -	- - -	- - -	- - -
Other/other	30	238	- - -	- - -	- - -	- - -	- - -	- - -
Spanish only	624	3,742	96 (1.3)	4 (1.1)	0 (0.2)	0 (0.1)	- - -	116 (3.4)
European only	17	223	- - -	- - -	- - -	- - -	- - -	- - -
Asian only	17	214	- - -	- - -	- - -	- - -	- - -	- - -
English/other	293	2,576	38 (4.9)	26 (3.8)	27 (5.4)	8 (4.9)	1 (0.7)	243 (7.7)
QUANTITATIVE								
English only	746	6,688	28 (2.7)	30 (3.0)	26 (2.1)	13 (1.6)	3 (0.6)	256 (3.4)
English/Spanish	1,683	9,408	48 (1.8)	29 (2.0)	18 (1.6)	4 (1.0)	1 (0.6)	221 (2.7)
English/European	435	3,918	35 (3.2)	25 (2.9)	25 (2.9)	13 (2.6)	3 (1.5)	249 (5.5)
English/Asian	159	1,506	34 (6.1)	26 (4.5)	24 (5.3)	12 (3.9)	3 (2.9)	246 (9.6)
Spanish/other	6	50	- - -	- - -	- - -	- - -	- - -	- - -
Other/other	30	238	- - -	- - -	- - -	- - -	- - -	- - -
Spanish only	624	3,742	96 (1.1)	4 (1.1)	1 (0.4)	0 (0.2)	0 (0.1)	111 (3.4)
European only	17	223	- - -	- - -	- - -	- - -	- - -	- - -
Asian only	17	214	- - -	- - -	- - -	- - -	- - -	- - -
English/other	293	2,576	33 (4.9)	25 (3.6)	29 (4.2)	11 (3.2)	2 (1.6)	249 (10.1)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

Percentages below 0.5 are rounded to 0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.1: Educational attainment by immigrant status

Row percent (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary
Country of birth					
United States	23,178	170,947	21 (0.3)	36 (0.2)	43 (0.2)
All immigrants	2,849	19,748	38 (1.4)	25 (1.2)	37 (0.9)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.2: Educational attainment by country of birth

Row percent (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary
Country of birth					
Spanish language	1,605	9,428	57 (1.9)	23 (1.4)	20 (1.3)
European language	521	4,745	24 (2.9)	28 (2.1)	47 (2.6)
Asian language	280	2,728	22 (3.8)	25 (4.9)	53 (4.0)
Other language	443	2,848	17 (2.3)	27 (3.4)	56 (2.9)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.3: Educational attainment among all U.S. adults, all Hispanics, and all U.S.-born Hispanics

Row percent (s.e.)	Sample size	Population /100	Less than high school	High school graduate	Any postsecondary
Total population	26,027	190,695	23 (0.2)	36 (0.2)	42 (0.1)
All Hispanics	3,093	18,236	43 (1.2)	30 (1.1)	27 (1.0)
U.S.-born Hispanics	1,480	8,726	30 (1.7)	38 (1.8)	33 (1.9)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.4: Educational attainment by self-reported fluency

Row percent (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary
Self-reported fluency					
Bilingual	2,773	19,854	32 (1.3)	28 (1.1)	40 (1.2)
English monolingual	22,407	165,364	20 (0.3)	36 (0.2)	44 (0.2)
Other monolingual	838	5,419	74 (1.9)	16 (1.6)	10 (1.2)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.5: Educational attainment by self-reported literacy

Row percent (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary
Self-reported literacy					
Biliterate	1,836	12,749	23 (1.3)	29 (1.5)	48 (1.4)
English monoliterate	23,063	170,399	20 (0.3)	36 (0.2)	43 (0.2)
Other monoliterate	918	6,077	72 (2.2)	18 (1.8)	10 (1.2)
Not literate	207	1,426	87 (2.5)	8 (1.8)	5 (1.6)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.6: Average prose proficiency by educational attainment

Prose proficiency (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary	All
Total population	26,027	190,695	208 (1.6)	270 (0.9)	310 (0.8)	273 (0.6)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.7: Average prose proficiency by educational attainment and country of birth

Prose proficiency (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary	All
Country of birth						
United States	23,178	170,947	220 (1.5)	274 (0.9)	314 (0.9)	280 (0.7)
All immigrants	2,849	19,748	150 (3.0)	224 (4.0)	271 (2.1)	213 (2.2)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.8: Average prose proficiency by educational attainment and self-reported fluency

Prose proficiency (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary	All
Self-reported fluency						
English monolingual	22,407	165,364	223 (1.5)	275 (0.9)	314 (0.8)	281 (0.7)
Bilingual	2,773	19,854	191 (3.8)	241 (2.9)	280 (2.6)	241 (2.0)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.9: Average prose proficiency by educational attainment, Hispanic, and immigrant status among those who speak exclusively English

Row percent (s.e.)	Sample size	Population /1000	Less than high school	High school graduate	Any postsecondary	All
All English monolinguals	22,407	165,364	223 (1.5)	275 (0.9)	314 (0.8)	281 (0.7)
Hispanic English monolinguals	745	4,638	233 (5.9)	270 (3.0)	303 (4.0)	275 (2.4)
Foreign-born English monolinguals	542	3,801	229 (8.5)	272 (4.9)	303 (3.5)	281 (3.4)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.10: Highest level of education completed before coming to the United States by age of arrival and language spoken in country of birth

Row percent (s.e.)	Sample size	Population /1000	0 to 3 Years	4 to 8 Years	9 to 12 Years	Post-secondary /other
Arrived U.S. age 1 to 11						
Spanish language	250	1,430	73 (3.4)	14 (2.7)	9 (2.1)	3 (1.6)
European language	141	961	88 (3.0)	3 (1.2)	6 (2.8)	2 (1.2)
Asian/other language	123	985	76 (5.3)	12 (3.4)	9 (3.5)	3 (1.8)
Arrived U.S. age 12 to 18						
Spanish language	400	2,352	11 (1.7)	47 (3.1)	35 (2.6)	7 (1.7)
European language	77	579	14 (4.4)	31 (5.8)	52 (6.2)	3 (1.7)
Asian/other language	120	894	7 (3.0)	30 (5.8)	53 (6.6)	10 (3.1)
Arrived U.S. age 19 to 24						
Spanish language	411	2,259	13 (2.6)	33 (3.1)	39 (3.5)	15 (2.6)
European language	96	1,090	6 (3.4)	22 (7.6)	42 (8.2)	29 (4.5)
Asian/other language	157	1,127	2 (1.0)	10 (3.1)	50 (4.2)	38 (4.2)
Arrived U.S. age 25 or older						
Spanish language	543	3,437	22 (2.1)	36 (2.7)	27 (1.9)	16 (1.9)
European language	186	2,030	12 (4.1)	21 (4.2)	27 (4.0)	39 (4.4)
Asian/other language	278	2,291	5 (2.1)	19 (3.1)	33 (4.2)	43 (4.2)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.11: Highest level of education completed before coming to the United States by self-reported fluency

Row percent (s.e.)	Sample size	Population /1000	0 to 3 Years	4 to 8 Years	9 to 12 Years	Postsecondary /other
Self-reported fluency						
Bilingual	1,457	10,422	19 (1.6)	22 (1.3)	32 (1.7)	27 (1.4)
English monolingual	493	3,596	41 (2.9)	11 (1.7)	32 (3.5)	16 (2.2)
Other monolingual	841	5,506	19 (1.5)	44 (2.2)	28 (2.0)	9 (1.2)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.12: Highest level of education completed before coming to the United States by self-reported literacy

Row percent (s.e.)	Sample size	Population /100	0 to 3 Years	4 to 8 Years	9 to 12 Years	Postsecondary /other
Self-reported literacy						
Biliterate	1,163	8,204	14 (1.3)	20 (1.5)	34 (1.8)	32 (1.6)
English monoliterate	599	4,407	45 (2.7)	11 (1.2)	29 (2.8)	14 (1.8)
Other monoliterate	902	6,030	13 (1.5)	47 (2.3)	31 (2.2)	9 (1.2)
Not literate	132	928	65 (4.8)	17 (3.6)	11 (2.6)	7 (2.4)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.13: Prose literacy level by highest level of education completed before coming to the United States

Row percent (s.e.)	Sample size	Population /1000	Level 1 (225 or lower)	Level 2 (226 to 275)	Level 3 (276 to 325)	Level 4 or 5 (326 or higher)
Education received prior to U.S. arrival						
0 to 3 years	660	4,577	42 (2.6)	23 (3.0)	22 (2.7)	13 (1.8)
4 to 8 years	756	5,111	76 (2.6)	15 (2.6)	7 (1.4)	2 (1.2)
9 to 12 years	827	6,039	54 (2.2)	25 (2.3)	15 (2.7)	5 (1.5)
Postsecondary	555	3,859	29 (3.3)	31 (2.6)	27 (3.6)	13 (2.7)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.14: Reasons for high school noncompletion among those born in the United States and immigrants

Row percent (s.e.)	Sample size	Population/ 1000	Financial problems	Job or military service	Personal problems, pregnancy	Lost interest, behavior, academic problems	Other (includes incarceration)
Country of birth							
U.S.	4,325	35,222	12 (1.0)	25 (1.0)	18 (0.8)	27 (1.2)	17 (0.9)
Foreign-born	1,061	7,396	34 (1.8)	19 (2.0)	7 (0.9)	18 (1.2)	22 (1.4)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.15: Reasons for high school noncompletion by age of arrival in the United States

Row percent (s.e.)	Sample size	Population /1000	Financial problems	Job or military service	Personal problems, pregnancy	Lost interest, behavior, academic problems	Other (includes incar-ceration)
U.S.-born	4,325	35,222	12 (1.0)	25 (1.0)	18 (0.8)	27 (1.2)	17 (0.9)
Arrived U.S. age 1 to 11	90	501	12 (3.2)	20 (6.6)	25 (5.2)	17 (4.2)	27 (6.4)
Arrived U.S. age 12 to 18	249	1,461	32 (3.7)	17 (3.0)	12 (2.3)	19 (2.2)	20 (2.6)
Arrived U.S. age 19 to 24	279	1,838	36 (4.2)	25 (4.1)	4 (1.1)	18 (2.0)	19 (3.2)
Arrived U.S. age 25 or older	423	3,362	38 (3.0)	14 (2.4)	5 (1.4)	19 (2.0)	24 (2.7)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.16: Average prose proficiency among adults who learned a non-English language before school by ESL-taking history

Average proficiency (s.e.)	Did not take ESL	Took but did not complete ESL	Completed an ESL class
All adults who learned a non-English language before school	230 (2.4)	155 (4.7)	225 (3.2)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.17: Participation in ESL among adults who learned a non-English language before school by country of birth

Percent (s.e.)	Sample size	Population /1000	Percent who took ESL class	Percent who completed ESL class
Country of birth				
United States	1,630	12,042	9 (0.9)	7 (0.8)
Spanish language	1,590	9,348	48 (1.5)	26 (1.4)
European language	304	3,032	55 (3.5)	44 (3.5)
Asian language	249	2,406	68 (3.4)	55 (3.3)
Other language	246	1,792	69 (3.6)	54 (3.9)

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.18: Participation in ESL classes by age learned English among adults who learned a non-English language before starting school

Percent (s.e.)	Sample size	Population /1000	Percent who took ESL class	Percent who completed ESL class
Age learned English				
Age 1 to 4	1,183	8,531	8 (1.0)	7 (0.9)
Age 5 to 15	1,388	10,192	39 (1.6)	33 (1.8)
Age 16 or older	897	6,418	65 (2.0)	40 (2.2)
Did not learn English	538	3,401	35 (2.5)	9 (1.9)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.19: Participation in ESL classes by self-reported fluency among adults who learned a non-English language before starting school

Percent (s.e.)	Sample size	Population /1000	Percent who took ESL class	Percent who completed ESL class
Self-reported fluency				
Bilingual	2,784	19,962	36 (1.1)	28 (1.0)
English monolingual	363	2,892	5 (1.6)	4 (1.5)
Other monolingual	866	5,715	47 (2.2)	1.9 (2.0)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.20: Participation in ESL classes by self-reported literacy among adults who learned a non-English language before starting school

Percent (s.e.)	Sample size	Population /1000	Percent who took ESL class	Percent who completed ESL class
Self-reported literacy				
Biliterate	1,844	12,825	44 (1.5)	36 (1.5)
English monoliterate	1,017	7,901	9 (1.4)	8 (1.3)
Other monoliterate	944	6,365	51 (1.8)	21 (1.7)
Not literate	213	1,490	30 (3.5)	16 (3.2)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.21: Participation in basic skills training by age learned English among adults who learned a non-English language before starting school

Percent (s.e.)	Sample Size	Population /1000	Percent who took basic skills class
Age learned English			
Age 1 to 4	1,206	8,687	11 (1.1)
Age 5 to 15	1,385	10,152	12 (0.9)
Age 16 or older	893	6,397	20 (2.1)
Did not learn English	538	3,403	4 (1.1)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B3.22: Where did you primarily learn to …?

Row percent (s.e)	Sample size	Population /1000	In school	At home or in community	At work	Did not learn	Other
Read newspapers, magazines, or books	24,910	190,180	60 (0.4)	37 (0.5)	1 (0.1)	1 (0.1)	- - -
Read graphs, diagrams, or maps	24,903	190,113	79 (0.3)	10 (0.2)	6 (0.2)	5 (0.1)	1 (0.1)
Fill out forms	24,905	190,207	60 (0.5)	19 (0.4)	17 (0.4)	3 (0.1)	1 (0.1)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B4.1: Mean weeks worked by occupation among people who worked for pay during the past 12 months

Weeks worked (s.e.)	Sample size	Population /1000	Managerial & professional	Technical, sales & admin. support	Prec. prod., operators, fabricators, craft, laborers	Services, farming & fishing
Total population:						
Including the employed and the unemployed	19,985	146,423	44 (0.4)	39 (0.3)	39 (0.4)	34 (0.5)
Including only the employed	18,060	132,222	47 (0.2)	44 (0.2)	43 (0.3)	39 (0.4)

For this table only, the categories employed and unemployed are defined in terms of the past year, not the reference week of the study. The category unemployed includes people who did not work at all during the previous year but who worked at some time during the past three years and therefore reported their occupation. Employed is defined as people who worked a positive number of weeks during the past year, even if they are currently unemployed.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B4.2: Mean annual earnings by occupation among people who worked for pay during the past 12 months

Annual earnings (s.e.)	Sample size	Population /1000	Managerial & professional	Technical, sales & admin. support	Prec. prod., operators, fabricators, craft, laborers	Services, farming & fishing
Mean annual earnings	16,829	122,658	38,791 (869)	17,804 (288)	17,985 (334)	10,566 (283)

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B4.3:Mean annual earnings (in U.S. dollars) by country of birth and language fluency among people who worked for pay during the past 12 months

Annual earnings (s.e.)	Sample size	Population /1000	Mean annual earnings
Total population	16,916	123,638	20,918 (207)
Country of birth			
United States	15,127	111,087	21,030 (215.2)
Spanish language	953	5,953	14,698 (835.5)
European language	326	2,795	26,647 (1,956.7)
Asian language	200	1,863	24,798 (4,385.9)
Other	310	1,940	21,607 (2,242.6)
Total population	16,916	123,638	20,918 (207)
Bilingual	1,686	11,749	21,425 (1,099.3)
English monolingual	14,777	108,756	21,165 (242.5)
Other monolingual	451	3,120	10,441 (401.0)
All immigrants	1,789	12,551	19,926 (940)
Bilingual	968	6,916	23,020 (1,634.8)
English monolingual	371	2,521	23,133 (2,485.2)
Other monolingual	449	3,109	10,453 (401.1)
All Hispanics	1,839	11,624	15,194 (604)
Bilingual	954	5,732	16,195 (906.3)
English monolingual	476	3,256	17,454 (1,847.2)
Spanish monolingual	407	2,623	10,218 (369.8)
Total population	16,916	123,638	20,918 (207)
Biliterate	1,155	8,117	22,730 (1,335.4)
English monoliterate	15,136	111,270	21,140 (233.2)
Other monoliterate	532	3,635	11,911 (729.0)
Not literate	93	617	10,081 (734.6)
All immigrants	1,789	12,551	19,926 (940)
Biliterate	759	5,452	24,555 (1,811.8)
English monoliterate	438	3,026	22,658 (2,120.3)
Other monoliterate	523	3,585	11,964 (739.8)
Not literate	69	489	9,773 (743.2)
All Hispanics	1,839	11,624	15,194 (604)
Biliterate	659	4,087	16,815 (1,102.3)
English monoliterate	639	4,157	16,864 (1,517.4)
Other monoliterate	468	2,921	11,379 (694.7)
Not literate	73	459	9,923 (651.4)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B4.4: Mean annual earnings (in U.S. dollars) by country of birth and document literacy level among people who worked for pay during the past 12 months

Annual earnings (s.e.)	Sample size	Population /1000	Level 1	Level 2	Level 3	Level 4	Level 5	All
Total population	16,916	123,638	13,521 (685)	16,711(451)	21,534 (573)	28,270 (716)	34,106 (1,885)	20,918 (207)
All immigrants	1,789	12,551	13,466 (898)	20,075 (2,254)	26,492 (3,326)	34,005 (4,434)	- - -	19,926 (940)
All Hispanics	1,839	11,624	11,305 (492)	14,570 (841)	21,014 (2,554)	21,809 (3,621)	- - -	15,194 (604)
Country of birth								
United States	15,127	111,087	13,544 (942)	16,348 (435)	21,217 (556)	28,020 (691)	33,775 (2,120)	21,030 (215)
Spanish language	953	5,953	11,211 (443)	15,344 (1,808)	30,244 (8,597)	- - -	- - -	14,698 (835)
European language	326	2,795	18,244 (4,198)	24,151 (4,609)	25,256 (4,231)	38,253 (7,356)	- - -	26,647 (1,957)
Asian language	200	1,863	17,563 (5,042)	27,696 (11,084)	27,446 (9,864)	- - -	- - -	24,798 (4,386)
Other	310	1,940	18,589 (5,400)	19,060 (3,690)	22,597 (4,122)	- - -	- - -	21,607 (2,243)
Total population								
Bilingual	1,686	11,749	15,394 (1,528)	19,663 (2,200)	25,141 (2,905)	31,707 (3,407)	- - -	21,425 (1,099)
English monolingual	14,777	108,756	13,790 (1,030)	16,370 (414)	21,246 (556)	28,089 (707)	34,079 (1,999)	21,165 (242)
Other monolingual	451	3,120	- - -	- - -	- - -	- - -	- - -	10,441 (401)
Total population	16,916	123,638	13,521 (685)	16,711(451)	21,534 (573)	28,270 (716)	34,106 (1,885)	20,918 (207)
Biliterate	1,155	8,117	17,822 (2,564)	20,672 (2,797)	25,481 (3,771)	30,283 (4,138)		22,730 (1,335)
English monoliterate	15,136	111,270	13,688 (965)	16,362 (400)	21,278 (557)	28,185 (705)	34,106 (1,997)	21,140 (233)
Other monoliterate	532	3,635	- - -	- - -	- - -	- - -	- - -	11,911 (729)
Not literate	93	617	- - -	- - -	- - -	- - -	- - -	10,081 (735)
Immigrants								
Bilingual	968	6,916	16,839 (2,019)	22,038 (3,304)	28,161 (4,551)	36,489 (6,711)	- - -	23,020 (1,635)
English monolingual	371	2,520	16,836 (1,787)	16,611 (2,358)	23,853 (5,605)	31,505 (7,229)	- - -	23,133 (2,485)
Other monolingual	449	3,109	- - -	- - -	- - -	- - -	- - -	10,453 (401)
Hispanics								
Bilingual	954	5,732	12,755 (1,066)	15,017 (1,291)	21,158 (2,913)	23,339 (6,901)	- - -	16,195 (906)
English monolingual	476	3,256	11,448 (2,326)	14,320 (1,923)	20,803 (4,527)	20,957 (3,235)	- - -	17,454 (1,847)
Other monolingual	407	2,623	- - -	- - -	- - -	- - -	- - -	10,218 (370)
Immigrants								
Biliterate	759	5,452	19,632 (3,095)	22,431 (3,444)	28,173 (5,110)	35,018 (6,852)	- - -	24,555 (1,812)
English monoliterate	438	3,026	14,745 (1,798)	16,509 (2,143)	23,611 (4,918)	32,922 (6,589)	- - -	22,658 (2,120)
Other monoliterate	523	3,585	- - -	- - -	- - -	- - -	- - -	11,964 (740)
Not literate	69	489	- - -	- - -	- - -	- - -	- - -	9,773 (743)
Hispanics								
Biliterate	659	4,087	13,339 (1,824)	15,158 (1,605)	20,727 (3,060)	- - -	- - -	16,815 (1,102)
English monoliterate	639	4,157	11,512 (1,520)	14,494 (1,354)	20,366 (3,997)	20,961 (3,012)	- - -	16,864 (1,517)
Other monoliterate	468	2,921	- - -	- - -	- - -	- - -	- - -	11,379 (695)
Not literate	73	459	- - -	- - -	- - -	- - -	- - -	9,923 (651)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Spanish speaking and other non-English speaking adults may not be accurate, since the samples are not comparable for these populations.

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Table B4.5: Mean annual earnings (in U.S. dollars) by country of birth and quantitative literacy level among people who worked for pay during the past 12 months

Annual earnings (s.e.)	Sample size	Population /1000	Level 1	Level 2	Level 3	Level 4	Level 5	All
Total population	16,916	123,638	12,188 (296)	16,013 (585)	20,461 (490)	28,113 (932)	39,200 (2,018)	20,918 (207)
All immigrants	1,789	12,551	12,085 (577)	19,732 (2,946)	26,119 (2,543)	37,500 (4,933)	- - -	19,926 (940)
All Hispanics	1,839	11,624	10,893 (412)	14,499 (879)	19,664 (2,253)	27,230 (3,778)	- - -	15,194 (604)
Country of birth								
United States	15,127	111,087	12,237 (408)	15,610 (653)	20,082 (547)	27,699 (903)	39,085 (1,858)	21,030 (215)
Spanish language	953	5,953	10,957 (381)	14,354 (1,337)	26,963 (6,453)	- - -	- - -	14,698 (835)
European language	326	2,795	15,875 (2,026)	20,704 (4,791)	28,181 (5,172)	38,227 (7,684)	- - -	26,647 (1,957)
Asian language	200	1,863	14,132 (3,086)	35,873 (16,411)	25,975 (4,508)	- - -	- - -	24,798 (4,386)
Other	310	1,940	14,093 (3,863)	19,160 (5,104)	21,922 (4,805)	- - -	- - -	21,607 (2,243)
Total population								
Bilingual	1,686	11,749	13,139 (1,050)	19,239 (2,396)	24,363 (2,026)	35,509 (4,534)	- - -	21,425 (1,099)
English monolingual	14,777	108,756	12,497 (391)	15,594 (651)	20,138 (557)	27,715 (893)	39,302 (1,975)	21,165 (242)
Other monolingual	451	3,120	- - -	- - -	- - -	- - -	- - -	10,441 (401)
Immigrants								
Bilingual	968	6,916	14,252 (1,445)	21,717 (4,010)	27,221 (3,163)	42,301 (7,058)	- - -	23,020 (1,635)
English monolingual	371	2,521	15,743 (1,928)	15,145 (2,571)	24,362 (5,668)	31,120 (5,713)	- - -	23,133 (2,485)
Other monolingual	449	3,109	- - -	- - -	- - -	- - -	- - -	10,453 (401)
Hispanics								
Bilingual	954	5,732	12,504 (852)	14,169 (1,198)	19,408 (2,517)	32,585 (6,800)	- - -	16,195 (906)
English monolingual	476	3,256	8,230 (1,333)	15,374 (1,511)	20,085 (4,374)	23,017 (3,379)	- - -	17,454 (1,847)
Other monolingual	407	2,623	- - -	- - -	- - -	- - -	- - -	10,218 (370)
Total population								
Biliterate	1,155	8,117	13,878 (1,652)	20,771 (3,071)	24,476 (2,220)	35,920 (4,989)	- - -	22,730 (1,335)
English monoliterate	15,136	111,270	12,405 (381)	15,587 (627)	20,199 (550)	27,777 (902)	39,343 (2,013)	21,140 (233)
Other monoliterate	532	3,635	- - -	- - -	- - -	- - -	- - -	11,911 (729)
Not literate	93	617	- - -	- - -	- - -	- - -	- - -	10,081 (735)
Immigrants								
Biliterate	759	5,452	15,060 (2,241)	22,914 (4,352)	27,216 (3,022)	41,076 (7,038)	- - -	24,555 (1,812)
English monoliterate	438	3,026	14,124 (1,437)	14,985 (2,057)	24,160 (4,943)	32,223 (6,337)	- - -	22,658 (2,120)
Other monoliterate	523	3,585	- - -	- - -	- - -	- - -	- - -	11,964 (740)
Not literate	69	489	- - -	- - -	- - -	- - -	- - -	9,773 (743)
Hispanics								
Biliterate	659	4,087	12,910 (1,481)	14,299 (1,325)	19,161 (3,009)	30,003 (7,203)	- - -	16,815 (1,102)
English monoliterate	639	4,157	9,455 (1,047)	15,205 (1,258)	19,988 (3,878)	22,772 (3,109)	- - -	16,864 (1,517)
Other monoliterate	468	2,921	- - -	- - -	- - -	- - -	- - -	11,379 (695)
Not literate	73	459	- - -	- - -	- - -	- - -	- - -	9,923 (651)

Respondents who reported that they spoke only English before starting school are coded English monolingual and English monoliterate, even if they learned to speak and/or read another language in school or as an adult. Respondents who spoke a language other than English before starting school and who speak or understand both that language and English well or very well as adults are coded bilingual. Respondents who spoke a language other than English before starting school and who read or write both that language and English well or very well as adults are coded biliterate.

Only adults who could respond to the background questionnaire in English or Spanish are represented in the National Adult Literacy Survey sample. Comparisons between Hispanics and other racial/ethnic groups may not be accurate, since the samples are not comparable for these populations

- - - Sample size is too small to provide a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

APPENDIX C

Overview of Procedures Used in the National Adult Literacy Survey

This appendix provides information about the methods and procedures used in the National Adult Literacy Survey. The *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey* will provide more extensive information about these procedures.[1] In addition, more detailed information on the development of the background questionnaires and literacy tasks can be found in *Assessing Literacy*.[2]

Sampling

The National and State Adult Literacy Surveys included the following three components: a national household sample, 11 individual state household samples, and a national prison sample. The national and state household components were based on a four-stage stratified area sample with the following stages: the selection of Primary Sampling Units (PSUs) consisting of counties or groups of counties, the selection of segments consisting of census blocks or groups of blocks, the selection of households, and the selection of age-eligible individuals. One national area sample was drawn for the national component; 11 independent, state-specific area samples were drawn for the 11 states participating in the state component (i.e., California, Illinois, Indiana, Iowa, Louisiana, New Jersey, New York, Ohio, Pennsylvania, Texas, Washington.) The sample designs used for all 12 samples were similar, except for two principal differences. In the national sample, black and Hispanic respondents were sampled at a higher rate than the remainder of the population in order to increase their representation in the sample, whereas the state samples used no oversampling. Also, the target population for the national sample consisted of adults 16 years of age or older, whereas the target population for the state samples consisted of adults 16 to 64 years of age.

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[1] I. Kirsch and others (2000). *Technical Report and Data File User's Manual for the 1992 National Adult Literacy Survey*. Washington, D.C.: Government Printing Office.
[2] A. Campbell, I. Kirsch, and A. Kolstad (1992). *Assessing Literacy: The Framework for the National Adult Literacy Survey*. Washington, D.C.: Government Printing Office.

The sample designs for all 12 household samples involved four stages of selection, each at a successively finer level of geographic detail. The first stage of sampling involved the selection of PSUs, which consist of counties or groups of counties. The PSUs were stratified on the basis of region, metropolitan status, percent black, percent Hispanic, and, whenever possible, per capita income. The national component used the WESTAT 100 PSU master sample with the Honolulu, Hawaii PSU added to the sample with certainty, to make 101 PSUs in total. The national frame of PSUs was used to construct individual state frames for the state component and a sample of eight to 12 PSUs was selected within each of the given states. All PSUs were selected with probability proportional to the PSU's 1990 population.

The second stage of sampling involved the selection of segments (within the selected PSUs) which consist of census blocks or groups of census blocks. The segments were selected with probability proportional to size where the measure of size for a segment was a function of the number of year-round housing units within the segment. The oversampling of black and Hispanic respondents for the national component was carried out at the segment level, where segments were classified as high minority (segments with more than 25 percent black or Hispanic population) or not high minority. The measure of size for high minority segments was defined as the number of white non-Hispanic households plus three times the number of black or Hispanic households. High minority segments were therefore oversampled at up to three times the rate of comparable, non-high minority segments. The measure of size for nonminority segments was simply the number of year-round housing units within the segment, as was the measure of size for all segments in the state components. One in seven of the national component segments was selected at random to be included in a "no incentive" sample. Respondents from the remaining segments in the national component received a monetary incentive for participation, as did respondents in the state component. (Respondents from the "no incentive" segments are not included in the household sample of this report.)

The third stage of sampling involved the selection of households within the selected segments. Westat field staff visited all selected segments and prepared lists of all housing units within the boundaries of each segment as determined by the 1990 census block maps. The lists were used to construct the sampling frame for households. Households were selected with equal probability within each segment, except for white non-Hispanic households in high minority segments in the national

component, which were subsampled so that the sampling rates for white non-Hispanic respondents would be about the same overall.

The fourth stage of sampling involved the selection of one or two adults within each selected household. A list of age-eligible household members (age 16 and older for the national component, age 16 to 64 for the state component) was constructed for each selected household. One person was selected at random from households with fewer than four eligible members; two persons were selected from households with four or more eligible members. The interviewers, who were instructed to list the eligible household members in descending order by age, then identified one or two household members to interview, based on computer-generated sampling messages that were attached to each questionnaire in advance.

The sample design for the prison component involved two stages of selection. The first stage of sampling involved the selection of state or federal correctional facilities with probability proportional to size, where the measure of size for a given facility was equal to the inmate population. The second stage involved the selection of inmates within each selected facility. Inmates were selected with a probability inversely proportional to their facility's inmate population (up to a maximum of 22 interviews in a facility) so that the product of the first and second stage sampling probabilities would be constant.

Weighting

Full sample and replicate weights were calculated for each record in order to facilitate the calculation of unbiased estimates and their standard errors. The full sample and replicate weights for the household components were calculated as the product of the base weight for a record and a compositing and raking factor. Demographic variables critical to the weighting were recoded and imputed, if necessary, prior to the calculation of base weights.

The base weight was calculated as the reciprocal of the final probability of selection for a respondent, which reflected all stages of sampling. The base weight was then multiplied by a compositing factor which combined the national and state component data in an optimal manner, considering the differences in sample design, sample size, and sampling error between the two components. Twelve different compositing factors were used, one for each of the 11 participating states, and a pseudo factor (equal to one) for all national component records

from outside the 11 participating states. The product of the base weight and compositing factor for a given record was the composite weight.

The composite weights were raked so that several totals calculated with the resulting full sample weights would agree with the 1990 census totals, adjusted for undercount. The cells used for the raking were defined to the finest combination of age, education level, race, and ethnicity that the data would allow. Raking adjustment factors were calculated separately for each of the 11 states and then for the remainder of the United States. The above procedures were repeated for 60 strategically constructed subsets of the sample to create a set of replicate weights to be used for variance estimation using the jackknife method. The replication scheme was designed to produce stable estimates of standard errors for national estimates as well as for the 11 individual states.

The full sample and replicate weights for the incarcerated component were calculated as the product of the base weight for a record and a nonresponse and raking factor. The base weight was calculated as the reciprocal of the final probability of selection for a respondent, which reflected both stages of sampling. The base weights were then nonresponse adjusted to reflect both facility and inmate nonresponse. The resulting nonresponse adjusted weights were then raked to agree with independent estimates for certain subgroups of the population.

Background Questionnaires

One of the primary goals of the National Adult Literacy Survey is to relate the literacy skills of the nation's adults to a variety of demographic characteristics and explanatory variables. Accordingly, survey respondents were asked to complete background questionnaires designed to gather information on their characteristics and experiences. To ensure standardized administration, the questionnaires were read to the respondent by trained interviewers.

As recommended by the Literacy Definition Committee, the development of the background questionnaire was guided by two goals: to ensure the usefulness of the data by addressing issues of concern, and to ensure comparability with the young adult and Department of Labor (DOL) job-seeker surveys by including some of the same questions. With these goals in mind, the background questionnaire addressed the following areas:

- general and language background;

- educational background and experiences;
- political and social participation;
- labor force participation;
- literacy activities and collaboration; and
- demographic information.

Questions in the first category asked survey participants to provide information on their country of birth, their education before coming to the United States, language(s) spoken by others at home, language(s) spoken while growing up, language(s) spoken now, participation in English as a Second Language courses, and self-evaluated proficiency in English and other languages. This information makes it possible to interpret the performance results in light of the increasing racial/ethnic and cultural diversity in the United States.

The questions on educational background and experiences asked respondents to provide information on the highest grade or level of education they had completed; their reasons for not completing high school; whether or not they had completed a high school equivalency program; their educational aspirations; the types and duration of training they had received in addition to traditional schooling; the school, home, or work contexts in which they learned various literacy skills; and any physical, mental, or health conditions they have that may affect their literacy skills. Information on respondents' education is particularly important because level of education is known to be a predictor of performance on the prose, document, and quantitative literacy scales.

The questions on political and social participation asked participants about the sources from which they get information, their television viewing practices, their use of library services, and whether or not they had voted in a recent election. Because an informed citizenry is essential to the democratic process, information was collected on how adults keep abreast of current events and public affairs. Information on adults' use of library services is also important, because libraries promote reading and often provide literacy programs. These questions make it possible to explore connections between adults' activities and their demonstrated literacy proficiencies.

The questions on labor force participation asked participants to provide information on their employment status, weekly wages or salary, weeks of employment in the past year, annual earnings, and the industry or occupation in which they work(ed). These questions respond to

concerns that the literacy skills of our present and future work force are inadequate to compete in the global economy or to cope with our increasingly technological society. The questions were based on labor force concepts widely used in economic surveys and permit the exploration of a variety of labor market activity and experience variables.

Questions on literacy activities and collaboration covered several important areas. Some of the questions focused on the types of materials that adults read, such as newspapers, magazines, books, and brief documents, making it possible to investigate the relationship between reading practices and demonstrated literacy proficiencies. Another set of questions asked respondents about the frequency of particular reading, writing, and mathematics activities. Respondents were asked to provide information on their newspaper, magazine, and book reading practices; reading, writing, and mathematics activities engaged in for personal use and for work; and assistance received from others with particular literacy tasks.

Finally, the survey collected information on respondents' race/ethnicity, age, and gender, as well as the educational attainment of their parents, their marital status, the number of people in their family who were employed full-time and part-time, sources of income other than employment, and family and personal income from all sources. This demographic information enabled researchers to analyze the characteristics of the adult population, as well as to investigate the literacy proficiencies of major subpopulations of interest, such as racial/ethnic groups, males and females, and various age cohorts.

Because some questions included in the household survey were inappropriate for the prison population, a revised version of the background questionnaire was developed for these respondents. Most of the questions in the household background questionnaire on general and language background and on literacy activities and collaboration were included. Many questions concerning education, political and social participation, labor force participation, family income, and employment status were not appropriate, however, and were omitted. In their place, relevant questions were incorporated from the 1991 Survey of Inmates of State Correctional Facilities, sponsored by the Bureau of Justice Statistics of the U.S. Department of Justice.

Literacy Assessment Booklets

The National Adult Literacy Survey measures literacy along three scales — prose, document, and quantitative — composed of literacy tasks that simulate the types of demands that adults encounter in everyday life. The literacy tasks administered in this survey included 81 new tasks as well as 85 tasks that were included in the previous young adult and job-seeker surveys. The administration of a common pool of tasks in each of the three surveys allows for valid comparisons of results across time for different populations.

The new literacy tasks developed for the survey serve to refine and extend the three existing literacy scales and provide a better balance of tasks across the three scales. The framework used to develop these tasks reflects research on the processes and strategies that respondents used to perform the literacy tasks administered in the young adult survey. In creating the new tasks, one goal was to include diverse stimulus materials and to create questions and directives that represent the broad range of skills and processes inherent in the three domains of literacy. Another goal was to create tasks that reflect the kinds of reading, writing, and computational demands that adults encounter in work, community, and home settings. Because the tasks are meant to simulate real-life literacy activities, they are open-ended — that is, individuals must produce a written or oral response, rather than simply choose the correct response from a list of options.

The new literacy tasks were developed with attention to the following elements:

- the structure of the stimulus material — for example, exposition, narrative, table, graph, map, or advertisement;
- the content represented and/or the context from which the stimulus is drawn — for example, work, home, or community; and
- the nature of what the individual is asked to do with the material — that is, the purpose for using the material — which in turn guides the strategies needed to complete the task successfully.

These factors, operating in various combinations, affect the difficulty of a task relative to others administered in the survey.

The printed and written materials selected for the survey reflect a variety of structures and formats. Most of the prose materials are expository — that is, they describe, define, or inform — since most of the

prose that adults read is expository; however, narratives and poetry are included as well. The prose selections include an array of linguistic structures, ranging from texts that are highly organized both topically and visually, to those that are loosely organized. Texts of varying lengths were chosen, ranging from full-page magazine selections to short newspaper articles. All prose materials included in the survey were reproduced in their original format.

The document materials represent a wide variety of structures, including tables, charts and graphs, forms, and maps. Tables include matrix documents in which information is arrayed in rows and columns (for example, bus or airplane schedules, lists, or tables of numbers). Documents categorized as charts and graphs include pie charts, bar graphs, and line graphs. Forms are documents that must be filled in, while other structures include advertisements and coupons.

Quantitative tasks require the reader to perform arithmetic operations using numbers that are embedded in print. Since there are no materials that are unique to quantitative tasks, they were based on prose materials and documents. Most quantitative tasks were, in fact, based on documents.

Adults do not read printed or written materials in a vacuum. Rather, they read within a particular context or for a particular purpose. Accordingly, the survey materials were chosen to represent a variety of contexts and contents. Six such areas were identified: home and family, health and safety, community and citizenship, consumer economics, work, and leisure and recreation. Efforts were made to include as broad a range as possible and to select universally relevant contexts and contents to ensure that the materials would be familiar to all participants. In this way, the disadvantages for individuals with limited background knowledge were minimized.

After the materials were selected, accompanying tasks were developed. The tasks were designed to simulate the way in which people use various types of materials and to require different strategies for successful performance. For both the prose and document scales, the tasks can be organized into three major categories: locating, integrating, and generating information. In the *locating* tasks, readers were asked to match information given in a question or directive with either literal or synonymous information in the text or document. *Integrating* tasks asked the reader to incorporate two or more pieces of information from different parts of the text or document. *Generating* tasks required readers not only to process information located in different parts of the material,

but also to draw on their knowledge about a subject or to make broad, text-based inferences.

Quantitative tasks required readers to perform one or more arithmetic operations (addition, subtraction, multiplication, or division) either singly or in combination. The type of operation to be performed was sometimes obvious from the wording of the question; in other tasks the readers had to infer which operation was to be performed. In some cases the numbers required to perform the operation could be easily identified; in others they were embedded in text. Some quantitative tasks asked the reader to explain how he or she would solve a problem, rather than to perform the actual calculation. The use of a simple, four-function calculator was required for some tasks.

Survey Design: BIB Spiralling

No individual could be expected to respond to the entire set of 166 simulation tasks administered as part of the survey. Accordingly, the survey design gave each respondent a subset of the total pool of literacy tasks, while at the same time ensuring that each of the 166 tasks was administered to a nationally representative sample of the adult population. Literacy tasks were assigned to blocks or sections that could be completed in about 15 minutes. These blocks were then compiled into booklets so that each block appeared in each position (first, middle, and last) and each block was paired with every other block. Thirteen blocks of simulation tasks were assembled into 26 booklets, each of which could be completed in about 45 minutes. During a personal interview, each participant was asked to complete one booklet of literacy tasks and the background questionnaire, which required approximately 20 minutes.

Training the Data Collection Staff

For the national and state samples, 24 field supervisors, 24 field editors, and 421 field interviewers were recruited and trained by Westat in January and February of 1992. The 24 supervisors were trained first at a session in Bethesda, Maryland. The seven-day program included the interviewer training. Additionally, Westat provided training specific to supervisory responsibilities, including the use of Westat's Automated Survey Control System, a computer-based system for managing the data collection effort. Finally, supervisors and editors were trained to perform

an item-by-item edit for each data collection instrument received from the field interviewers.

After the training offered in Bethesda, interviewers attended training sessions geographically closest to their homes, either San Francisco (January 31 - February 2) or Dallas (February 7 - 9). Four training groups were formed at each of the two training sites. Each group was led by a Westat home office field manager. Within each of the four groups, the trainees were divided into "learning communities" with approximately 18 interviewers each. Each community was led by the field supervisor who would supervise the interviewers during the data collection phase.

The training program was modeled closely after Westat's general approach for training field staff. This approach uses a mix of techniques to present study material, focusing heavily on trainee participation and practice. The training program was standardized with verbatim scripts and a detailed agenda to ensure comparability in presentation across groups.

The key training topics were the data collection instruments — the household screener,[3] the background questionnaire, and the interview guide and literacy exercise booklet. The majority of training time was devoted to instructions for administering these documents. In addition, sessions were used to present instructional material on gaining respondent cooperation, keeping records of nonresponse cases, editing completed work, and completing administrative forms. A bilingual field supervisor provided Spanish speaking interviewers with training on the Spanish translations of the screener and background questionnaires.

Prior to project-specific training, new interviewers attended an additional one-half day of training on general interviewing techniques. Interviewers selected to work on the prison sample received an additional day of training on interview procedures unique to that sample.

Administering the Data Collection Instruments

Data collection instruments included the screener, which was designed to enumerate household members and select survey respondents, the background questionnaire, and the literacy exercise booklets. Interviewers were given their first assignments and began work

[3] The household screner was filled out as part of the fourth stage of sampling discussed earlier in this appendix. The screener consisted of a list of all household members in descending order by age. It was used to select survey participants.

immediately after training. The interviewer was given a call record folder and screener for each sampled dwelling unit in his or her assignment. A computer-generated label attached to the front of each folder and screener provided the case identification number, address, and assigned exercise booklet number. Additionally, interviewers were provided with all other field materials necessary to conduct interviews and meet reporting requirements.

Case assignments were made by the field supervisors, who also mailed letters to households about one week before the interviewers planned to contact the household. When making contact, the interviewer first verified that the address was in the sample and the unit was, in fact, an occupied dwelling. If the unit did not meet the definition of a year-round housing unit or was vacant, or for some other reason the interviewer was unable to complete a screener at an assigned address, she or he documented the situation in a noninterview report form.

The interviewer introduced the study using an introduction printed on the front of the screener. As part of the introduction, the interviewer indicated that if someone from the household was selected for an interview, the respondent would be paid $20 for participating. After introducing the study, the interviewer proceeded to conduct the screening interview with any household member 16 years of age or older. If the household members spoke only a language other than Spanish or English, the interviewer could obtain the services of a translator to complete the screener interview.

The screener was used to collect names, relationships, sex, age and race/ethnicity of all household members at the selected dwelling unit. For the national sample, household members aged 16 years and older were eligible for selection. For the state sample, however, household members 16 to 64 years of age were eligible. In households with three or fewer eligible household members, one was randomly selected for the interview. In households with four or more eligibles, two respondents were selected. To select respondents, interviewers first listed the names and ages (in descending age order) of all eligible household members. They then referred to a sampling table which selected one or two respondents from the household.

Once the screener was completed and a respondent(s) selected, the interviewer proceeded to administer the background questionnaire and the exercise booklet. If the selected respondent was not available at the time the screener was conducted, the interviewer returned to

administer the background questionnaire and exercise booklet, which were administered on the same visit.

The background questionnaire took approximately 20 minutes to administer and could be conducted in English or Spanish (using the Spanish printed version) only. In the introduction to the background questionnaire, the respondent was told that he or she would be given a check for $20 in appreciation of the time and effort involved in completing the interview, questionnaires, and assessment. The background questionnaire was divided into six sections and collected demographic data as well as data on literacy-related behaviors. Respondents from each of the 11 participating states were asked five state-specific questions, which appeared at the end of the questionnaire.

When the background questionnaire was completed, the interviewer administered the exercise booklet, which took approximately 45 minutes. There were 26 different versions of the exercise booklet, and each version had a corresponding interview guide, which the interviewer used to facilitate the respondent's completion of tasks in the booklet.

For the prison population, the interviewer informed the selected inmate about the study using an introduction printed in the background questionnaire since there was no screener. As part of the introduction, the interviewer indicated that the inmate would receive a certificate of participation if he or she completed the survey. Because of varying prison regulations, it was not possible to pay inmates $20 for their participation and so they received the certificate. The background questionnaire and exercise booklet were administered using the same procedures as for the household population.

Response Rates

Since there were three instruments — screener, background questionnaire, and exercise booklet — required for the administration of the survey, it was possible for a household or respondent to refuse to participate at the time of the administration of any one of these instruments. Thus, response rates were calculated for each of the three instruments. For the prison sample there were only two points at which a respondent could refuse — at the administration of either the background questionnaire or exercise booklet. The response rates presented below reflect the percentage of those who had the opportunity to participate at each stage of the survey. The response rates for the national household and prison samples are as follows.

Table C.1: Response rates

Instrument	National	Prison
Screener	89.1%	N/A
Background questionnaire	81.0%	85.7%
Exercise booklet	95.8%	96.1%

Data Collection Quality Control

Several quality control procedures relating to data collection were used. These included the interviewer field edit, a complete edit of all documents by a trained field editor, validation of 10 percent of each interviewer's close-out work, and field observation of both supervisors and interviewers.

At the interviewer training session, interviewers were instructed on procedures for performing a field edit of all data collection documents. The main purpose of this edit was to catch and correct or explain any errors or omissions in recording, to learn from mistakes so they were not repeated, and to remove stray marks and completely fill in bubbles on the documents that were to be optically scanned.

Additionally, a complete edit was performed on all documents by a trained field editor. An item-by-item review was performed on each document, and each error was fully documented on an edit form. The supervisor reviewed the results of the edit with the interviewer during his or her weekly telephone conference.

Validation is the quality control procedure used to verify that an interview was conducted and it took place at the correct address and according to specified procedures, or that nonresponse statuses (e.g., refusals, vacancies, language problems) were accurately reported by the interviewers. Interviewers knew that their work would be validated but did not know to what extent or which cases. A 10 percent subsample of dwelling units were selected and flagged in the supervisor's log and in the automated survey control system. The supervisors performed validation interviews by telephone if a phone number was available. Otherwise, validation was performed in person by the supervisor or by another interviewer.

Field observations of both supervisors and interviewers were performed by Westat field management staff. One purpose of the interviewer observation was to provide home office staff with an

opportunity to observe effectively both performance of field procedures and respondents' reactions to the survey. Another purpose was to provide feedback to weak interviewers when there was concern about their skills and/or performance. In addition to in-person observations, interviewers were required to tape record one complete interview and assessment. The field supervisor selected the particular case in advance and listened to the tape to "observe" each interviewer.

Finally, nine of the 24 supervisors were visited by field management staff and evaluated on their editing, coding, office organization, ability to maintain up-to-date records on production data, and supervision of interviewers.

Scoring the Literacy Exercise Booklets

As the first shipments of exercise booklets were received at ETS, copies were made of actual responses to the tasks. These sample responses were then scored by various staff, including the test developer and scoring supervisor, using either the scoring guides developed for the young adult tasks or guides prepared during the development of the new tasks. As the sample responses were scored, adjustments were made to the scoring guides for the new tasks to reflect the kinds of answers that the respondents were providing.

The sample papers comprised the training sets used to train a group of readers who would score the exercise booklets. The purposes of the training were to familiarize the readers with the scoring guides and to ensure a high level of agreement among the readers. Each task and its scoring guide were explained and sample responses representative of the score points in the guide were discussed. The readers then scored and discussed an additional 10 to 30 responses. After group training had been completed, all the readers scored all the tasks in over a hundred booklets to give them practice in scoring actual booklets, as well as an opportunity to score more responses on a practice basis. A follow-up session was then held to discuss responses on which readers disagreed. The entire training process was completed in about four weeks.

Twenty percent of all the exercise booklets were subjected to a reader reliability check, which entailed a scoring by a second reader. To prevent the second reader from being influenced by the first reader's scores, the first reader masked the scores in every fifth booklet that he or she scored. These booklets were then passed on for a second reader to score. When the second reader had scored every item, the first reader's

scores were unmasked. If there was a discrepancy between the two scores for any response, the scoring supervisor reviewed the response and discussed it with the readers involved.

The statistic used to report inter-reader reliability is the percentage of exact agreement — that is, the percentage of times the two readers agreed exactly in their scores. There was a high degree of reader reliability across all the tasks in the survey, ranging from a low of 88.1 percent to a high of 99.9 percent with an average agreement of 97 percent. For 133 out of 166 open-ended tasks, the agreement was above 95 percent.

Data Entry

The background questionnaire was designed to be read by a computerized scanning device. For most questions, field personnel filled in ovals next to the respondent's answers. Open-ended items in the background questionnaire were coded and the ovals filled in by ETS staff before they were shipped to the scanning department. Responses on the screener were transferred to scannable documents by ETS personnel when the check-in process was complete, and the screener documents were batched and sent to the scanning department on a regular basis. Exercise booklet scores were transferred to scannable documents by the readers who scored the items, and these were also batched and sent to the scanning department at regular intervals. The scanned data from screeners, background questionnaires, and exercise booklets were transmitted to magnetic tape, which was then sent to the ETS computer center. As each of the different instruments were processed, the data were transferred to a database on the main computer for editing.

Editing and Quality Control

Editing included an assessment of the internal logic and consistency of the data received. For example, data were examined for nonexistent housing locations or booklets, illogical or inconsistent responses, and multiple responses. Where indicated, an error listing was generated and sent back to the processing area, where the original document was retrieved and the discrepancies were corrected. If resolution of a conflict in the data was not possible, the information was left in the form in which it was received. Wherever possible, however, conflicts were resolved. For example, in the infrequent cases in which field personnel provided more than one response to a single-response noncognitive item, specific

guidelines were developed to incorporate these responses consistently and accurately. The background questionnaires were also checked to make sure that the skip patterns had been followed and all data errors were resolved. In addition, a random set of booklets was selected to provide an additional check on the accuracy of transferring information from booklets and answer sheets to the database.

Scaling

The results from the 1992 National Adult Literacy Survey are reported on three scales established by the 1985 young adult literacy assessment: prose literacy, document literacy, and quantitative literacy. With scaling methods, the performance of a sample of examinees can be summarized on a series of subscales even when different respondents have been administered different items. Conventional scoring methods are not suited for assessments like the national survey. Statistics based on the number of correct responses, such as proportion of correct responses, are inappropriate for examinees who receive different sets of items. Moreover, item-by-item reporting ignores similarities of subgroup comparisons that are common across items. Finally, using average percent correct to estimate means of proficiencies of examinees within subpopulations does not provide any other information about the distribution of skills among the examinees.

The limitations of conventional scoring methods can be overcome by the use of item response theory (IRT) scaling. When several items require similar skills, the response patterns should have some uniformity. Such uniformity can be used to characterize both examinees and items in terms of a common scale attached to the skills, even when all examinees do not take identical sets of items. Comparisons of items and examinees can then be made in reference to a scale, rather than to percent correct. IRT scaling also allows distributions of groups of examinees to be compared.

Scaling was carried out separately for each of the three domains of literacy (prose, document, and quantitative). The NAEP reading scale, used in the young adult literacy assessment, was dropped because of its lack of relevance to the current NAEP reading scale. The scaling model used for the national survey is the three-parameter logistic (3PL) model

from item response theory.[4] It is a mathematical model for estimating the probability that a particular person will respond correctly to a particular item from a single domain of items. This probability is given as a function of a parameter characterizing the proficiency of that person, and three parameters characterizing the properties of that item.

Overview of Linking the National Adult Literacy Survey (NALS) Scales to the Young Adult Literacy Survey (YALS) Scales

Prose, document, and quantitative literacy results for the 1992 National Adult Literacy Survey are reported on scales that were established in the 1985 Young Adult Literacy Survey. For each scale, a number of new items unique to the national survey were added to the item pool that was administered in the original young adult survey. The NALS scales are linked to the YALS scales based upon the commonality of the two assessments, namely, the original young adult survey common items. Fifty-one percent of the items administered in the national survey were common to the young adult survey. The composition of the item pool is presented in Table C.1.

A unidimensional IRT model like the three-parameter logistic model employed in this study assumes that performance on all the items in a domain can, for the most part, be accounted for by a single (unobservable) proficiency variable. Subsequent IRT linking and scaling analyses treat each scale separately, that is, a unique proficiency is assumed for each scale. As a result, the linking of corresponding scales was carried out for each pair of scales separately. The three steps used to link the scales are listed below.

1. Establish provisional IRT scales through common item parameter calibration based on a pooling of the NALS and YALS items.
2. Estimate distribution of proficiencies on the provisional IRT scales using "plausible value" methodology.
3. Align the NALS scale to the YALS scale by a linear transformation based upon the commonality of proficiency distribution of the YALS sample.

[4] A. Birnbaum (1968). "Some Latent Trait Models." In F.M. Lord and M.R. Novick, *Statistical Theories of Mental Test Scores.* Reading, MA: Addison-Wesley. F.M. Lord (1980). *Applications of Item Response Theory to Practical Testing Problems.* Hillscale, NJ: Erlbaum.

Table C.2: Composition of item pool for the National Adult Literacy Survey

	Number of items		
Scale	**YALS Items**	**New items**	**NALS total**
Prose	14	27	41
Document	56	25	81
Quantitative	15	28	43
Total	85	81	165

Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992 and Young Adult Literacy Survey, 1985.

Statistical Procedures

The statistical comparisons in this report were based on the t-statistic. Generally, whether or not a difference is considered significant is determined by calculating a t-value for the difference between a pair of means, or proportions, and comparing this value to published tables of values at certain critical levels, called *alpha levels*. The alpha level is an *a priori* statement of the probability of inferring that a difference exists when, in fact, it does not.

In order to make proper inferences and interpretations from the statistics, several points must be kept in mind. First, comparisons resulting in large t-statistics may appear to merit special note. This is not always the case, because the size of the t-statistic depends not only on the observed differences in means or the percentage being compared, but also on the standard error of the difference. Thus, a small difference between two groups with a much smaller standard error could result in a large t-statistic, but this small difference is not necessarily noteworthy. Second, when multiple statistical comparisons are made on the same data, it becomes increasingly likely that an indication of a population difference is erroneous. Even when there is no difference in the population, at an alpha level of .05, there is still a 5 percent chance of concluding that an observed t-value representing one comparison in the sample is large enough to be statistically significant. As the number of comparisons increases, the risk of making such an error in inference also increases.

To guard against errors of inference based upon multiple comparisons, the Bonferroni procedure to correct significance tests for multiple contrasts was used. This method corrects the significance (or

alpha) level for the total number of contrasts made with a particular classification variable. For each classification variable, there are (K*(K-1)/2) possible contrasts (or nonredundant pairwise comparisons), where K is the number of categories. The Bonferroni procedure divides the alpha level for a single t test (for example, .05) by the number of possible pairwise comparisons in order to give a new alpha that is corrected for the fact that multiple contrasts are being made.

The formula used to compute the t-statistic when observations are independent is:

$$t = \frac{(P_1 - P_2)}{\sqrt{se_1^{\ 2} + se_2^{\ 2}}}$$

where P_1 and P_2 are the estimates to be compared, se_1 and se_2 are their corresponding standard errors, and P_1 and P_2 are independent.

If P_1 and P_2 are not independent, the formula to compute to t-statistic is:

$$t = \frac{(P_1 - P_2)}{\sqrt{se_1^{\ 2} + se_2^{\ 2} + 2se_1 se_2}}$$

where P_1 and P_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.

APPENDIX D

Definitions of Subpopulations and Variables

[In Order of Appearance in Report]

Bilingual/English Monolingual/Other Monolingual

All survey respondents were asked how well they understand spoken English and how well they speak English. They were given four alternative categories for their responses: not at all, not well, well or very well. People who answered well or very well to either question were coded as being fluent in English.

All respondents were also asked what language or languages they spoke before they started school. If they answered anything other than simply English, they were asked how well they understand that language when it is spoken to them and how well they speak that language. They were provided with the same four categories for their response: not at all, not well, well or very well. People who answered well or very well were coded as being fluent in a language other than English.

People who reported they were fluent only in English were coded English monolingual. People who reported they were fluent only in a language other than English were coded non-English monolingual. People who reported they were fluent in two languages were coded bilingual.

Biliterate/English Monoliterate/Other Monoliterate

All survey respondents were asked how well they read English and how well they write English. They were given four alternative categories for their responses: not at all, not well, well or very well. People who answered well or very well to either question were coded as being literate in English.

All respondents were also asked what language or languages they spoke before they started school. If they answered anything other than simply English, they were asked how well they read that language and how well they write that language. They were provided with the same four categories for their response: not at all, not well, well or very well. People who answered well or very well were coded as being literate in a language other than English.

People who reported they were literate only in English were coded English monoliterate. People who reported they were literate only in a language other than English were coded non-English monoliterate. People who reported they were literate in two languages were coded biliterate.

Race/Ethnicity

Respondents were asked two questions about their race and ethnicity. The first question asked them to indicate which of the following best described them:

- White
- Black, African American
- American Indian
- Alaskan Native
- Pacific Islander
- Asian
- Other

The interviewer recorded from observation the races of respondents who refused to answer the question. The second question asked respondents whether they were of Spanish or Hispanic origin or descent. Those who responded "yes" were asked to identify which of the following groups best describes their Hispanic origin:

- Mexicano, Mexican, Mexican American, Chicano
- Puerto Rican
- Cuban
- Central/South American
- Other Spanish/Hispanic

In cases where people answered that they were of Spanish or Hispanic descent but did not specify their country of origin, we grouped them with people who specified "other Spanish/Hispanic." In some cases people who answered that they were of Hispanic origin should have been asked their country of origin but were not. We grouped these people with "other Spanish/Hispanic" unless they gave a country of birth other than the United States in response to the question, "In what country were you born?" If they gave a country of birth other than the United States, we used that to classify their Hispanic origin. Additionally, a few respondents gave multiple countries of origin. These cases are grouped with "other Spanish/Hispanic."

All respondents who indicated they were of Spanish or Hispanic origin are classified as Hispanic, regardless of what race they said best described them. We grouped Asians and Pacific Islanders in one category. American Indians are included in the category Other.

Age of Arrival

All survey respondents who stated that they were born in a country other than the United States were asked, "How many years have you lived in the United States?" They were given a choice of eight categories for their answer: 1 to 5, 6 to 10, 11 to 15, 16 to 20, 21 to 30, 31 to 40, 41 to 50, and 51 or more.

We took the midpoint of the category they chose (3, 7, 13, 18, 25, 35, 45, or 51) and subtracted it from their age to get their age of arrival. If the result was less than 1, and we knew they were not born in the United States, we coded their age of arrival as 1. We then grouped the respondents into four categories based on this calculated age of arrival: 1 to 11, 12 to 18, 19 to 24, and 25 or older. We also created a fifth category, U.S.-born for respondents born in the United States.

Language Spoken in Home While Growing Up

All respondents were asked "When you were growing up, what language or languages were usually spoken in your home?" The categories given were: English, Spanish and Other (specify).

The Educational Testing Service took these answers and coded them into ten categories: English only, English/Spanish, English/European, English/Asian, English/other, Other/other, Spanish only, European only, and Asian only. We use these ten categories in this report.

Language Spoken Before Starting School

All respondents were asked "What language or languages did you learn to speak before you started school?" The categories given were: English, Spanish and Other (specify).

The Educational Testing Service took these answers and coded them into ten categories: English only, English/Spanish, English/European, English/Asian, English/other, Other/other, Spanish only, European only, and Asian only. We use these ten categories in this report.

At places in this report we collapsed the ten categories into three categories: English only, English/other, and Other only. The categories were coded as follows:

English only

- English

English/other

- English/Spanish
- English/European
- English/Asian
- English/other

Other only

- Other/other
- Spanish only
- European only
- Asian only

Language Usually and Often Spoken Now

All respondents who indicated that they spoke a language other than English before starting school were asked, "Which language do you usually speak now?" and "What other language do you often speak now?" The response categories given for both questions were the same: English, Spanish, and Other (specify).

The Educational Testing Service combined these two questions into a recoded variable "languages usually and often spoken now" with ten categories: English only, English/Spanish, English/European, English/Asian, English/other, Other/other, Spanish only, European only, and Asian only. We used that variable in this report.

In some parts of this report, clearly indicated in the text, we added people who were not asked the two questions about language(s) usually and often spoken to the English only categories. These are all people who indicated that they spoke only English before starting school.

At places in this report we collapsed the ten categories into three categories: English only, English/other, and Other only. The categories were coded as follows:

English only

- English

English/other

- English/Spanish
- English/European
- English/Asian
- English/other

Other only

- Other/other
- Spanish only
- European only
- Asian only

Country of Birth

All people who answered the survey were asked, "In what country were you born?" Respondents were classified into one of five categories, depending upon the language spoken in their country of birth: United States, Spanish language, European language, Asian language, and Other.

Respondents who did not give their country of birth but who indicated on other questions that they were not born in the United States were placed in one of the categories whenever possible based on their answers to the questions about the language(s) spoken in their home before they started school.

Respondents born in territories of the United States were not included with people born in the United States. Instead, they were categorized based on the language spoken in the territory.

Countries were grouped together as follows:

Spanish Language

- Argentina
- Bolivia
- Chile
- Colombia
- Costa Rica
- Cuba
- Dominican Republic
- Ecuador
- El Salvador
- Guatemala
- Honduras
- Mexico
- Nicaragua
- Panama
- Peru
- Puerto Rico
- Spain
- Uruguay
- Venezuela

European Language

- Australia
- Austria
- Belgium
- Brazil
- Canada

- Czechoslovakia
- Denmark
- England
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Netherlands
- New Zealand
- Norway
- Poland
- Portugal
- Russia
- Scotland
- Sweden
- Switzerland
- Yugoslavia

Asian Language

- Hong Kong
- Japan
- Korea
- Philippines
- Taiwan
- Thailand
- Vietnam

Other

- All other countries

Immigrants

All respondents who were classified under the country of birth variable as being born in a country other than the United States were also classified as immigrants.

Educational Attainment

All respondents were asked, "I'd like to ask you about your educational background and experiences. What is the highest level of public or private education you

completed?" The interviewer was instructed to probe for the U.S. equivalent if the respondents went to school outside the United States.

We grouped the possible responses as follows:

Less than high school

- less than high school (0 to 8 years)
- some high school (9 to 12 years but did not complete 12th grade)

High school diploma

- still in high school
- GED or high school equivalency
- high school graduate

Postsecondary

- attended a vocational, trade or business school after high school
- college: less than two years
- college: associate's degree (A.A.)
- college: two or more years, no degree
- college graduate (B.S. or B.A.)
- post graduate/no degree
- postgraduate/degree (M.S., M.A., Ph.D., M.D., etc.)

Education Prior to Arrival in the United States

All respondents not born in the United States were asked, "What was the highest level of education you completed before coming to the United States?" The interviewer was instructed to probe for U.S. equivalents if the response did not fit any of the categories.

We grouped the possible responses as follows:

0 to 3 years

- did not attend school before coming to U.S.
- primary (grades K-3)

4 to 8 years

- elementary (grades 4-8)

9 to 12 years

- secondary (grades 9-12)

Postsecondary

- vocational (postsecondary)
- college/university

Reason for Leaving School Before Graduating from High School

All respondents who indicated that they did not finish high school were asked, "What was the main reason you stopped your public or private school when you did?"

We grouped the possible responses as follows:

Financial problems

- financial problems

Job or military service

- went to work or into the military

Personal problems

- pregnancy
- family or academic problems

School-related problems

- lost interest or behavior problems in school
- academic problems at school

Other

- other
- incarceration (prison survey only)

Participation in English as a Second Language (ESL) classes

The background questionnaire asked respondents who had learned a language other than English before school the following: "Have you ever taken a course to learn how to read and write English as a second language?" and "Have you ever taken a

course to learn how to speak and understand English as a second language?" Those who indicated that they had taken such courses were then asked if they had completed them. On the basis of these responses, we categorized individuals who reported taking one or both types of classes as having taken ESL, and those who reported having completed at least one type of class as having completed ESL.

Participation In Basic Skills Classes

The background questionnaire for the household sample asked all respondents: "Are you currently enrolled in or have you ever taken part in a program other than in regular school in order to improve your basic skills, that is, basic reading, writing, and arithmetic skills?" Incarcerated individuals were asked three questions: "Since your current admission to prison, have you ever been in any education program, excluding vocational training?" and, if yes, "What kind of program was that--basic classes up to the 9th grade, high school classes to get a diploma or GED, or college level classes? (check all that apply)." They were also asked a question similar to the one asked in the household sample, referring to any basic skills training received prior to their current incarceration. We coded members of the prison population as participants in basic skills classes if they had participated in a prison program involving curriculum up to the 9th grade or if they answered yes to the question about taking basic skills classes before incarceration.

Continuity of Employment

All respondents were asked, "Including weeks of paid leave, such as vacation and sick leave, how many weeks did you work for pay or profit during the past 12 months?" We coded the responses into three categories: none, 1 to 39 weeks, and 40 or more weeks.

Employed/Unemployed/Not in the Labor Force

Respondents were asked what they were doing the week before the survey:

- Working a full-time job for pay or profit, that is, 35 hours or more
- Working for pay or profit part-time, that is, 1 to 34 hours
- Working two or more part-time jobs for pay, totaling 35 or more hours
- Unemployed, laid off, or looking for work
- With a job but not at work because of temporary illness, vacation, or work stoppage
- With a job but on family leave (maternity or paternity leave)
- In school
- Keeping house
- Retired
- Doing volunteer work

If they answered "unemployed, laid off, or looking for work" they were asked, "Have you looked for a job at any time during the past four weeks?"

Respondents who answered that they were working full-time, working part-time, with a job but not at work, or with a job but on family leave were classified as employed.

Respondents who answered that they were unemployed, laid off, or looking for work and who also answered that they had looked for a job at some time during the past four weeks were classified as unemployed.

Respondents who answered that they were unemployed, laid off, or looking for work but stated that they had not looked for a job at any time during the past four weeks were classified as out of the labor force. Additionally, respondents who indicated that they were in school, keeping house, retired, or doing volunteer work were classified as out of the labor force.

Occupation

All respondents who worked at any time during the past three years were asked three questions about their employment: "For what kind of business or industry did/do you work?" "What is your occupation, that is, what (is/was) your job called?" "What (are/were) the most important activities or duties at this job?"

The Educational Testing Service took the answers to these questions and coded people into 40 occupations. We recoded 39 of those occupations into four categories based on the single digit Standard Occupational Codes (SOC): managerial and professional; technical sales and support; precision production, operators, fabricators, crafts and laborers (also referred to as blue collar in this report); and services, farming and fishing. The 40th occupation, military, was coded as missing and left out of our analysis in Chapter 5. The following occupations are included in each of our categories:

Managerial and Professional

- Architects/surveyors
- Engineers
- Math/computer scientists
- Natural scientists
- Registered nurses
- Health diagnostics
- Other health related
- Accountants/auditors
- Public sector executives and management
- Private sector executives and management
- Other management
- Teachers

Technical, Sales, and Administrative Support

- Engineering technicians
- Health technicians
- Science technicians
- Other technicians
- Sales representatives
- Sales supervisors and proprietors
- Other sales related
- Adjustors and invest
- Computer equipment operators
- Information clerks
- Secretaries
- Stenographers/typists
- Supervisors
- Other administrative support

Precision production, operators, fabricators, crafts and laborers

- Construction crafts
- Other crafts/precision products
- Transport operative
- Fabricate/assemble/inspect
- Other assemble/operate/fabricate
- Clean equip. handler/laboratory

Services, farming, and fishing

- Personal service occupations
- Public safety
- Health services
- Other services
- Manager/operators
- Other farm/fish/hunt

Annual Earnings

All respondents who stated that they had worked for pay during the past 12 months were asked, "For the past 12 months, what was your average weekly wage or salary before any deductions? Include tips and commissions." The figure given was multiplied by the number of weeks worked during the past year (see continuity of employment above) to get annual earnings.

APPENDIX E

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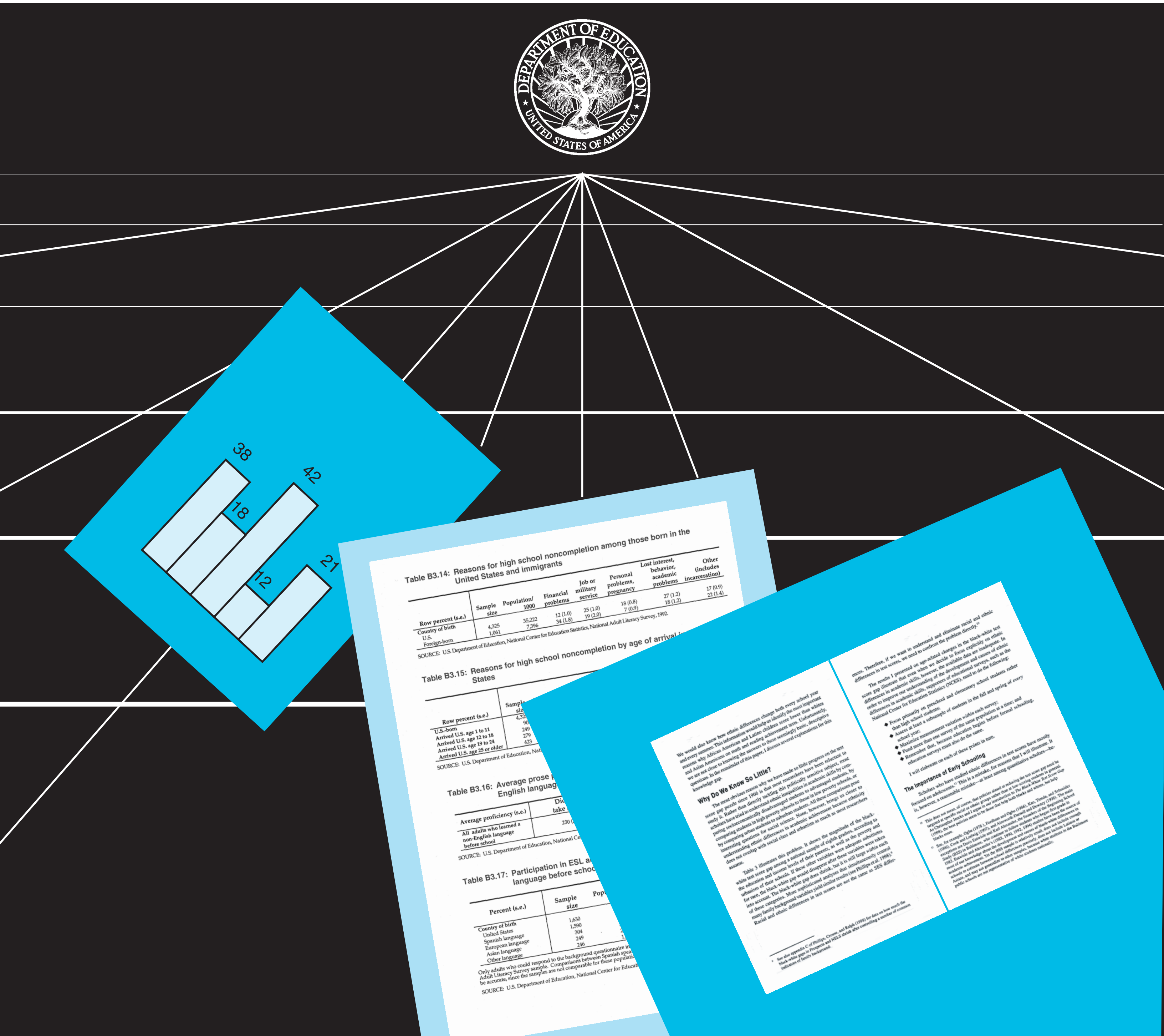
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