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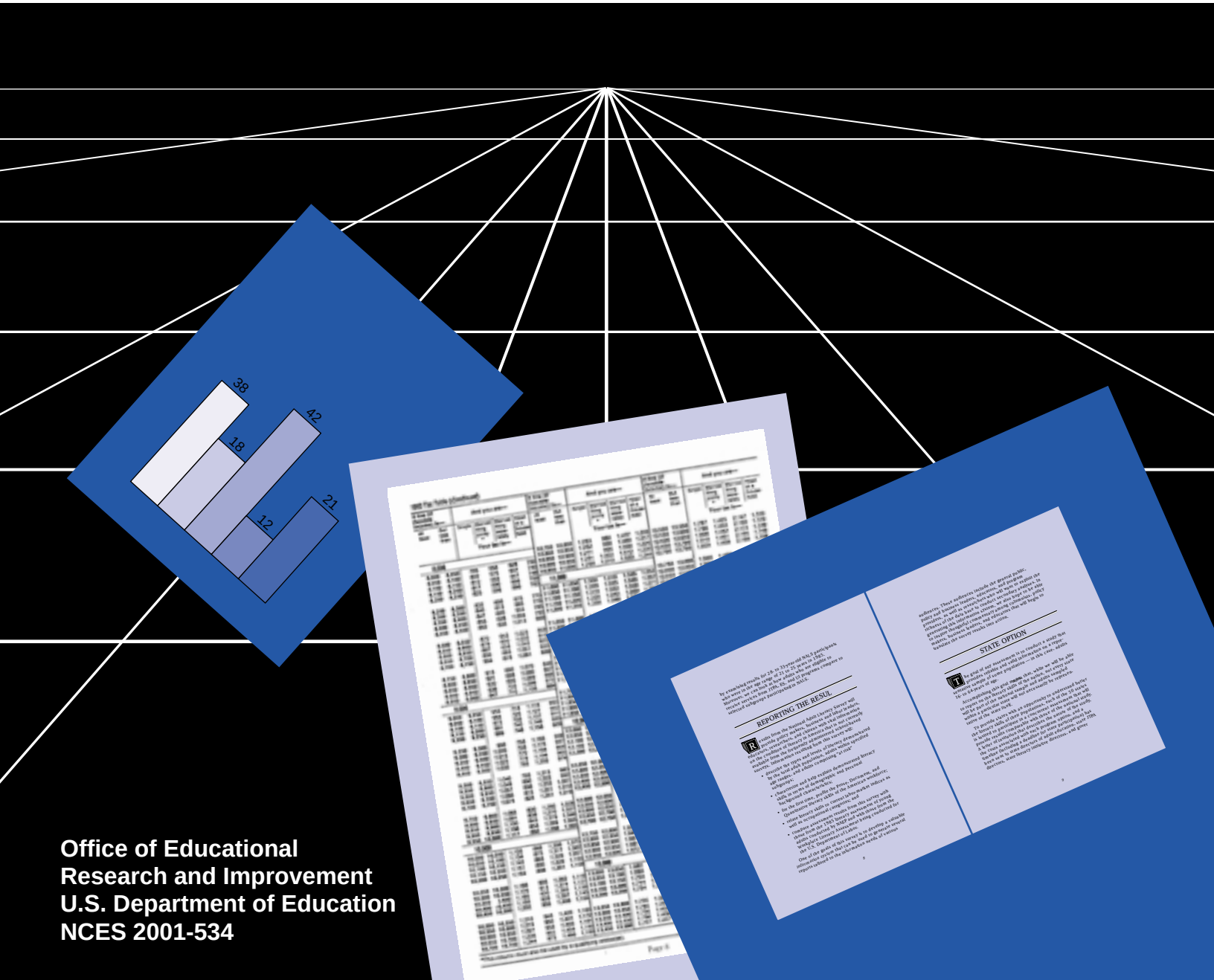
Adult Literacy and Education in America

Four Studies Based on the National Adult Literacy Survey



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NATIONAL CENTER FOR EDUCATION STATISTICS

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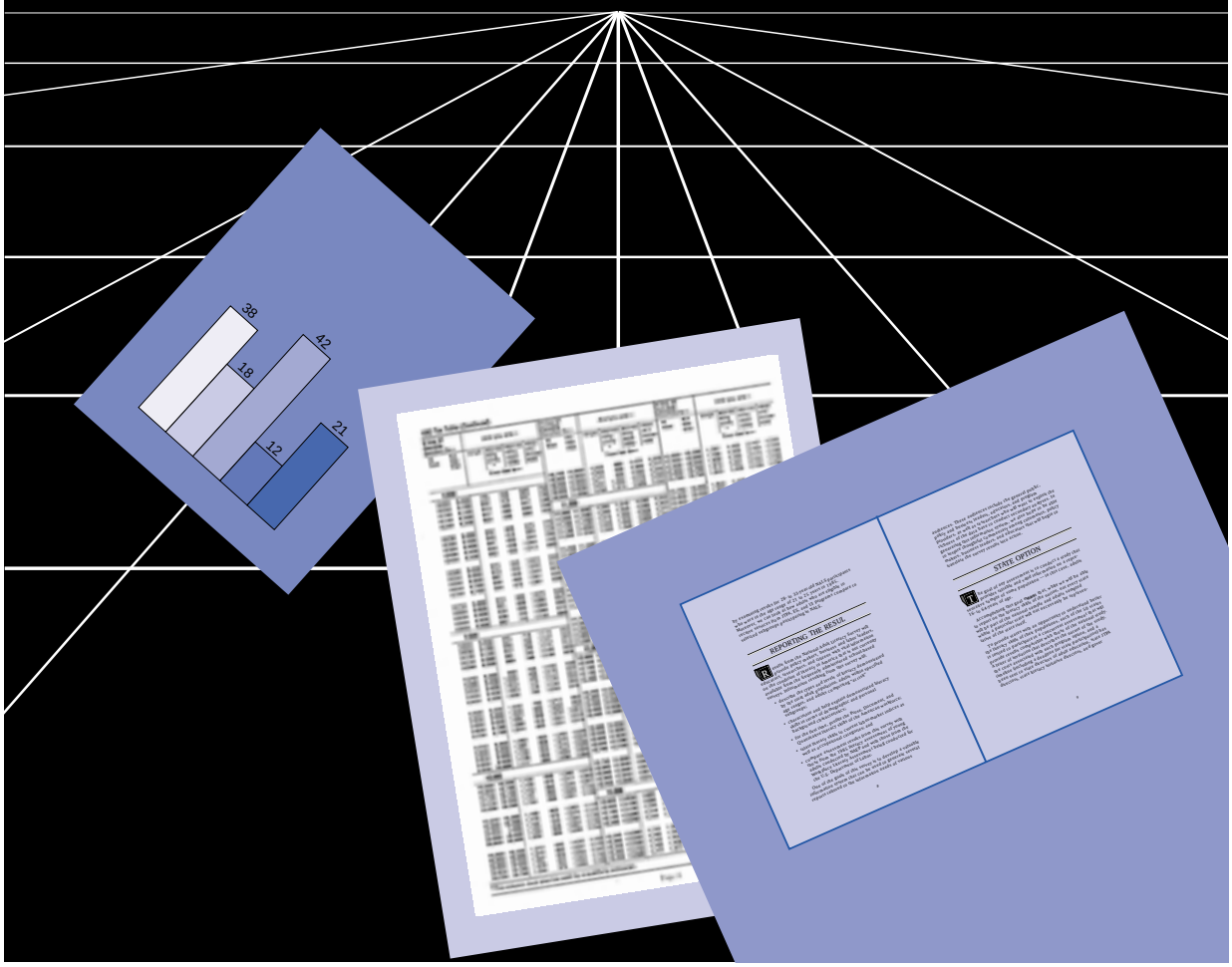
Carl F. Kaestle, Anne Campbell, Jeremy D. Finn, Sylvia T. Johnson, and Larry J. Mikulecky



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FOREWORD

The 1992 National Adult Literacy Survey provided a statistical portrait of the literacy skills of U.S. adults age 16 years and older. The wealth of information flowing from this survey gave new information resources to the community of adult educators and scholars of literacy that had previously had few statistical resources to bring to the policy arena.

The population of adults age 16 years and older changes very slowly over time, as immigrants arrive, emigrants leave, young people are born and reach the age of 16, and people die. Because most adults in this age group have finished their formal schooling, changes in aggregate literacy skills are probably marginal. Because it is safe to assume that the literacy skills of this population change slowly over time, the National Center for Education Statistics (NCES) plans subsequent literacy assessments at one-decade intervals. The next national assessment of adult literacy is expected in 2002, with data reporting scheduled for 2003. Because changes in skills occur so slowly, it is also true that analyses of the 1992 data remain relevant today.

A number of different secondary analysts have used the 1992 survey to illuminate aspects of adult literacy. This study of the relationship between education and the literacy skills of adults was commissioned by NCES as one in a series of reports designed to provide a more detailed look at particular aspects of adult literacy. While prepared in consultation with NCES staff and other experts, in the end this report presents the views of the authors, not of NCES or the U.S. Department of Education. NCES commissioned this report to promote the exchange of ideas among researchers and policymakers.

Peggy G. Carr
Associate Commissioner
Assessment Division

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PREFACE

The United States has always been a mosaic of cultures, but the diversity of our population has increased by striking proportions in recent years. As Barbara Everitt Bryant, former director of the Bureau of the Census, has written: "If you gave America a face in 1990, it would have shown the first sign of wrinkles [and] it would have been full of color."[1] The median age of Americans continues to rise, growing from 30 to almost 33 years during the 1980s. It is projected that by the year 2080, nearly 25 percent of the adults in this nation will be over 65, compared with only about 12 percent today. The racial and ethnic composition of the nation also continues to change. While 3.7 million people of Asian or Pacific Islander origin were living in this country in 1980, there were 7.2 million a decade later — an increase of almost 100 percent. The number of individuals of Hispanic origin also rose dramatically over this time period, from roughly 6 to 9 percent of the population, or to more than 22 million people. Our increasing diversity can not only be seen but also be heard: today, some 32 million individuals in the United States speak a language other than English, and these languages range from Spanish and Chinese to Yupik and Mon-Khmer.[2]

Given these patterns and changes, this is an opportune time to explore the literacy skills of adults in this nation. In 1988, the U.S. Congress called on the Department of Education to support a national literacy survey of America's adults. While recent studies funded by the federal government explored the literacy of young adults and job seekers, the National Adult Literacy Survey is the first to provide accurate and detailed information on the skills of the adult population as a whole — information that, to this point, has been unavailable.

Perhaps never before have so many people from so many different sectors of society been concerned about adult literacy. Numerous reports published in

[1] B.E. Bryant. (1991). "The Changing Face of the United States." *The World Almanac and Book of Facts, 1991*. New York, NY: Pharos Books. p. 72

[2] United States Department of Commerce. (April 1993). "Number of Non-English Language Speaking Americans Up Sharply in 1980s, Census Bureau Says." *United States Department of Commerce News*.

the last decade — including *A Nation at Risk*, *The Bottom Line*, *The Subtle Danger*, *Literacy: Profiles of America's Young Adults*, *Jump Start: The Federal Role in Adult Education*, *Workforce 2000*, *America's Choice: High Skills or Low Wages*, and *Beyond the School Doors* — have provided evidence that a large portion of our population lacks adequate literacy skills and have intensified the debate over how this problem should be addressed.

Concerns about literacy are not new. In fact, throughout our nation's history there have been periods when the literacy skills of the population were judged inadequate. Yet, the nature of these concerns has changed radically over time. In the past, the lack of ability to read and use printed materials was seen primarily as an individual problem, with implications for a person's job opportunities, educational goals, sense of fulfillment, and participation in society. Now, however, it is increasingly viewed as a national problem, with implications that reach far beyond the individual. Concerns about the human costs of limited literacy have, in a sense, been overshadowed by concerns about the economic and social costs.

Although Americans today are, on the whole, better educated and more literate than any who preceded them, many employers say they are unable to find enough workers with the reading, writing, mathematical, and other competencies required in the workplace. Changing economic, demographic, and labor-market forces may exacerbate the problem in the future. As a study by the American Society for Training and Development concluded, "These forces are creating a human capital deficit that threatens U.S. competitiveness and acts as a barrier to individual opportunities for all Americans."[3]

Whether future jobs will have greater literacy requirements than today's jobs, or whether the gap between the nation's literacy resources and its needs will widen, are open questions. The evidence to support such predictions is scarce. What many believe, however, is that our current systems of education and training are inadequate to ensure individual opportunities, improve economic productivity, or strengthen our nation's competitiveness in the global marketplace.

There is widespread agreement that we as a nation must respond to the literacy challenge, not only to preserve our economic vitality but also to ensure that every individual has a full range of opportunities for personal fulfillment and participation in society. At the historic education summit in Charlottesville, Virginia, the nation's governors — including then-Governor Clinton — met with then-President Bush to establish a set of national education goals that would guide this country into the twenty-first century. As adopted in 1990 by members of the National Governors' Association, one of the six goals states:

[3] A.P. Carnevale, L.J. Gainer, A.S. Meltzer, and S.L. Holland. (October 1988). "Workplace Basics: The Skills Employers Want." *Training and Development Journal.* pp. 20-30.

By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

The following year, Congress passed the National Literacy Act of 1991, the purpose of which was "to enhance the literacy and basic skills of adults, to ensure that all adults in the United States acquire the basic skills necessary to function effectively and achieve the greatest possible opportunity in their work and in their lives, and to strengthen and coordinate adult literacy programs."

But how should these ambitious goals be pursued? In the past, whenever the population's skills were called into question, critics generally focused on the educational system and insisted that school reforms were necessary if the nation were to escape serious social and economic consequences. Today, however, many of those who need to improve their literacy skills have already left school. In fact, it is estimated that almost 80 percent of the work force for the year 2000 is already employed. Moreover, many of those who demonstrate limited literacy skills do not perceive that they have a problem. Clearly, then, the schools alone cannot strengthen the abilities of present and future employees and of the population as a whole. A broad-based response seems necessary.

To initiate such a response, we need more than localized reports or anecdotal information from employers, public leaders, or the press; accurate and detailed information about our current status is essential. As reading researchers John Carroll and Jean Chall observed in their book *Toward a Literate Society*, "any national program for improving literacy skills would have to be based on the best possible information as to where the deficits are and how serious they are."[4] Surprisingly, though, we have lacked accurate and detailed information about literacy in our nation — including how many individuals have limited skills, who they are, and the severity of their problems.

In 1988, Congress asked the U.S. Department of Education to address this need for information on the nature and extent of adult literacy. In response, the Department's National Center for Education Statistics and Division of Adult Education and Literacy called for a national household survey of the literacy skills of adults in the United States. A contract was awarded to Educational Testing Service and a subcontract to Westat, Inc. to design and conduct the National Adult Literacy Survey, results from which are presented in these pages.

During the first eight months of 1992, trained staff conducted household interviews with nearly 13,600 individuals aged 16 and older who had been

[4] J.B. Carroll and J.S. Chall, eds. (1975). *Toward a Literate Society: A Report from the National Academy of Education*. New York, NY: McGraw Hill. p. 11.

randomly selected to represent the adult population in this country. In addition, some 1,100 inmates from 80 federal and state prisons were interviewed to gather information on the skills of the prison population. Finally, approximately 1,000 adults were surveyed in each of 12 states that chose to participate in a special study designed to produce state-level results that are comparable to the national data. Each individual was asked to spend about an hour responding to a series of diverse literacy tasks and providing information on his or her background, education, labor market experiences, and reading practices.

The results of the National Adult Literacy Survey comprise an enormous set of data that includes more than a million responses to the literacy tasks and background questions. More important than the size of the database, however, is the fact that it provides information that was previously unavailable — information that is essential to understanding this nation's literacy resources.

To ensure that the survey results will reach a wide audience, the committees that guided the project recommended that the findings be issued in a series of reports. This volume discusses the interrelationship between literacy and education. The series also includes a report that provides an overview of the results of the survey as well as additional reports that offer a more detailed look at particular issues, including:

- literacy in the work force
- literacy among prisoners
- literacy among older adults
- literacy and cultural diversity
- literacy practices

A final report conveys technical information about the survey design and the methods used to implement it.

Although these reports focus almost exclusively on the results of the National Adult Literacy Survey, their contents have much broader implications. The rich collection of information they contain can be used to inform policy debates, set program objectives, and reflect on our society's literacy resources and needs.

Irwin S. Kirsch
Project Director

EXECUTIVE SUMMARY

The National Adult Literacy Survey provides the most detailed portrait ever created of the English literacy abilities of our nation's adults. Funded by Congress through the U.S. Department of Education, the survey was conducted in 1992. In 1993, the Department published a summary overview of the results, which described the literacy skills of adults in the United States and discussed differences among various groups in the population.[1] Subsequently, the Department invited people who had served on the two advisory committees for the survey to produce a series of reports that look at the results of the survey, addressing different special topics in ways they believed would interest literacy workers, policymakers, and the general public. The present report explores the relationship between formal schooling and adult literacy proficiency in a more detailed and analytical way than was possible in the initial overview.

The most pervasive result of the National Adult Literacy Survey is that level of formal schooling is strongly related to adult literacy proficiency. This may strike some as surprising, given much recent criticism of schools for failing to teach reading effectively and for failing to make school learning relevant to real-life tasks. Nonetheless, increased levels of formal schooling correlated with substantial gains in adult literacy proficiency for all groups, at all levels of education. This set of four research essays investigates that relationship in several ways: by exploring the interrelationships of race/ethnicity and age to literacy proficiency and formal schooling; by providing a picture of who drops out and what impact that decision has on adult literacy proficiency; by looking at those least effectively served by schools — those whose proficiencies were in the two lowest levels on the literacy scales; and by exploring how these adult proficiencies map out into the world of work.

[1] 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, DC: U.S. Department of Education.

The Survey

The National Adult Literacy Survey avoided characterizing adults as either *literate* or *illiterate* people. Instead, it profiled the literacy abilities of adults based on their performance on a wide array of tasks using the kinds of materials they actually encounter in their daily lives. The tasks assessed such literacy skills as finding information, making inferences, interpreting tables, reading maps, and making calculations.

The information was gathered in 1992. Trained staff interviewed over 13,600 adults in households across the country. The participants were randomly selected to represent the adult population of the country as a whole. An additional 1,000 adults were interviewed in each of 11 states that chose to participate in a concurrent survey designed to provide results that are comparable to the national data. Finally, 1,150 inmates in 80 federal and state prisons were surveyed. The prisons were randomly selected to represent prisons across the country, and the inmates themselves were randomly selected from each of the prisons. A total of 26,000 adults participated in the study.

Using an extensive background questionnaire, interviewers collected information about respondents' demographic characteristics, educational background, reading practices, and other characteristics related to literacy. Then participants responded to a set of literacy tasks. Analyses of their responses yielded proficiency scores that profiled their skills on three literacy scales — prose, document, and quantitative. The scales were each divided into five levels that define the increasing difficulty and complexity of the tasks associated with them. Combining the results of the background questionnaires with the literacy proficiency scores produced a wealth of information about the characteristics of people with different literacy skills.

This report explores the links between education and literacy in several ways. After an overview (chapter 1), the report discusses the relationship between literacy skills and formal schooling across different social categories and across age cohorts (chapter 2). Then it describes the literacy proficiencies and other characteristics of individuals who did not complete high school (chapter 3), as well as the characteristics — educational and otherwise — of individuals whose proficiency scores were in the range of the lower two levels on the literacy scales (chapter 4). Finally, it discusses the proficiencies and characteristics of respondents in the workforce and explores some of the implications for adult educators (chapter 5). Here are some of the highlights from these chapters.

Formal Education and Adult Literacy Proficiencies (Chapter 2)

The main finding that pervades the data on education in the National Adult Literacy Survey is that literacy proficiency is strongly related to levels of formal schooling. Each successive level of formal education is accompanied by a rise in average literacy proficiencies. This does not prove a causal relationship, but it suggests that high literacy abilities and high levels of education strongly reinforce one another. Given the many criticisms of America's schools in recent decades, the sturdy association of formal education and adult literacy skills deserves our attention. If one suspects that more schooling fosters adult literacy skills, on average, it has strong policy implications. The following figures show how this plays out on the 500-point scale for prose literacy. Respondents who did not complete high school averaged 231 on the prose scale. Those who completed high school averaged 270, and those with a four-year college degree averaged 322.

Literacy proficiency also relates strongly to race/ethnicity, defined in most of our tables as White, Black, Hispanic, and other. Although the total sample in the National Adult Literacy Survey is very large and is representative of the nation's entire population, sample sizes of other racial/ethnic groups were generally not sufficient for reporting results separately. The prose proficiency of White adults averages 287, while that of Black adults is 237 and Hispanic adults 216. The correlation between racial/ethnic groups and literacy proficiency is partially explained by differential levels of education, parental education, income, or other variables that differ by race. Our data do not measure differential quality of schooling and other factors, such as motivation and opportunity, that might affect the acquisition of literacy skills. Our data do demonstrate, however, that schooling plays a double role in shaping the English literacy proficiencies by race/ethnicity: some groups are able to attain more schooling than others, which, on average, correlates with higher literacy proficiencies; second, at a given level of educational attainment, groups differ in average literacy attainment. This second phenomenon may be caused by a difference in the *quality* of schooling experienced by different groups and by other factors discussed in chapter 2.

An interesting relationship is observed between literacy proficiency and age. Average literacy proficiencies rise with each older cohort up to those who are in their 40s and then decline in the older population. The rise from the cohort in their 20s to the cohort in their 40s is not due to more effective schooling in earlier decades — indeed, there is no decline in the levels of literacy proficiency at a given level of formal education as we move from the 40-year olds to the 20-year

olds. Rather, it is because many people in the cohorts of 30-year olds and 40-year olds have continued to get formal education as adults. This is a picture of a *learning society*. The continuing formal education of adults is much reduced beyond age 50, and the initial schooling levels of Americans in those older cohorts were also lower; the literacy proficiencies of older cohorts are lower as well. Everything seems to point toward a connection between formal education and adult literacy skills, across all groups and all ages.

School Noncompletion and Literacy (Chapter 3)

In general, proficiency on all three dimensions of literacy is lowest for individuals who have not graduated from high school, higher for high school graduates and GED holders, and highest for individuals who have attended postsecondary schooling. This pattern is found for African-American, Hispanic, and White populations alike, for males and females alike, and for adults in all age ranges. At the same time, the average proficiencies of Hispanic adults who did not begin or complete high school are substantially below those of other school noncompleters. This group represents almost half of all Hispanic individuals sampled. The primary language spoken at home as a child may provide a partial explanation. High school noncompleters who grew up in Spanish-speaking homes demonstrate lower proficiencies than noncompleters from other language homes, even though high school graduates who grew up in Spanish-speaking homes do not exhibit this handicap.

Among high school dropouts, there is little or no relationship between literacy proficiency and employment. For high school graduates, however, higher proficiency is associated with an increased likelihood of being employed. Thus, for individuals who do not complete high school, increased literacy proficiency does not provide an advantage in obtaining part-time or full-time work.

High school dropouts who were out of the workforce demonstrate extremely low literacy proficiencies. This group includes a large number of older individuals (78 percent of all noncompleters 55 years of age or older) and also a substantial number of younger adults (27 percent of under-55 dropouts). Smaller percentages of high school graduates in either age bracket reported being out of the workforce and, at the same time, their literacy proficiencies are not nearly as low.

In spite of the handicap in average literacy proficiency, individuals who do not complete high school are a diverse group. They leave school for a variety of reasons and engage in a wide range of work, education, and literacy-related

activities after leaving. For example, individuals who reported leaving school because of loss of interest or behavior problems or because of pregnancy have significantly higher proficiencies as adults and engage in significantly more literacy practices in comparison with individuals who dropped out for other reasons.

A small but noteworthy proportion of noncompleters enrolled in part-time or full-time educational programs after leaving school. Approximately 18 percent of noncompleters reported studying for a high-school equivalency diploma and, by a conservative estimate, at least 4 percent completed the GED program. Their average literacy proficiency is at least as high as that of high school graduates. Given the generally powerful correlation between formal schooling and adult literacy skills noted in chapter 2, it is important to keep in mind the range of literacy skills *among* adults at a given education level, including those who did not complete high school.

Adults Performing at the Two Lowest Literacy Levels (Chapter 4)

We have seen that there is a range of literacy proficiencies among those who did not complete high school. Conversely, there is a range of educational attainment among those whose literacy proficiencies were in the lower levels in the National Adult Literacy Survey. About 60 percent of those in Level 1 on the prose literacy scale did not complete high school, and 14 percent of college graduates perform in Level 1 or 2. For policy purposes, the two-edged finding of the survey is important: educational attainment correlates strongly and regularly with literacy proficiency, yet some individuals with many years of schooling are among the group with low literacy proficiency.

Nearly half the adult population perform in Level 1 or Level 2. They are diverse in terms of educational experience and social characteristics. Nonetheless, some relationships are evident, and they are relevant to discussions of literacy and education. First, although level of education does not predict literacy proficiency in individual cases, there is a strong relationship between literacy and education. For example, among respondents who went to high school but did not graduate, 80 percent perform in Level 1 or 2 on the prose scale; among those who had some college but no degree, 31 percent do. There is also a relationship between literacy and race/ethnicity: among African-American adults, as well as among Hispanic adults, 75 percent demonstrate prose proficiency in Level 1 or 2, compared with 39 percent of White respondents.

Some respondents to the National Adult Literacy Survey completed the background questionnaire but completed none of the literacy tasks, or not enough to produce proficiency scores. If they had been excluded from the tables, the sample would no longer have been nationally representative; thus, procedures for estimating their probable scores were implemented. About 12 percent of the entire sample consisted of such nonresponders. Among those classified in Level 1, however, the percentage was much higher; about 41 percent were nonresponders among those performing in Level 1 on the prose scale. Respondents were asked why they did not complete the cognitive sections; if their reply was unrelated to reading ability (for example, they had a physical disability, or no time, or simply refused to continue), the average scores of other respondents with similar background characteristics (age, ethnicity, gender, region) were factored in when estimating their literacy proficiency. If their reason was related to literacy (did not speak English, did not read well), then the estimate was lower. The estimates were also influenced by any cognitive items the respondent did complete.

Unfortunately, there is no way to be certain that these estimates did not underestimate the literacy abilities of noncompleters, so caution is required in discussing respondents demonstrating proficiency in Level 1. It may be that some respondents had literacy abilities above Level 1 but wished to avoid the discomfort of having their literacy abilities tested and rated. Although the estimation procedures might underestimate some respondents' literacy proficiency, the same attitudes or anxieties that made them reluctant to complete the survey may cause them to avoid other literacy tasks in their everyday lives. Low literacy is thus a form of double jeopardy in people's lives: it is both a technical disadvantage and a social stigma. It can both keep one from learning what one needs to know and add insult to injury by embarrassing an individual. It is a double disadvantage that policymakers and adult literacy workers need to keep in mind.

Education for the Workplace (Chapter 5)

When we follow respondents into the workforce, we find that many workers who perform in Level 1 or 2 are laborers, in food service, in child care, and in maintenance occupations. These individuals are unlikely to succeed independently and consistently at the literacy tasks of moderate difficulty demanded in many workplaces. In some occupational areas — service workers,

farming and forestry — a substantial minority of workers say they rarely read on the job, but most workplaces are alive with literacy activities and literacy demands, and even in traditionally lower-status jobs many workers must write memoranda and reports. Workers who rarely read at home or on the job, however, demonstrate the lowest proficiencies, which is cause for concern as research indicates that learning loss occurs when there is lack of practice.

About 8 percent of all employees have sought basic skills training from an employer or union program, publicly sponsored classes or tutoring, or other program. Surprisingly, the percentage is about the same at all occupational levels and at all educational levels. Managerial and professional workers reported that they had sought basic skills training in the same proportions as laborers or clerical workers. Also, those enrolled in basic skills training were distributed equally across all educational levels.

Not surprisingly, most workers reported that basic prose reading ability was learned at school or at home, not at work. But other literacy abilities, some respondents said, were learned mainly at work, and some interesting patterns were evident in the data. People of lower education levels more often said that they learned how to manipulate documents, graphs, and tables primarily at work, perhaps because they had limited exposure to them at school or at home. People with higher education levels tended to report that they learned to write at work, suggesting either that they are asked to write more at work and thus learn from the experience or that they are offered more actual instructional opportunities to improve their writing at work.

The National Adult Literacy Survey confirms a picture of workers with widely varying literacy proficiencies and a workplace with literacy demands for most workers. The data should be helpful for those planning literacy instruction in workplace settings.

Conclusion

If there is one simple message about education and literacy in the National Adult Literacy Survey, it is that education matters. Formal education correlates strongly with higher literacy abilities at all levels and among all groups. We cannot prove from such correlations that education *causes* higher literacy abilities, but anyone who thinks that formal education only functions to hand out credentials, or that schools are failing to make a difference in people's actual functional skills, must reckon with these data. They show substantial

literacy gains at every increasing level of formal schooling among all groups, including males and females, racial/ethnic groups, and age groups.

Literacy is complex, however, and no simple message is very helpful. The results also contain many double messages about the relationship between literacy and education. First, there is always a substantial number of individuals who defy the relationships, and policymakers must keep these possibilities in mind. There are people with a high level of educational attainment and low literacy skills, and vice versa. There are dropouts with average literacy skills, and executives with minimal literacy skills. Second, the association of formal schooling with higher literacy skills is attributable partially to other factors such as high parental education or high economic status. People with various advantages also tend to get a lot of education. Thus, the answer to our problems in the United States will never be simply more education for everyone. Third, not all groups gain equal benefit from more education, whether measured in literacy proficiency or other cognitive outcomes. In particular, not only is there a relationship between race/ethnicity and educational attainment, but also between race/ethnicity and literacy proficiency at a given education level. Thus, policymakers must look at how formal education operates for different groups, as well as at factors beyond the schools that influence the acquisition of literacy abilities.

In summary, the National Adult Literacy Survey reinforces traditional notions about the importance of formal schooling but shows us a world in which formal schooling is enmeshed in social, familial, and economic contexts that also influence the attainment and uses of literacy.

CHAPTER 1

*Overview**

Few would deny the importance of literacy in this society or the advantages enjoyed by those with advanced skills. This shared belief in the value of literacy, though, does not imply consensus on the ways it should be defined and measured. In fact, opinions vary widely about the skills that individuals need to function successfully in their work, in their personal lives, and in society, and about the ways in which these skills should be assessed. As a result, there have been widely conflicting diagnoses of the literacy problem in this country. The National Adult Literacy Survey was initiated to fill the need for accurate and detailed information on the English literacy skills of America's adults.

In the Adult Education Amendments of 1988, the U.S. Congress called upon 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. In September 1989, NCES awarded a four-year contract to Educational Testing Service (ETS) to design and administer the survey and to analyze and report the results. A subcontract was given to Westat, Inc., for sampling and field operations.

The plan for developing and conducting the National Adult Literacy Survey (NALS) was guided by a panel of experts from business and industry, labor, government, research, and adult education. This Literacy Definition Committee worked with ETS 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

*Portions of 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, DC: U.S. Department of Education.

design, the quality of the data collected, the integrity of the analyses conducted, and the appropriateness of the interpretations of the final results.

An initial report released in September, 1993, discussed the main findings of the National Adult Literacy Survey.[1] Teams of members from the advisory boards and staff from Educational Testing Service were formed to prepare subsequent reports on special topics. This report explores the relationship between adult literacy and education.

The remainder of this introduction discusses the definition of literacy used in the National Adult Literacy Survey, the framework used in designing the survey instruments, the populations assessed, the survey administration, and the methods for reporting the results.

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.[2] 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 judgements 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.***

[1] I.S. Kirsch, et al. (September 1993). *Adult Literacy in America: A First Look at the Results of the National Adult Literacy Survey*. Washington, DC: U.S. Department of Education.

[2] I.S. Kirsch and A. Jungeblut. (1986). *Literacy: Profiles of America's Young Adults*. Princeton, NJ: Educational Testing Service. I.S. Kirsch, 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.

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."

The definition of literacy from the young adult survey 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. This committee agreed that expressing the literacy proficiencies of adults in school-based terms or grade-level scores is inappropriate. 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. 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 checkbook, figuring out a tip,

completing an order form, or determining the amount of interest from a loan advertisement.

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
- increased emphasis on tasks that ask respondents to describe how they would set up and solve a problem
- 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 had been

administered in both the young adult and job-seeker assessments. Administering a common set of simulation tasks in each of the three literacy surveys made it 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 assigned to 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: *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.[3]

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 households 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

[3] 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. (October 1992). *Assessing Literacy: The Framework for the National Adult Literacy Survey*. Washington, DC: National Center for Education Statistics.

of literacy tasks. Black and Hispanic households were oversampled to ensure reliable estimates of literacy proficiencies and to permit analyses of the performance of these subpopulations.

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 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 offenses, 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.

Table 1.1

The National Adult Literacy Survey Sample

Total Population*

	Assessed sample	National population
Total Population	26,091	191,289,250
Sex		
Male	11,770	92,098,158
Female	14,279	98,900,965
Age		
16 to 18 years	1,237	10,423,866
19 to 24 years	3,344	24,514,789
25 to 39 years	10,050	63,277,808
40 to 54 years	6,310	43,794,468
55 to 64 years	2,924	19,503,078
65 years and older	2,214	29,735,489
Race/Ethnicity		
White	17,292	144,967,759
Black	4,963	21,192,151
Hispanic/Mexican	1,776	10,234,806
Hispanic/Puerto Rican	405	2,190,094
Hispanic/Cuban	147	928,116
Hispanic/Central or South American	424	2,607,829
Hispanic/Other	374	2,520,468
Asian or Pacific Islander	438	4,116,356
American Indian or Alaskan Native	189	1,802,724
Other	83	728,948

Prison Population

	Assessed sample	National population
Total	1,147	765,651
Sex		
Male	1,076	722,632
Female	71	43,019
Race/Ethnicity		
White	417	265,602
Black	480	340,308
Hispanic	211	134,048
Asian or Pacific Islander	7	4,106
American Indian or Alaskan Native	27	17,758
Other	5	3,829

*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 because of missing data.

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

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

Although proficiency scores for groups tended to be similar across the three literacy scales, this does not mean 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.[4]

[4] 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.

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 1.1, 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 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 point on the appropriate scale based on their difficulty as reflected in the performance of the nationally representative sample of adults surveyed. Analyses of the types of materials and demands that characterize each level reveal the progression of literacy demands along each scale (Figure 1.2).

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.

Figure 1

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	**151** 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	**232** Locate intersection on a street map	**238** Calculate postage and fees for certified mail
	250 Locate two features of information in sports article	**245** Locate eligibility from table of employee benefits	**246** Determine difference in price between tickets for two shows
		259 Identify and enter background information on application for social security card	**270** Calculate total costs of purchase from an order form
275	**275** Interpret instructions from an appliance warranty	**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
	280 Write a brief letter explaining error made on a credit card bill	**296** 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
	304 Read a news article and identify a sentence that provides interpretation of a situation	**314** Use bus schedule to determine appropriate bus for given set of conditions	
	316 Read lengthy article to identify two behaviors that meet a stated condition	**323** Enter information given into an automobile maintenance record form	
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	**325** Plan travel arrangements for meeting using flight schedule
	347 Explain difference between two types of employee benefits	**348** Use bus schedule to determine appropriate bus for given set of conditions	**331** Determine correct change using information in a menu
	359 Contrast views expressed in two editorials on technologies available to make fuel-efficient cars		**350** Using information stated in news article, calculate amount of money that should go to raising a child
	362 Generate unfamiliar theme from short poems		**368** Using eligibility pamphlet, calculate the yearly amount a couple would receive for basic supplemental security income
	374 Compare two metaphors used in poem		
375			
	382 Compare approaches stated in narrative on growing up	**379** Use table of information to determine pattern in oil exports across years	**375** Calculate miles per gallon using information given on mileage record chart
	410 Summarize two ways lawyers may challenge prospective jurors	**387** Using table comparing credit cards, identify the two categories used and write two differences between them	**382** Determine individual and total costs on an order form for items in a catalog
	423 Interpret a brief phrase from a lengthy news article	**396** Using a table depicting information about parental involvement in school survey to write a paragraph summarizing extent to which parents and teachers agree	**405** Using information in news article, calculate difference in times for completing a race
500			**421** Using calculator, determine the total cost of carpet to cover a room

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

Figure 1.2

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 onto 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 *226-275*	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 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.	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.

About This Report

This report looks at adult literacy and education, with education defined primarily as levels of formal schooling. Because such a topic is broad in scope and can be examined through many different lenses, the authors do not intend for this report to be comprehensive; rather they each examine the data from the perspective of their individual research interests and fields of expertise. While the chapters are linked by the common theme of literacy and schooling, the authors are individually responsible for the presentation and analysis in their respective chapters. Leading off the discussion, chapter 2 looks at the relationship between literacy and schooling in detail for the entire population and for particular subgroups, including a comparison of different age cohorts. Chapter 3 narrows the focus by profiling the literacy proficiencies of school noncompleters and discusses their literacy-related experiences and practices. Looking at the data through a different lens, chapter 4 focuses on adults performing in the two lowest literacy levels in light of their education, background, and literacy practices. Finally, in light of the concern about educating people for the workplace, chapter 5 presents information about the literacy proficiencies, practices, and educational levels of adults in various occupations.

The five authors of this report divided responsibilities in the following way. Carl Kaestle, the lead author, chaired the authors' organizational conferences, wrote the Executive Summary, chapter 2, and the Epilogue, and assisted Anne Campbell in the editorial and adjudication tasks. Anne Campbell adapted and rewrote chapter 1, this overview chapter, using earlier descriptions of the National Adult Literacy Survey, and she handled most of the complex editorial tasks involved in the report's creation, review, and revision. The remaining authors each wrote a chapter, reviewed others' chapters, and participated in various conversations about the project as a whole: Jeremy Finn, chapter 3; Sylvia Johnson, chapter 4; and Larry Mikulecky, chapter 5. The chapter authors are individually responsible for the presentation and data analysis of their chapters.

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 representative samples drawn from their two respective universes. As such, they are subject to some measurable degree of uncertainty. Scientific procedures employed in the study design and the scaling of literacy tasks, however, permit a high degree of confidence in the resulting estimates of task difficulty. Similarly, the sampling design and weighting procedures applied in this survey assure that participants' responses can be generalized to the populations of interest.

When comparisons between various subpopulations are made, statistical tests are applied to the data in order to establish that differences are significant. These significance tests take into account the magnitude of the differences (for example, the difference in average document proficiency between high school and college graduates), the size of the standard errors 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. Readers who are interested in making their own comparisons are therefore advised not to use the numbers alone to compare various groups, but rather to evaluate such comparisons using statistical tests.[5]

The goal of this report is to provide useful information to those involved in various education communities — elementary and secondary schools, vocational and technical schools, higher education institutions, adult education programs, and workplace training programs. In considering the results, readers should keep in mind that this was a survey of literacy only in the English language. Thus, the results do not capture the literacy resources and abilities that some respondents possess in languages other than English.

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. This survey focuses on some, but not all, of these variables.

Furthermore, although the survey results reveal that certain characteristics are related to literacy, it is impossible to determine, from a survey administered at one point in time, 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

[5] To determine whether the difference between two groups is statistically significant, one must estimate the degree of uncertainty (or the standard error) associated with the difference. To do so, one squares each group's standard error and, sums these squared standard errors, and then takes the square root of this sum. The difference between the two groups plus or minus twice the standard error of the difference is the confidence interval. If the confidence interval does not contain zero, then the difference between the two groups is said to be statistically significant.

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 have emphasized that causal assertions are speculative.

A final note deserves emphasis. This report describes the literacy proficiencies of various subpopulations defined by characteristics such as age, sex, race, ethnicity, and educational background. While certain groups demonstrated lower literacy skills than others on average, within every group there were some individuals who performed well and some who performed 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 performed worse than those in the second. Such statements are only intended to highlight differences among the average proficiencies of groups and, therefore, do not capture the variability within each group.

CHAPTER 2

Formal Education and Adult Literacy Proficiencies: Exploring the Relevance of Gender, Race, Age, Income, and Parents' Education

by Carl F. Kaestle[1]

How is literacy related to schooling? One finding pervades the data of the National Adult Literacy Survey: literacy abilities are highly correlated with how much education a person has had. This will come as no great surprise to most people, but if we wish to understand how literacy abilities are distributed in our society, we need to look at the association of literacy and schooling in some detail. Given the widespread criticism of schools over the past two decades, one might think that schools were not teaching literacy abilities very well. The reform literature abounds with images of high school graduates who can barely read and with complaints that students finish school without learning the functional literacy skills they need in the workplace. Scholars who study literacy have reinforced the notion of a disjunction between schools and adult literacy abilities, even though they have presented a more positive image of how people cope with adult literacy tasks. They have pointed out the differences between school literacy and literacy as it functions in the world of most adults. School literacy is formal and hierarchical, and reading instruction is focused largely on prose fiction and a narrow range of expository writing. Functional literacy outside the school is less structured, less hierarchical, involves a greater variety of materials and settings, is more integrated with other tasks, and is more social.[2]

The results from the National Adult Literacy Survey tell two contrasting stories about the relationship of schooling to literacy abilities that are useful in the adult world. On the one hand, the survey provides a very detailed profile of what people with varying amounts of education can and cannot do in terms of

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[1] Carl Kaestle's work on literacy has been generously supported by The Spencer Foundation and by the Wisconsin Center for Education Research at the University of Wisconsin-Madison, although this publication does not represent or reflect official positions of these agencies.

[2] S.B. Heath. (1980). "The Functions and Uses of Literacy," *Journal of Communication, 30*, pp. 123-33; D.R. Olson. (1977). "The Languages of Instruction: The Literate Bias of Schooling." In R.C. Anderson, R.J. Spiro, and W.E. Montague, eds., *Schooling and the Acquisition of Knowledge.* Hillsdale, NJ: Lawrence Erlbaum; W.A. Diehl and L. Mikulecky. (1980). "The Nature of Reading at Work," *Journal of Reading 24,* pp. 221-228.

literacy tasks; and indeed, the abilities people display at a given level of school attainment may not be what we need for effective citizenship, parenting, work, and personal fulfillment. On the other hand, the strength and pervasiveness of the correlation between schooling and adult literacy abilities in these data reinforces the conventional notion that one's literacy abilities are related to how much schooling one has had. Although the correlation does not prove a causal relationship, it is hard to imagine a successful strategy for improving future adult literacy abilities that would ignore the importance of more and better schooling for individuals.

This chapter presents the National Adult Literacy Survey findings on the relationship between literacy and schooling for the whole assessment population and then explores the relationship between adult literacy proficiency, formal education, and various characteristics of the subjects in the assessment, including race/ethnicity, gender, age, parents' education level, and household income. Subsequent chapters will take up special populations: school dropouts in chapter 3 and those who scored in the lower literacy levels in chapter 4. Chapter 5 will consider insights the survey provides about education and literacy in the workplace.

Chapter 2 will show that literacy proficiencies increase as people reach higher levels of education. Second, literacy abilities at a given level of schooling are influenced by gender, race/ethnicity, parents' education, and income in important ways. Finally, the data will show that the average literacy proficiency scores of 30-year-old cohort are higher (across all groups) than those of 20-year olds, and those of 40-year olds are higher still. The data suggest that these increases are associated with continued formal schooling as adults, not with more extensive or more effective initial education. This phenomenon, a feature of our *learning society,* tapers off in the cohort in their fifties. Successive cohorts have lower levels of schooling and lower average literacy proficiencies.

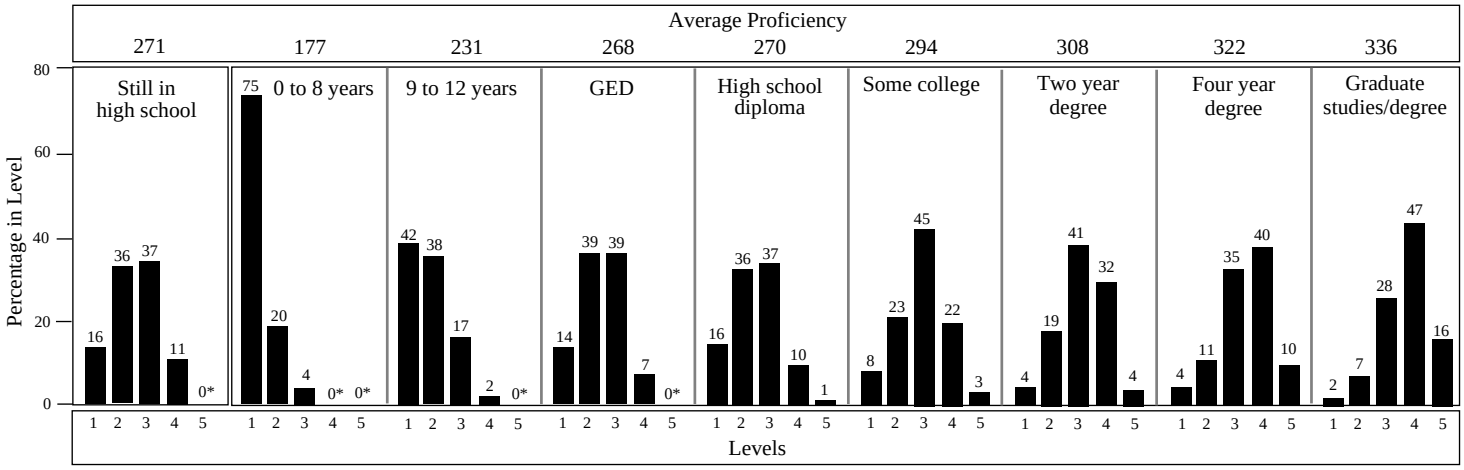
Literacy and Schooling

Figure 2.1 gives average proficiency scores by the subjects' education level, and then, in the bar graphs, the percentages of people at each education level who perform at each of the five proficiency levels, for each of the three literacy scales. The regular and strong relationship of education level to literacy proficiency is dramatized in this figure. According to the data for prose proficiency, for example, those subjects who had only 0 to 8 years of schooling average 177 on the prose scale, while those with a four-year college degree

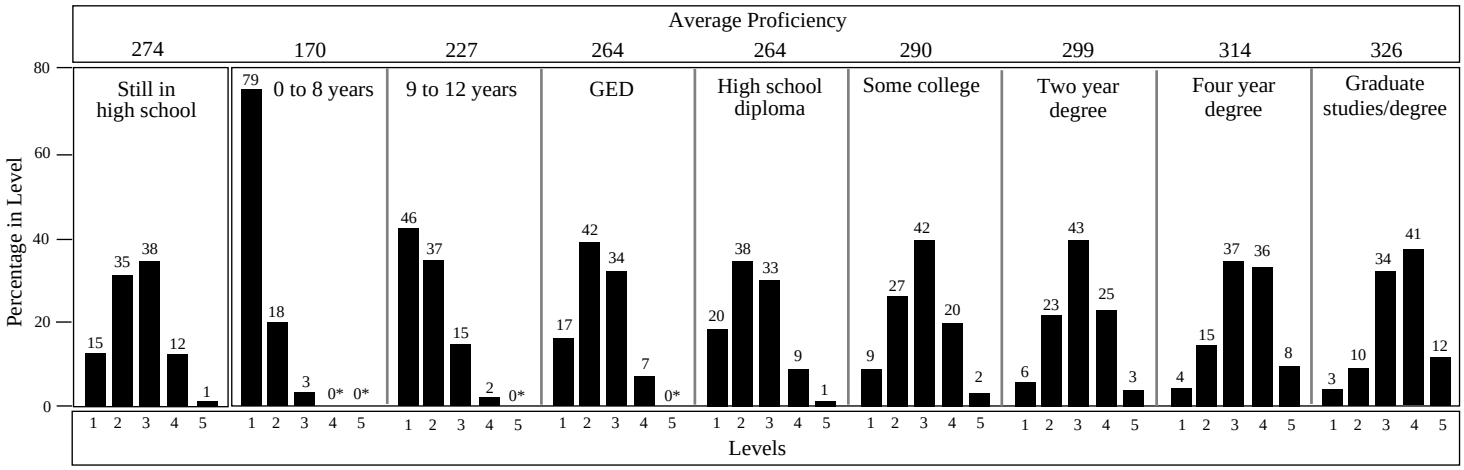
Figure 2.1

Percentages at Each Level and Average Proficiencies on Each Literary Scale, by Education Level

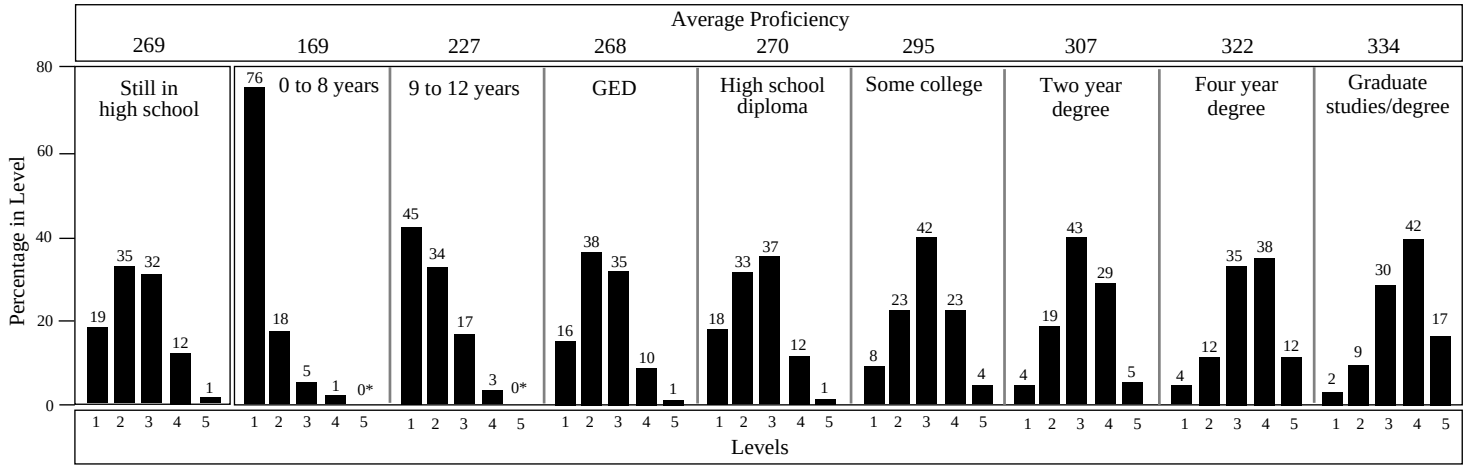
PROSE



DOCUMENT



QUANTITATIVE



*Percentages below .5 are rounded to 0.

Level 1 (0 to 225) **Level 2** (226 to 275) **Level 3** (276 to 325) **Level 4** (326 to 375) **Level 5** (376 to 500)

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

average 322. Put another way, 95 percent of those with only 0 to 8 years of education perform in the lower two literacy levels on the prose scale and none in the highest two levels, while 15 percent of college graduates perform in the lowest two levels and 50 percent in the highest two levels. The profiles for the document and quantitative scales are nearly identical to those of the prose scale. In each case the average proficiency scores increase with each succeeding level of educational attainment. Subjects whose highest level of education was the GED had very similar scores to those whose highest level was the high school diploma, so they will be combined in subsequent tables. (Note that these data do not provide a comparison of all GED holders with all high school graduates because they do not include any GED or high school diploma holders who went on to further education.) Even at the higher levels of the formal education system, additional years of schooling are usually correlated with a lower proportion of individuals in the lower literacy levels and a greater proportion in the higher two levels.[3] (Also see table B2.1 in appendix B.)

Two complications must be emphasized. First, as tempting as it is to make a correlation into a causal relationship, the high association of schooling and literacy does not prove that schooling causes higher literacy; it especially does not prove that schooling is responsible for all the differences in literacy ability shown in people of differing levels of educational attainment. People with high education levels may have wealthier families or more highly educated parents, for example. This chapter separates out (controls for) some of these effects. Even after controlling for such factors, it is possible that people with high literacy skills (however they learned them) tend to seek and receive higher amounts of education. Furthermore, even when they have equal amounts of education, some groups have different average literacy proficiencies. The relationship of schooling to literacy varies for different groups defined by gender, age, race/ethnicity, parents' education, and household income. The analysis now turns to these important variables.

Results by Gender

Table 2.1 gives proficiency scores by gender and by education level for all three literacy scales. Males and females demonstrate similar performance on the prose literacy scale at all levels of education; the only statistically significant

[3] The following are statistically significant relationships: on the prose and document scales, when adults with a two-year degree are compared with adults with a four-year degree, who are, in turn, compared with adults with some graduate studies, the percentages in Level 2 decline and the percentages in Levels 4 and 5 increase with level of education. On the quantitative scale, comparing the same groups, there is a significant decrease in Level 2 percentages and an increase in Level 5 percentages as level of education increases.

difference occurs among adults whose highest level of education is a GED or high school diploma, where the males' scores are seven points lower than the females'. Across all education levels, however, males and females differ by only 2 points on the prose scale, and the difference is not statistically significant. On the document scale, the average proficiency of males is about 4 points higher than females at the college levels, resulting in a statistically significant difference of 3 points across all education levels. A more substantial difference exists between males' and females' literacy abilities on the quantitative scale. Here the gap in proficiency scores across all education levels is 11 points. Although the data cannot tell us the reason for this gap, it is possible that many schools and workplaces have given females less encouragement, opportunity, training, and responsibility to do tasks that require quantitative literacy. Table 2.2 was produced to explore whether this gap decreased over the years, but the sample sizes were not sufficient to guarantee statistical significance. Other

TABLE 2.1

Percentages and Average Proficiencies on Each Literacy Scale of Adults: Sex, by Education Level

SEX			EDUCATION LEVEL						
			Still in high school	0 to 8 years	9 to 12 years	GED/High school	Some postsecondary	College graduate	Total
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Total	25,989	190,430							
Prose			4 (0.1) 271 (2.0)	10 (0.3) 177 (2.7)	13 (0.2) 231 (1.4)	31 (0.1) 270 (1.0)	21 (0.2) 294 (1.0)	21 (0.2) 325 (1.1)	100 (0.0) 273 (0.6)
Document			4 (0.1) 274 (1.9)	10 (0.3) 169 (2.5)	13 (0.2) 227 (1.6)	31 (0.1) 264 (1.0)	21 (0.2) 290 (0.9)	21 (0.2) 316 (0.9)	100 (0.0) 267 (0.7)
Quantitative			4 (0.1) 269 (2.3)	10 (0.3) 169 (3.2)	13 (0.2) 227 (1.7)	31 (0.1) 270 (1.0)	21 (0.2) 295 (1.4)	21 (0.2) 324 (1.0)	100 (0.0) 272 (0.7)
Male	11,739	91,849							
Prose			5 (0.2) 270 (3.3)	10 (0.5) 174 (3.5)	12 (0.4) 228 (2.1)	29 (0.5) 266 (1.8)	20 (0.4) 293 (1.4)	23 (0.5) 326 (1.5)	100 (0.0) 272 (0.8)
Document			5 (0.2) 273 (3.1)	10 (0.5) 169 (3.0)	12 (0.4) 227 (2.4)	29 (0.5) 264 (1.8)	20 (0.4) 292 (1.2)	23 (0.5) 318 (1.4)	100 (0.0) 269 (0.9)
Quantitative			5 (0.2) 272 (3.4)	10 (0.5) 172 (3.9)	12 (0.4) 232 (2.3)	29 (0.5) 273 (1.7)	20 (0.4) 301 (1.7)	23 (0.5) 331 (1.4)	100 (0.0) 277 (0.9)
Female	14,250	98,581							
Prose			4 (0.2) 273 (2.6)	9 (0.3) 179 (3.4)	14 (0.4) 233 (2.1)	32 (0.4) 273 (1.1)	21 (0.4) 295 (1.3)	20 (0.5) 325 (1.1)	100 (0.0) 274 (0.8)
Document			4 (0.2) 275 (3.0)	9 (0.3) 169 (3.5)	14 (0.4) 227 (2.1)	32 (0.4) 264 (1.0)	21 (0.4) 288 (1.3)	20 (0.5) 314 (1.2)	100 (0.0) 265 (0.9)
Quantitative			4 (0.2) 266 (3.0)	9 (0.3) 166 (4.3)	14 (0.4) 224 (2.1)	32 (0.4) 267 (1.2)	21 (0.4) 291 (1.4)	20 (0.5) 317 (1.2)	100 (0.0) 266 (0.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

TABLE 2.2

Percentages and Average Quantitative Proficiencies of Adults: Age and Sex, by Education Level

SEX BY AGE	n	WGT N (/1,000)	Still in high school	0 to 8 years	9 to 12 years	GED/High school	Some postsecondary	College graduate	Total
			EDUCATION LEVEL						
			RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
16 to 19 Year Olds									
Males	854	7,711	60 (2.4) 272 (3.4)	3 (0.7) *** (****)	10 (1.1) 241 (6.3)!	19 (1.5) 274 (7.9)	7 (1.1) 305 (6.8)!	0† (0.0) *** (****)	100 (0.0) 269 (2.8)
Females	872	6,591	51 (1.6) 267 (3.0)	2 (0.6) *** (****)	15 (1.6) 246 (6.3)!	23 (1.5) 280 (6.1)	9 (0.9) 303 (5.8)!	0† (0.2) *** (****)	100 (0.0) 269 (2.0)
Total	1,726	14,302	56 (1.4) 270 (2.1)	3 (0.5) 200 (10.0)!	12 (1.1) 244 (4.8)	21 (1.0) 277 (5.5)	8 (0.7) 304 (3.6)!	0† (0.1) *** (****)	100 (0.0) 269 (1.7)
20 to 29 Year Olds									
Males	2,903	20,606	0† (0.1) *** (****)	4 (0.4) 161 (8.4)!	13 (0.9) 235 (4.6)	38 (1.5) 270 (2.7)	26 (1.2) 304 (2.6)	19 (1.1) 328 (3.3)	100 (0.0) 281 (1.9)
Females	3,222	20,562	0† (0.1) *** (****)	3 (0.4) 163 (8.8)!	12 (0.7) 230 (3.8)	38 (1.0) 269 (2.4)	27 (0.9) 295 (2.4)	19 (0.9) 320 (2.0)	100 (0.0) 278 (1.5)
Total	6,125	41,168	0† (0.1) *** (****)	3 (0.3) 162 (6.2)!	13 (0.5) 233 (3.2)	38 (0.7) 270 (1.9)	27 (0.6) 299 (2.0)	19 (0.7) 324 (1.7)	100 (0.0) 279 (1.2)
30 to 39 Year Olds									
Males	3,070	20,244	0† (0.0) *** (****)	6 (0.6) 164 (6.9)!	11 (0.8) 231 (4.8)!	31 (1.2) 278 (2.8)	23 (1.0) 304 (2.6)	30 (1.0) 336 (2.4)	100 (0.0) 289 (1.8)
Females	3,650	22,041	0† (0.0) *** (****)	5 (0.4) 151 (7.0)!	12 (0.9) 226 (4.5)	31 (1.0) 276 (1.8)	25 (1.0) 297 (2.4)	28 (1.0) 324 (2.0)	100 (0.0) 282 (1.5)
Total	6,720	42,285	0† (0.0) *** (****)	5 (0.4) 158 (4.9)!	11 (0.6) 229 (3.5)	31 (0.7) 277 (1.9)	24 (0.6) 300 (1.7)	29 (0.6) 330 (1.7)	100 (0.0) 286 (1.2)
40 to 49 Year Olds									
Males	2,181	15,683	0† (0.3) *** (****)	7 (0.7) 165 (10.2)!	9 (0.9) 227 (7.1)!	26 (1.1) 280 (4.0)	22 (1.2) 308 (2.9)	36 (1.2) 336 (2.4)	100 (0.0) 294 (1.8)
Females	2,489	16,632	0† (0.0) *** (****)	6 (0.6) 179 (9.7)!	9 (0.8) 220 (4.5)!	31 (1.3) 271 (3.0)	23 (1.2) 296 (3.0)	31 (1.1) 324 (2.6)	100 (0.0) 282 (1.8)
Total	4,670	32,314	0† (0.1) *** (****)	6 (0.5) 172 (6.8)!	9 (0.6) 223 (3.8)!	28 (1.0) 275 (2.7)	23 (0.9) 302 (1.9)	33 (0.7) 330 (1.9)	100 (0.0) 288 (1.3)
50 to 59 Year Olds									
Males	1,331	10,114	0† (0.0) *** (****)	13 (1.5) 178 (8.6)!	12 (1.1) 234 (6.8)!	32 (1.6) 276 (3.8)	17 (1.1) 297 (4.2)	25 (1.4) 334 (3.2)	100 (0.0) 277 (3.0)
Females	1,706	10,985	0† (0.0) *** (****)	10 (1.0) 166 (6.8)!	15 (0.9) 231 (4.1)	34 (1.3) 273 (2.9)	21 (0.9) 289 (3.5)	20 (1.3) 315 (3.2)	100 (0.0) 267 (2.3)
Total	3,037	21,099	0† (0.0) *** (****)	12 (0.9) 172 (5.5)	13 (0.8) 232 (3.4)	33 (0.9) 274 (2.5)	19 (0.8) 293 (2.7)	23 (0.9) 325 (2.0)	100 (0.0) 272 (1.9)
60 to 69 Year Olds									
Males	903	9,374	0† (0.4) *** (****)	20 (1.8) 185 (8.6)	19 (2.0) 241 (6.8)	22 (1.9) 262 (4.2)	16 (1.3) 291 (7.5)!	22 (1.7) 323 (4.4)	100 (0.0) 261 (3.6)
Females	1,356	10,653	0† (0.2) *** (****)	18 (1.7) 179 (6.9)	19 (1.3) 231 (4.2)	35 (1.8) 260 (3.7)	16 (1.0) 275 (3.3)!	12 (1.3) 292 (6.4)!	100 (0.0) 246 (2.8)
Total	2,259	20,027	0† (0.2) *** (****)	19 (1.1) 182 (5.2)	19 (1.2) 236 (4.0)	29 (1.3) 261 (2.9)	16 (0.7) 283 (4.5)	17 (0.9) 312 (4.0)	100 (0.0) 253 (2.0)
70 Years or Older									
Males	491	8,098	0† (0.1) *** (****)	33 (2.4) 167 (9.0)	16 (1.6) 208 (9.8)!	23 (1.9) 259 (8.2)	13 (1.5) 272 (8.8)!	15 (1.9) 305 (6.6)!	100 (0.0) 229 (4.7)
Females	950	11,106	0† (0.2) *** (****)	29 (1.8) 157 (6.8)	22 (1.8) 199 (4.7)	25 (1.9) 232 (5.4)	15 (1.4) 255 (7.8)!	9 (0.8) 264 (8.6)!	100 (0.0) 209 (3.5)
Total	1,441	19,204	0† (0.1) *** (****)	31 (1.3) 161 (6.5)	19 (1.4) 202 (4.4)	24 (1.2) 243 (4.3)	14 (1.0) 262 (6.2)	12 (0.9) 287 (5.7)	100 (0.0) 218 (3.3)
Grand Total									
Grand Total	25,978	190,399	4 (0.1) 269 (2.3)	10 (0.3) 169 (3.2)	13 (0.2) 227 (1.7)	31 (0.1) 270 (1.0)	21 (0.2) 295 (1.4)	21 (0.2) 324 (1.0)	100 (0.0) 272 (0.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

studies suggest, however, that significant differences persist today in males' and females' scores on assessments of quantitative skills.[4]

The gender gap in quantitative literacy shows that one group can have a distinctive profile in comparison with another group on one of the three scales but not be very different on another scale; in other words, the three scales are independent of each other. With respect to race/ethnicity, however, the data show that proficiencies on all three scales are affected by group differences. The analysis now turns to differences among racial/ethnic groups.

Results by Race/Ethnicity

Table 2.3 shows literacy proficiencies of different racial/ethnic groups, subdivided by level of education. Combining all education levels, the prose proficiency of White subjects is on average 49 points higher than that of Black subjects. In turn, the average proficiency of Black adults is 21 points higher than that of Hispanic respondents. Some of these differences are accounted for by differences in educational attainment. As table 2.3 shows, 24 percent of White adults were college graduates, while only 11 percent of Black and 9 percent of Hispanic adults were. Conversely, only 7 percent of White adults reported 0 to 8 years of schooling, while 12 percent of Black adults and 26 percent of Hispanic subjects reported that level of schooling. Looking at the columns of literacy proficiency scores by education levels, one can see the effect of "controlling" for education. The gap between Black and White adults remains substantial at all education levels; for example, White college graduates outperform Black college graduates on the prose scale by 42 points and on the quantitative scale by 51 points.

Although the gap between Black and White adults' literacy proficiency scores is smaller at any given education level than it is for the two entire populations without controlling for education, there is reason to be skeptical about how much of the reduction is attributable to education *per se*. The relationship between race, education, and literacy proficiency is influenced by other factors. Educational attainment is affected by such factors as parents' education and household income, so those variables are silently brought into the analysis when we produce tables on literacy proficiency by race and education. A more complex statistical analysis, which controls for several of those variables at once, appears below. Suffice it to say here that the portion of

[4] See G.Z. Wilder and K. Powell. (1989). *Sex Differences in Test Performance: A Survey of the Literature.* New York: College Entrance Examination Board.

TABLE 2.3

Percentages and Average Proficiencies on Each Literacy Scale of Adults: Race/Ethnicity, by Education Level

RACE / ETHNICITY / LITERACY SCALE	n	WGT N (/1,000)	EDUCATION LEVEL: Still in high school	0 to 8 years	9 to 12 years	GED/High school	Some postsecondary	College graduate	Total
			RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Total	26,027	190,695							
Prose			4 (0.1) 271 (2.0)	10 (0.3) 176 (2.7)	13 (0.2) 231 (1.5)	31 (0.1) 270 (1.0)	21 (0.2) 294 (1.0)	21 (0.2) 325 (1.1)	100 (0.0) 273 (0.6)
Document			4 (0.1) 274 (1.9)	10 (0.3) 169 (2.4)	13 (0.2) 227 (1.6)	31 (0.1) 264 (1.0)	21 (0.2) 290 (0.9)	21 (0.2) 316 (0.9)	100 (0.0) 267 (0.7)
Quantitative			4 (0.1) 269 (2.3)	10 (0.3) 169 (3.2)	13 (0.2) 227 (1.7)	31 (0.1) 270 (1.0)	21 (0.2) 295 (1.4)	21 (0.2) 324 (1.0)	100 (0.0) 272 (0.7)
White	17,281	144,791							
Prose			4 (0.2) 283 (2.2)	7 (0.3) 201 (3.2)	11 (0.3) 243 (1.6)	32 (0.3) 278 (1.1)	21 (0.3) 301 (1.2)	24 (0.3) 331 (1.2)	100 (0.0) 286 (0.7)
Document			4 (0.2) 286 (2.3)	7 (0.3) 191 (3.2)	11 (0.3) 238 (1.9)	32 (0.3) 271 (1.1)	21 (0.3) 297 (1.0)	24 (0.3) 322 (1.0)	100 (0.0) 280 (0.8)
Quantitative			4 (0.2) 283 (2.4)	7 (0.3) 194 (3.9)	11 (0.3) 242 (2.2)	32 (0.3) 279 (1.1)	21 (0.3) 304 (1.5)	24 (0.3) 330 (1.1)	100 (0.0) 287 (0.8)
Black	4,953	21,150							
Prose			6 (0.5) 247 (4.0)	12 (0.7) 158 (3.9)	21 (0.8) 213 (2.3)	31 (1.0) 242 (1.6)	19 (0.9) 267 (1.8)	11 (0.7) 289 (2.7)	100 (0.0) 237 (1.4)
Document			6 (0.5) 248 (3.9)	12 (0.7) 150 (3.1)	21 (0.8) 207 (2.2)	31 (1.0) 235 (1.6)	19 (0.9) 261 (2.2)	11 (0.7) 277 (2.6)	100 (0.0) 230 (1.1)
Quantitative			6 (0.5) 234 (4.8)	12 (0.7) 139 (4.2)	21 (0.8) 197 (2.9)	31 (1.0) 233 (1.9)	19 (0.9) 258 (2.2)	11 (0.7) 279 (2.5)	100 (0.0) 224 (1.4)
Hispanic	3,093	18,236							
Prose			6 (0.5) 245 (7.0)!	26 (1.0) 135 (3.6)	18 (1.0) 200 (4.8)	24 (1.1) 241 (3.8)	17 (0.8) 265 (3.5)	9 (0.8) 294 (5.3)!	100 (0.0) 216 (2.2)
Document			6 (0.5) 246 (6.6)!	26 (1.0) 130 (3.7)	18 (1.0) 197 (5.0)	24 (1.1) 240 (4.3)	17 (0.8) 263 (3.4)	9 (0.8) 293 (5.2)!	100 (0.0) 214 (2.6)
Quantitative			6 (0.5) 241 (6.8)!	26 (1.0) 128 (3.7)	18 (1.0) 196 (5.4)	24 (1.1) 240 (4.2)	17 (0.8) 265 (3.5)	9 (0.8) 295 (6.3)!	100 (0.0) 213 (2.4)
Other	700	6,518							
Prose			6 (1.1) *** (****)	12 (2.2) 155 (10.9)!	11 (1.5) 212 (11.0)!	24 (3.0) 233 (10.5)!	21 (1.9) 269 (6.6)!	26 (2.7) 286 (5.6)!	100 (0.0) 244 (4.1)
Document			6 (1.1) *** (****)	12 (2.2) 171 (11.7)!	11 (1.5) 212 (10.3)!	24 (3.0) 234 (9.0)!	21 (1.9) 266 (7.2)!	26 (2.7) 287 (5.6)!	100 (0.0) 246 (3.5)
Quantitative			6 (1.1) *** (****)	12 (2.2) 169 (17.8)!	11 (1.5) 213 (9.5)!	24 (3.0) 242 (7.5)!	21 (1.9) 271 (6.1)!	26 (2.7) 297 (6.4)!	100 (0.0) 252 (3.8)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

the gap in literacy proficiencies of different racial/ethnic groups that is attributable to education is modest, suggesting that problems of racial and ethnic disparities extend far beyond educational institutions. To say that education does not explain all of the literacy differences between groups, of course, does not mean that education is not strongly correlated with literacy performance within groups.

In interpreting the literacy proficiencies by racial/ethnic groups, it is important to emphasize that this survey assessed only English-language literacy proficiencies. No non-English versions of the assessment were developed. This may account for some part of the gap between Hispanic adults on the one hand and both White and Black adults on the other hand. Furthermore, because the first two education categories are quite broad (0 to 8 years, and 9 to 12 years) one might wonder whether the categories mask differences in educational attainment by racial/ethnic groups. Table 2.4 shows that the average number of years of schooling attained was very similar for Black and White respondents who reported 0 to 11 years of schooling, but that the average for the Hispanic

TABLE 2.4

Percentages of Adults with 11 or Fewer Years of Schooling Reporting Number of Years and Mean Years, by Race/Ethnicity

YEARS OF SCHOOLING	RACE /ETHNICITY			
	White	Black	Hispanic	Other
	WGT N (/1,000) 26,284	WGT N (/1,000) 6,664	WGT N (/1,000) 7,228	WGT N (/1,000) 1,449
	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)
0	0.5 (0.2)	0.6 (0.3)	10.9 (2.2)	5.9 (2.6)
1	0.3 (0.1)	0.5 (0.2)	1.7 (0.5)	0.0 (0.0)
2	0.5 (0.1)	1.4 (0.2)	2.8 (0.5)	1.6 (1.1)
3	1.4 (0.4)	2.5 (0.4)	6.2 (0.8)	4.4 (2.9)
4	1.9 (0.3)	2.7 (0.4)	4.5 (0.9)	4.7 (1.4)
5	1.9 (0.3)	4.7 (0.6)	5.6 (0.9)	8.2 (4.2)
6	3.9 (0.5)	5.1 (0.8)	14.2 (1.1)	9.9 (3.6)
7	6.3 (0.7)	5.3 (0.6)	4.2 (0.6)	6.7 (2.1)
8	22.3 (1.3)	13.2 (1.2)	9.9 (1.2)	13.4 (4.1)
9	17.9 (1.0)	15.1 (1.6)	13.0 (1.3)	12.0 (2.8)
10	20.2 (1.0)	19.7 (1.7)	10.8 (1.1)	13.0 (3.8)
11	22.9 (1.3)	29.1 (2.0)	16.2 (1.3)	20.1 (4.3)
Mean	8.8 (0.1)	8.7 (0.1)	6.7 (0.2)	7.5 (0.4)

WGT N = population size estimate /1,000 (the sample sizes for subpopulations may not add up to the total sample sizes because of missing data); CPCT = column percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

population was lower. Among those White respondents who reported 11 or fewer years of schooling, the average number of years completed was 8.8; among Black adults the average was 8.7; among Hispanic adults the average was 6.7. The reason, as shown in table 2.4, is that a very large proportion of Hispanic subjects reported no schooling whatsoever (10.9 percent, compared with 0.5 percent for White adults and 0.6 percent for Black adults). Perhaps this results from lack of educational opportunity not only for Hispanic people who immigrated, but also for those who were born in this country. Although the *average* years of schooling are similar for Black and White respondents who have eleven or fewer years of schooling, the distributions are quite different. At the lower attainment levels, however, our sample size is not sufficient to provide statistically significant estimates of these differences.[5]

These distributions suggest, however, that some of our broad categories mask differences in educational attainment by race. Thus, some of the differences in literacy proficiency by race/ethnicity at a given education level may be due to differences in educational attainment within the broad categories. Table 2.5 illustrates this phenomenon at the higher levels of attainment. Table 2.3 combined all those with any higher education but no degree into *some postsecondary* and all degree-holders (2-year, 4-year, and postgraduate) into *college degree*. Table 2.5 breaks these higher education categories into four more finely defined categories. While the percentage of White adults who attained two or more years but no degree (21.5) is somewhat similar to that for Hispanic adults (17.4) and for Black respondents (18.9), the rate for White 4-year-college-degree holders (10.5 percent) is about twice that of Black 4-year-college-degree holders (5.3 percent), while 4 percent of Hispanic respondents held such degrees. At the postgraduate level the ratio of White attainment is about three times that of Black or Hispanic attainment. The broader categories of table 2.3, then, do not fully control for level of education.

Differences persist, however, even when level of educational attainment is better controlled. For example, in the case of high school or GED graduates with no further education (table 2.3), the average prose proficiencies of White, Black, and Hispanic respondents are 278, 242, and 241, respectively. The possible reasons for such differences include disparities in other factors that vary by race, such as family income and parental education, as well as disparities in the quality of schooling received by different groups and disparities in opportunities for lifelong learning depending on job

[5] Similar distributions are reported in R. Kominski and A. Adams. (1992). *Educational Attainment in the United States: March 1991 and 1990.* Current Population Reports, Series P-20, No. 462. Washington, DC: Bureau of the Census. Further research is needed on members of different racial and ethnic groups who receive very low levels of formal schooling.

TABLE 2.5

Percentages of Adults at Higher Education Levels Only, by Race/Ethnicity

RACE/ ETHNICITY		HIGHER EDUCATION LEVELS							
		2 years or more, no degree		2-year degree		4-year degree		Postgraduate work or degree	
	WGT N (/1,000)	RPCT*	(SE)	RPCT*	(SE)	RPCT*	(SE)	RPCT*	(SE)
White	**144,762**	21.5	(0.3)	3.9	(0.2)	10.5	(0.2)	9.9	(0.3)
Black	**21,150**	18.9	(0.9)	2.4	(0.4)	5.3	(0.4)	3.5	(0.4)
Hispanic	**18,234**	17.4	(0.8)	2.1	(0.3)	4.0	(0.6)	3.1	(0.4)

WGT N = population size estimate /1,000 (the sample sizes for subpopulations may not add up to the total sample sizes because of missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

* Percentages do not add up to 100 because data for lower educational levels are not included in the table.

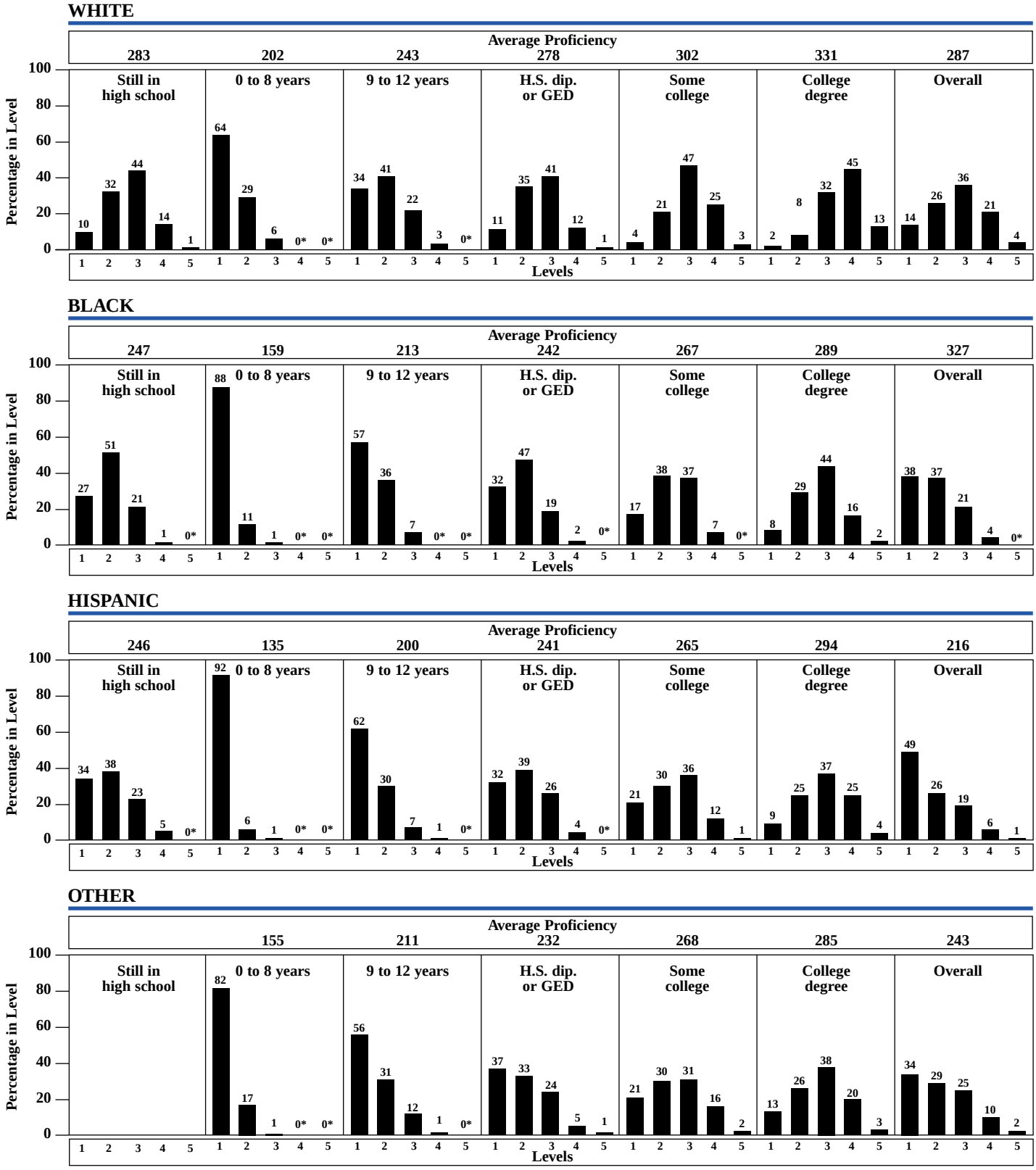
Source: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

opportunities and other adult activities. Figure 2.2 shows the resulting pattern of literacy abilities by racial/ethnic group, expressed as percentages of each group at each of the five literacy levels, subdivided by education level. Combining all education levels, 40 percent of White subjects perform in the lower two levels on the prose scale, while 75 percent of Black and Hispanic subjects and 63 percent of the subjects from other racial/ethnic groups perform in either of those levels. Looking at the higher levels, 25 percent of White adults perform in Level 4 or 5, while 4 percent of Black adults, 7 percent of Hispanic adults, and 12 percent of other groups perform in either of those levels. (Also see tables B2.2P, D, and Q.)

Schooling plays an important double role in shaping these English literacy proficiencies by race/ethnicity. First, people with more education demonstrate higher proficiencies on the literacy assessment, on average; and, as we noted above, the amount of schooling attained within the broad educational levels differs among racial groups, so that even if people at the same education level attained exactly the same literacy proficiency, the groups would still have different average literacy proficiencies, attributable to different amounts of

Figure 2.2

Percentages at Each Level and Average Prose Proficiencies, by Race/Ethnicity and Education Level



*Percentages below .5 are rounded to 0.

Level 1 (0 to 225) Level 2 (226 to 275) Level 3 (276 to 325) Level 4 (326 to 375) Level 5 (376 to 500)

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

schooling attained by different groups. Second, however, members of different groups in fact have different literacy proficiencies at the same education level; other variables, such as family conditions and school quality, may account for differences in literacy skills for different racial and ethnic groups with the same amount of schooling. It would seem, then, that efforts to improve the English literacy abilities of minorities face uphill challenges both in terms of quantity and effectiveness of education.

Results by Parents' Education Level

Respondents in the National Adult Literacy Survey were asked to state the highest year of schooling attained by their parents or guardians. Table 2.6 presents the literacy proficiencies of respondents with different levels of schooling, by the highest level of education received by either parent. Parents' education level correlates with higher proficiency on the literacy scales, when controlling for the subject's education level. It is not a huge effect (compared, for example, with the respondent's own education), but it is very consistent. Compare, for example, the prose literacy scores of respondents with a high school diploma. Those whose parents had no more than 8 years of schooling average 255; those whose parents had 9 to 12 years of education average 267. When at least one of the subject's parents had a high school diploma, the proficiency is 275, and when one had a college degree, the subject's proficiency averages 286. These data remind us that while we focus on the strong correlation of schooling and literacy ability, we must also be aware of the strong and consistent conditioning effects of family variables. Parents' education level may be a proxy for the family's socioeconomic status; but it may also stand as a measure of educational resources in the home or of parents as educational role models and as shapers of their children's aspirations. Any of these roles could help explain the relationships observed in table 2.6.

TABLE 2.6

Percentages and Average Proficiencies on Each Literacy Scale of Adults: Respondents' Education Level, by Parents' Education Level

RESPONDENTS' EDUCATION LEVEL/ LITERACY SCALE			PARENTS' EDUCATION LEVEL			
			0 to 8 years	9 to 12 years	High school	4 year college degree
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
0 to 8 Years	1,412	11,983				
Prose			77 (1.6)	8 (1.0)	13 (1.4)	2 (0.5)
			173 (2.9)	190 (7.5)!	208 (7.7)!	*** (****)
Document			77 (1.6)	8 (1.0)	13 (1.4)	2 (0.5)
			165 (2.9)	181 (7.7)!	202 (7.0)!	*** (****)
Quantitative			77 (1.6)	8 (1.0)	13 (1.4)	2 (0.5)
			168 (3.8)	181 (8.0)!	200 (8.5)!	*** (****)
9 to 12 Years	2,245	16,932				
Prose			46 (1.4)	19 (1.1)	30 (1.5)	5 (0.7)
			218 (2.1)	235 (3.5)	244 (2.7)	256 (7.1)!
Document			46 (1.4)	19 (1.1)	30 (1.5)	5 (0.7)
			212 (2.3)	232 (4.3)	243 (2.8)	258 (6.9)!
Quantitative			46 (1.4)	19 (1.1)	30 (1.5)	5 (0.7)
			217 (2.8)	232 (4.6)	242 (3.2)	257 (6.4)!
High School	4,577	37,485				
Prose			28 (1.0)	15 (0.7)	48 (1.0)	9 (0.6)
			255 (2.4)	267 (3.1)	275 (1.7)	286 (3.5)
Document			28 (1.0)	15 (0.7)	48 (1.0)	9 (0.6)
			245 (2.5)	260 (2.3)	271 (1.6)	286 (4.4)
Quantitative			28 (1.0)	15 (0.7)	48 (1.0)	9 (0.6)
			255 (2.5)	266 (3.4)	277 (1.8)	284 (3.5)
4 Year College Degree	1,487	10,683				
Prose			14 (1.1)	7 (0.9)	43 (2.0)	35 (1.7)
			296 (4.1)!	308 (5.8)!	318 (2.1)	324 (2.3)
Document			14 (1.1)	7 (0.9)	43 (2.0)	35 (1.7)
			284 (4.0)!	294 (6.9)!	310 (2.2)	320 (2.4)
Quantitative			14 (1.1)	7 (0.9)	43 (2.0)	35 (1.7)
			303 (4.8)!	313 (7.1)!	320 (2.2)	324 (2.4)
Total Population	17,266	126,380				
Prose			31 (0.6)	13 (0.4)	41 (0.6)	16 (0.4)
			233 (1.5)	264 (1.7)	284 (0.9)	305 (1.4)
Document			31 (0.6)	13 (0.4)	41 (0.6)	16 (0.4)
			225 (1.6)	258 (1.7)	279 (0.7)	302 (1.5)
Quantitative			31 (0.6)	13 (0.4)	41 (0.6)	16 (0.4)
			233 (1.7)	264 (2.0)	284 (0.9)	304 (1.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Literacy and Household Income

Total household income of a subject is quite regularly related to literacy levels in the National Adult Literacy Survey. Table 2.7 shows that the average proficiency of high school graduates in households with incomes below $20,000 is 261 on the prose scale. Those whose family income was $20,000 to $39,999 average 276, while those with a family income of $40,000 to $74,999 average 284. As logical as the connection may seem, the data are difficult to interpret. The cell sizes are small, so some differences do not reach statistical significance. Furthermore, it is not possible to determine whether higher household income is the cause or the effect of higher literacy proficiencies. For younger adults, higher family income may represent resources that allow them to pursue more education. For older adults, higher family income may reflect the subject's own enhanced earning power due to higher literacy proficiencies attained earlier. Chapter 5 documents that among professionals 64 percent perform in Level 4 or Level 5 on the prose scale; among clerical workers 26 percent do; and among nonsupervisory farm workers, 9 percent.[6] The data from this survey also indicate that adults with lower literacy scores are disproportionately poor. For example, of adults performing in Level 1 on the prose scale, 43 percent are in poverty, whereas only 12 percent of those in Level 3 are.[7]

Income can be a conditioning background factor influencing whether a person acquires literacy abilities, but income can also be the outcome of one's literacy abilities. In both cases, higher income is correlated with higher literacy proficiencies. The relationship of household income to literacy proficiency is straightforward as a correlation: the higher the one, the higher the other. It is complex when one inquires *how* the income relates to literacy proficiency: as a resource, as a consequence, or as a proxy for a literacy-rich household environment. These data yield no answers to these questions, about which one can only speculate.

[6] See table 5.2 in chapter 5.

[7] See I.S. Kirsch, et al. (1993). *Adult Literacy in America: A First Look at the Results of the National Adult Literacy Survey*. Washington, DC: National Center for Education Statistics, p. 60.

TABLE 2.7

Percentages and Average Prose Proficiencies of Adults at Each Education Level, by Household Income

EDUCATION LEVEL			TOTAL HOUSEHOLD INCOME			
			$0 to $19,999	$20,000 to $39,999	$40,000 to $74,999	$75,000 and over
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Still in high school	366	3,234	27 (4.2) 247 (6.8)!	24 (3.1) 273 (5.0)!	30 (3.3) 289 (6.5)!	19 (2.5) 301 (9.1)!
0 to 8 years	1,264	11,394	70 (2.0) 179 (3.0)	22 (1.8) 194 (5.4)	7 (0.9) 197 (11.2)!	1 (0.4) *** (****)
9 to 12 years	1,975	16,747	50 (1.6) 225 (2.0)	34 (1.5) 242 (3.1)	14 (1.0) 254 (4.8)!	3 (0.5) *** (****)
GED/High school	5,196	42,983	30 (0.9) 261 (1.8)	38 (1.0) 276 (1.5)	27 (0.7) 284 (1.8)	6 (0.5) 290 (3.1)!
Some postsecondary	5,068	31,020	23 (1.1) 286 (2.6)	34 (0.9) 294 (1.9)	34 (1.1) 305 (1.6)	10 (0.7) 313 (2.9)
College graduate	4,938	34,594	11 (0.7) 311 (3.4)	23 (0.8) 320 (2.2)	41 (1.0) 330 (1.5)	25 (1.1) 341 (1.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Results by Age

The relevance of the subjects' age to their literacy proficiencies is also complex. In this case, the correlation is curvilinear, that is, literacy proficiencies rise as we move from the group in their twenties to those in their thirties, and again to those in their forties. Thereafter, however, the line bends downward as the average literacy proficiencies drop among subjects in their fifties and subsequent cohorts. Table 2.8 presents prose literacy proficiencies and the

percentages performing at each literacy level for different age groups, and, within the age groups, by the amount of education the participants completed. The age cohorts include one group for the 16- to 19-year olds, cohorts by decade up through age 69, and then one group for the subjects who were 70 and older. The participants aged 20 to 29 became 18 years old in the 1980s; thus, they reflect educational conditions of that decade for most of their elementary and secondary schooling. The 30-year olds are the generation of the 1970s; those in their 40s were high school age in the 1960s, and so forth.

Overall prose proficiency by age cohort, across all education levels, rises from 273 for the 16- to 19-year olds to 281 for the 20- to 29-year olds, to 287 for the 30- to 39-year olds and 288 for the 40- to 49-year olds, and then declines: 271 among 50- to 59-year olds, 252 among 60- to 69-year olds, and 222 among those 70 and over. If one controls for level of education, of course, these differences are reduced, although the older cohorts show a slight tendency toward lower scores at a given education level. The main trends, though, are that average prose literacy proficiency rises from the 20- to 29-year-old cohort through the 40- to 49-year-old cohort, and then people in the three oldest cohorts demonstrate decreasing overall prose proficiency.

It is tempting to make historical generalizations from cohort data, but strictly speaking the data do not allow historical comparisons. They do not provide a comparison of the 20-year olds now with the 60-year olds when they were 20, so we cannot make generalizations about the relationship between their schooling experiences and their literacy abilities. The 60-year olds have had the subsequent 40 years to learn, to improve their literacy in non-school settings, or, conversely, to forget some of their skills. Demographers call these differences that are due to changes in individuals' life-course experiences *maturation* effects, in contrast to the different historical circumstances experienced by different generations, which are called *cohort* effects. One plausible explanation of the curvilinear trend in overall literacy scores across cohorts — rising until the age of 50, then declining — is that in early adulthood people continue to learn, both in formal schooling and in other settings (a maturation effect), but that older generations do less of this, and their lower school attainment rates (a cohort effect) account for much of their lower literacy scores.

Whatever the cause, the maturation effects seem more salient up to about age 50, and the cohort effects are more obvious in those over 50. This is true of both assessed literacy proficiencies (table 2.8) and educational attainment (table 2.2). There we note that among 20- to 29-year olds, only 3 percent terminated schooling with eight or fewer years, and 13 percent received 9 to 12 years. These figures do not change much in the succeeding cohorts up to age

TABLE 2.8

Percentages at Each Level and Average Prose Proficiencies of Adults, by Age and Education Level

AGE BY EDUCATION LEVEL			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
16 to 19 Years Old								
Still in high school	947	8,012	15 (1.8)	36 (2.2)	37 (2.6)	11 (2.0)	0† (0.5)	272 (2.0)
0 to 8 years	58	400	57 (9.2)	33 (10.3)	10 (7.0)	0† (0.0)	0† (0.0)	203 (9.8)
9 to 12 years	260	1,763	27 (4.6)	42 (5.4)	27 (4.0)	4 (2.1)	0† (0.4)	251 (4.9)
GED/High school diploma	269	2,974	8 (2.3)	31 (6.2)	48 (6.6)	13 (3.6)	1 (0.6)	284 (3.9)
Some postsecondary	192	1,147	2 (1.1)	18 (4.8)	52 (7.6)	25 (6.9)	3 (2.0)	306 (4.0)
College graduate	2	14	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Total	1,728	14,310	15 (1.3)	34 (2.4)	39 (2.3)	11 (1.4)	1 (0.4)	273 (1.5)
20 to 29 Years Old								
Still in high school	18	127	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	262	1,371	74 (5.5)	21 (5.8)	5 (2.2)	0† (0.4)	0† (0.0)	168 (6.9)
9 to 12 years	935	5,168	36 (2.5)	41 (2.9)	20 (3.2)	3 (1.0)	0† (0.2)	237 (3.2)
GED/High school diploma	1,834	15,779	16 (1.2)	36 (1.9)	37 (1.7)	10 (1.3)	0† (0.2)	270 (1.8)
Some postsecondary	1,972	11,056	6 (0.7)	22 (1.6)	44 (2.0)	25 (1.6)	3 (0.7)	299 (1.6)
College graduate	1,111	7,728	2 (0.8)	8 (1.7)	35 (3.0)	44 (2.3)	11 (1.6)	327 (2.4)
Total	6,132	41,229	15 (0.7)	27 (1.1)	35 (1.1)	19 (1.0)	3 (0.4)	281 (1.2)
30 to 39 Years Old								
Still in high school	3	10	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	351	2,286	81 (3.1)	15 (3.5)	4 (3.2)	0† (0.2)	0† (0.0)	158 (5.3)
9 to 12 years	719	4,811	38 (3.2)	39 (2.6)	20 (2.7)	3 (1.1)	0† (0.1)	235 (3.3)
GED/High school diploma	1,899	12,989	13 (1.3)	34 (1.6)	39 (2.3)	13 (1.5)	1 (0.4)	276 (1.5)
Some postsecondary	1,834	10,156	6 (1.1)	20 (1.3)	46 (1.9)	25 (1.7)	3 (0.6)	299 (1.6)
College graduate	1,925	12,125	2 (0.5)	7 (1.0)	32 (1.7)	45 (1.8)	14 (1.1)	332 (1.5)
Total	6,731	42,376	15 (0.7)	22 (0.6)	34 (1.1)	23 (0.9)	5 (0.4)	287 (1.2)
40 to 49 Years Old								
Still in high school	1	41	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	293	2,067	71 (5.4)	23 (4.8)	6 (3.1)	0† (1.0)	0† (0.0)	172 (7.5)
9 to 12 years	413	2,953	46 (3.9)	36 (4.2)	16 (3.2)	2 (2.0)	0† (0.3)	227 (3.8)
GED/High school diploma	1,260	9,232	13 (1.5)	35 (2.3)	41 (3.2)	10 (1.7)	1 (0.5)	274 (2.3)
Some postsecondary	1,201	7,350	5 (0.8)	21 (2.0)	47 (2.8)	24 (2.5)	3 (0.9)	299 (2.2)
College graduate	1,513	10,734	2 (0.6)	9 (1.3)	29 (2.3)	46 (2.0)	14 (1.2)	332 (2.1)
Total	4,681	32,376	14 (0.7)	22 (1.1)	34 (1.2)	24 (0.9)	5 (0.5)	288 (1.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

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

TABLE 2.8 Continued

Percentages at Each Level and Average Prose Proficiencies of Adults, by Age and Education Level

AGE BY EDUCATION LEVEL			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
50 to 59 Years Old								
Still in high school	0	0	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	344	2,482	74 (4.0)	23 (4.3)	3 (1.5)	1 (0.6)	0† (0.0)	177 (5.1)
9 to 12 years	364	2,765	39 (3.6)	42 (4.9)	16 (4.8)	2 (1.0)	0† (0.1)	234 (3.8)
GED/High school diploma	938	7,049	15 (1.6)	36 (2.3)	40 (2.9)	10 (1.8)	0† (0.2)	272 (1.9)
Some postsecondary	699	4,054	7 (1.3)	24 (3.7)	49 (5.0)	17 (2.8)	1 (1.2)	290 (2.2)
College graduate	694	4,759	2 (0.7)	11 (1.6)	38 (2.7)	40 (2.8)	10 (1.7)	324 (2.0)
Total	3,039	21,109	21 (1.1)	27 (1.5)	34 (1.9)	16 (1.3)	3 (0.4)	271 (1.6)
60 to 69 Years Old								
Still in high school	2	53	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	391	3,832	70 (3.6)	26 (3.7)	4 (1.9)	0† (0.0)	0† (0.0)	188 (4.0)
9 to 12 years	360	3,830	43 (3.7)	39 (4.0)	16 (3.3)	1 (1.0)	0† (0.0)	233 (3.2)
GED/High school diploma	651	5,817	19 (2.5)	41 (2.9)	34 (3.1)	6 (1.3)	0† (0.4)	262 (2.5)
Some postsecondary	466	3,186	11 (2.7)	34 (4.2)	42 (3.4)	12 (3.2)	1 (0.5)	278 (3.2)
College graduate	392	3,325	4 (1.7)	21 (3.2)	41 (3.4)	27 (3.9)	7 (1.8)	308 (3.3)
Total	2,262	20,043	30 (1.7)	33 (1.9)	27 (1.4)	8 (0.9)	1 (0.3)	252 (1.6)
70 Years or Older								
Still in high school	2	26	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	468	5,919	80 (3.1)	17 (2.6)	3 (1.2)	0† (0.9)	0† (0.1)	177 (4.8)
9 to 12 years	259	3,691	62 (4.1)	31 (3.9)	7 (2.3)	0† (0.4)	0† (0.0)	206 (3.3)
GED/High school diploma	316	4,663	31 (4.0)	47 (4.7)	20 (3.0)	3 (2.0)	0† (0.2)	242 (4.3)
Some postsecondary	220	2,681	26 (4.6)	36 (4.3)	31 (4.7)	5 (2.7)	1 (0.9)	256 (5.7)
College graduate	178	2,239	14 (3.4)	32 (5.1)	34 (4.8)	17 (4.9)	3 (2.2)	281 (5.2)
Total	1,443	19,220	49 (2.0)	31 (1.8)	16 (1.4)	4 (1.2)	0† (0.3)	222 (2.6)
Grand Total								
Grand Total	6,744	60,372	33 (0.9)	31 (1.0)	26 (1.0)	10 (0.7)	1 (0.2)	249 (1.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

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

50: for 30- to 39-year olds the two rates are 5 and 11 percent, and for people 40 to 49 years old, 6 and 9 percent. Above age 50, however, these low-end schooling rates increase: among 50- to 59-year olds 12 percent had 8 or fewer years, while 13 percent had 9 to 12 years; among 60- to 69-year olds the rates were 19 percent for both categories, and for those over 70 they were 31 and 19 percent, meaning that half of the adults over 70 did not receive a high school diploma. In the meantime, for the rest of these cohorts, formal learning continued quite impressively through the 40-year-old cohort. The percentage of the 20- to 29-year-old cohort that graduated from college is 19 percent; among the 30- to 39-year olds it is 29 percent; for 40- to 49-year olds, it increases again to 33 percent. We know that these increases were maturation effects — that is, individuals who continued their college education as older adults. They were not cohort effects, because we know that college enrollment rates were not higher in earlier decades.[8] But after age 50 this effect reduces, probably because fewer individuals pursue formal degrees in their own life course beyond age 50, combined with the effect of lower college enrollment rates in the older cohorts' historical experience of earlier decades. Thus, among 50- to 59-year olds, the percentage of college graduates is 23 percent; among 60- to 69-year olds, it is 17 percent; and among those 70 and older, it is 12 percent. Because literacy abilities are highly correlated with educational attainment, this profile of very different schooling experiences of people at different ages obviously affects the overall literacy profile of the different cohorts.

Although the data in table 2.8 mix historical and life course experiences, they shed some light on one historical question. During the mid-1970s and 1980s, many school critics charged that the schools had declined in standards and effective teaching during the period from the mid-1960s to the mid-1970s. They cited declining scores on college entrance tests and school achievement tests; and they urged a return to basics and more academic emphasis. To the extent that there was a general decline, one might expect to see it reflected in the literacy performance of adults at the same education level in the different cohorts. The data provide no support for such a hypothesis. Tables 2.9A and B summarize the relevant data. Among those with a high school diploma or GED in this sample, the group that became 18 years old during the 1980s had a slightly larger percentage in the lowest two literacy levels (52 percent) than the 1970s cohort (47 percent) and the 1960s cohort (48 percent). Then the cohort that went to high school in the 1950s displays slightly larger percentages in

[8] See S. Harris. (1972). *A Statistical Portrait of Higher Education.* New York: McGraw-Hill, p. 413; and National Center for Educational Statistics. (1992). *Digest of Educational Statistics, 1992.* Washington, DC: Department of Education, p. 9.

these lower literacy levels (51 percent) and the 1940s generation included even more (60 percent). As table 2.9A shows, many of these slight changes across decades are not statistically significant. The important point is not whether these increased proficiencies in younger cohorts are statistically significant, but that there is no indication of decline in proficiency at a given education level for the generations that completed high school in the 1960s or 1970s. The same point can be made by looking at college graduates across the cohorts and asking how many scored in Level 4 and Level 5 in prose literacy (table 2.9B). Most of the comparisons are not statistically significant, and there is no suggestion in these data of a decline in the 1960s or 1970s.

What these data show is consistent with our whole discussion of age, schooling, and literacy abilities. These cohort data imply that, on average, adults continue to improve their literacy proficiencies as they get older until sometime in their 40s. On average, they acquire more formal schooling, which correlates with the higher literacy proficiencies. In the older cohorts, schooling levels decline, as do literacy proficiencies at a given education level. The reasons, of course, do not emerge from these correlations; there are several possibilities. Rates of acquiring additional schooling slow down among adults 50 and older, and increasing education is associated with higher literacy scores.

TABLE 2.9A

Percentages of High School Graduates/GED Holders in Levels 1 and 2, by Decade of Schooling

GED/HS	Percent in Level Level 1 (SE)	Significant difference from the decade above?	Percent in Level 2 (SE)	Significant difference from the decade above?
1980s (age 20-29)	16 (1.2)	N/A	36 (1.9)	N/A
1970s (age 30-39)	13 (3.2)	NO	34 (1.6)	NO
1960s (age 40-49)	13 (1.5)	NO	35 (2.3)	NO
1950s (age 50-59)	15 (1.6)	NO	36 (2.3)	NO
1940s (age 60-69)	19 (2.5)	NO	41 (2.9)	NO
1930s (age 70+) or earlier	31 (4.0)	YES	47 (4.7)	NO

(SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

TABLE 2.9B

Percentages of College Graduates in Levels 4 and 5, by Decade of Schooling

COLLEGE GRADUATE	Percent in Level Level 4 (SE)	Significant difference from the decade above?	Percent in Level 5 (SE)	Significant difference from the decade above?
1980s (age 20-29)	44 (2.3)	N/A	11 (1.6)	N/A
1970s (age 30-39)	45 (1.8)	NO	14 (1.1)	NO
1960s (age 40-49)	46 (2.0)	NO	14 (1.2)	NO
1950s (age 50-59)	40 (2.8)	NO	10 (1.7)	NO
1940s (age 60-69)	27 (3.9)	YES	7 (1.8)	NO
1930s (age 70+) or earlier	17 (4.9)	NO	3 (2.2)	NO

(SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

The learning curve for acquiring literacy skills in work and other adult roles may also slow down for many. The historical experience of the older cohorts may contain relevant factors as well, but studies have not shown a significant increase (nor a decrease) across the decades in schools' ability to teach reading ability at a given grade level.[9] Some literacy abilities may decline with aging if they are not used regularly; and disabilities may play a role in the correlations we observe here between older cohorts and lower literacy scores.[10]

Sorting Out the Variables

The background variables that influence adults' literacy proficiencies confound each other; they overlap. Some of the differences in literacy proficiencies by race may be due to the fact that White adults are wealthier than minorities, on average. Some of the differences in literacy associated with parents' education may be due to the fact that parents' education is a proxy for family income.

[9] See L.C. Stedman and C.F. Kaestle. (1991). "Literacy and Reading Performance in the United States from 1880 to the Present." In Kaestle, et al., *Literacy in the United States: Readers and Reading Since 1880.* New Haven: Yale University Press.

[10] See H. Brown, R. Prisuta, B. Jacobs, and A. Campbell. (1996). *Literacy of Older Adults in America.* Washington, DC: U.S. Department of Education.

How do we sort out these overlapping categories? One statistical method, called multiple regression analysis, attempts to estimate the independent effect of each of the background variables while controlling for the effect of each of the others. For example, how much increase in prose literacy is associated with an increase in parental education level, other things being equal? This analysis gives an estimate for increases in literacy due to parental education among individuals whose race, household income, region, and age are the same.

The results of a regression analysis performed on the data are found in table 2.10. The regression coefficients tell us how much of an increase or decrease in prose proficiency score would be attributable to a change of one category in the variable being looked at, while all the other variables in the equation are held constant. For example, among respondents who had one parent whose highest level of education was high school completion, the average prose proficiency score is 31 points higher than the average score among respondents whose parents received only 0 to 8 years of education, but some of that difference is attributable to other variables that are also correlated with parents' education, such as race and income. Regression #1 controls for the effects of race/ethnicity, region, gender, household income, and subject's age. In this regression, parents' education level accounts for 17 points of the difference between the two groups. In regression #2 we controlled for the subject's own education, and the impact of parents' education dropped to 7.4 points. In other words, parents' education accounts for 7.4 points of the average score difference between children whose parents had 0 to 8 years of education and children whose parents had a high school diploma, after controlling for the other variables. Parents' education is still an important correlate, but not nearly as decisive as it appears when we simply look at the literacy proficiencies of respondents whose parents had different amounts of education. This is the sort of perspective regression analysis can give us.

Regarding race/ethnicity categories, the contrast group is Black adults. For example, Mexican American adults' average prose proficiency score, uncontrolled for other variables, is 31 points lower than that of Black adults (the *zero-order* relationship). When controlling for the variables in the first regression, including region, gender, parents' education, household income, and age of subject (but not subject's education), the gap narrows to 23 points; in other words, about 8 points of the difference between Mexican American adults and Black American adults on prose proficiency is attributable to the variables controlled, not to the race/ethnicity difference. When education levels are introduced, the gap narrows again, to about 13 points, so the subject's education has accounted for about another 10 points of the difference.

TABLE 2.10

Results of Multiple Regression Analysis, Prose Scale

VARIABLE (CONTRAST GROUP)	Average Difference in Proficiency by Category (Uncontrolled)	Regression #1: Unstandardized Regression Coefficient[11]	Regression #1: T-statistic	Regression #2 (controls for subject's education): Unstandardized Regression Coefficient	Regression #2: T-statistic
Race/Ethnicity (Black Adults)					
Mexican	-31	-23.4	-8.5*	-13.2	-5.5*
Puerto Rican	-19	-11.3	-2.2*	-8.8	-1.9
Cuban	-26	-20.8	-3.1*	-11.9	-2.1*
Central/South American	-30	-31.1	-6.9*	-24.9	-6.0*
Other Hispanic	23	10.2	2.2*	11.4	2.7*
Asian/Pacific Island	5	-11.8	-2.9*	-18.3	-4.9*
Native American/Alaskan Indian	17	11.9	2.1*	12.7	2.4*
White	49	37.2	22.4*	32.3	21.5*
Other/Missing	-24	-27.2	-3.3*	-21.1	-2.8*
Region (Northeast)					
Midwest	9	7.7	5.5*	7.0	5.7*
South	-3	1.1	0.7	2.1	1.6
West	6	8.6	5.5*	6.6	4.7*
Gender (Male)					
Female	1	8.0	7.6*	6.8	7.2*
Parents' Education Level (0 to 8 years)					
9 to 12 years	31	17.0	8.9*	7.4	4.3*
High school/GED graduate	50	27.3	19.5*	13.1	10.3*
Some postsecondary	66	41.8	22.2*	22.1	13.0*
College graduate	78	52.3	32.2*	27.4	17.5*
Household Income ($0 to 9,999)					
$10,000 to 19,999	20	16.4	7.7*	10.1	5.4*
$20,000 to 29,999	40	26.7	12.5*	14.3	7.7*
$30,000 to 39,999	50	33.6	15.4*	16.9	8.9*
$40,000 to 49,999	61	38.2	16.1*	19.5	9.0*
$50,000 to 74,999	73	47.4	20.2*	22.7	10.8*
$75,000 and over	88	57.5	22.6*	28.3	12.8*
Missing data	16	8.9	4.9*	0.8	0.5*
Subject's Age (16- to 18-year-olds)					
19- to 24-year olds	6	14.1	6.0*	2.8	1.3
25- to 29-year olds	8	11.4	5.1*	-1.8	-0.9
40- to 54-year olds	4	11.0	4.6*	-2.6	-1.2
55- to 64-year olds	-25	-3.1	-1.2	-9.9	-4.3*
65 years or older	-57	-24.2	-9.4*	-23.5	-10.4*
Subject's Education Level[12] (0 to 8 years)					
9 to 12 years	57			37.8	20.1*
High school/GED graduate	94			62.8	32.8*
Some postsecondary	120			80.0	35.9*
College graduate	146			102.5	49.1*

* Suggests significant regression coefficient.

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

[11] The regression coefficients state the difference between each group and the contrast group, while controlling for the effect of the other variables listed.

[12] Subjects still in high school deleted.

Regarding the difference in prose proficiency between White adults and Black adults, the zero-order difference is 49 points higher, on average, for White subjects. When we control for the variables in the first regression, the White-Black difference reduces to 37 points, and when we add subject's education level into the equation, it reduces to a 32-point difference. The portion of the difference in prose scores across racial/ethnic groups that is specifically attributable to level of schooling in this regression analysis may seem modest at first (10 points for the Mexican American-Black difference, 5 points for the White-Black difference).

Three important caveats must be emphasized. First, this equation, which accounts for level of education as well as a number of family background variables (household income, parents' education) tells us the *minimum* amount of the cross-group proficiency difference attributable to education level, because education is also already operating partially through the background variables of household income and parents' education (in other words, one reason that high parental education levels are associated with high levels of proficiency in their children is because they send their children to more years of school). Thus, the actual impact of education is almost certainly larger than is expressed in this regression equation.[13] Second, the variable called subject's education measures broad categories of school attainment, such as 0 to 8 years of schooling, or college degree, which lump together people with quite different levels of education (see table 2.5 above, which breaks down the categories of those who have received some higher education). Third, the variable called subject's education in this regression analysis says nothing about the quality of education offered to people. There is much evidence that school quality differs greatly and that the differences are often associated with racial/ethnic differences of the students.[14]

Therefore, we should conclude from this more detailed consideration of the regression analysis that what appears to be a modest association of school attainment with differences in the prose proficiency of different racial/ethnic groups, as seen in the regression analysis presented in table 2.10 (and in two-

[13] In contrast, the *maximum* amount of the difference attributable to the subject's education, controlling for race-ethnicity, is estimated if we regress only the subject's education and race ethnicity on the dependent variable (prose proficiency). The results of this regression are presented in B2.3. For example, for White respondents, education accounts for at least 5 points of the difference in their scores compared with Black respondents, but it may approach something closer to 15 points. For Mexican Americans, when education is added after controlling for family variables, it is associated with 8 points of the difference between that group and Black respondents, but it approaches 20 points when education is regressed alone against race-ethnicity.

[14] See, for example, L. Darling-Hammond. (1994). "Performance-based Assessment and Educational Equity," *Harvard Educational Review, 60* (1), pp. 5-30; J. Kozol. (1991). *Savage Inequalities*. New York: Crown Publishers; and L. Hedges, R. Levine, and R. Greenwald. (April 1994). "Does Money Matter: A Meta-Analysis of Studies of the Effects of School Inputs on Student Outcomes," *Educational Researcher, 23,* pp. 5-14.

way tables such as table 2.3) should be considered as a minimum impact, while the true impact of education is quite substantial. Furthermore, *within* groups, education is associated with regular and substantial differences in prose literacy proficiency. Nonetheless, another substantial amount of the race/ethnicity differences in literacy proficiency remains unaccounted for through an analysis of the variables we could measure. There are surely multiple causes for these differences, and assertions about causes are speculative. The message from the data is a double message about education, race/ethnicity, and adult literacy: while education is strongly associated with literacy proficiency for all racial/ethnic groups, differences in education as measured in this study account for only a part of the literacy proficiency differences across racial/ethnic groups. Efforts to reduce those differences will, thus, have to address many kinds of disparities of condition, aspiration, and opportunity in our society.

Summary: Education and Mediating Variables

Years of schooling, we have seen, is strongly correlated with one's level of performance on the literacy assessment. Also related are other variables, such as gender, race, parents' education, and family income. We do not know exactly what causes these correlations. We do not know, for example, what features of child rearing or schooling might condition literacy skill attainment by males and females. We do not know exactly how the level of parents' education affects one's acquisition of literacy skills, although we can imagine many ways it might. All educators can do is attempt to give equal opportunity and encouragement to members of all groups. Uneven distribution of literacy skills is deeply rooted in our social structure. Strategies for correcting such imbalances range from changing attitudes, to changing curriculum materials, to changing the allocation of resources. In addition to decrying this unevenness of literacy proficiency for different groups with similar amounts of schooling, many educators have also expressed concern that the average proficiency across all groups at a given level of education is not as high as is needed in our society. The data cannot tell us precisely how education relates to adult literacy, but they testify to the striking association of increased formal schooling to increased adult proficiencies, across all ages, all levels of schooling, and all social groups.

CHAPTER 3

School Noncompletion and Literacy
by Jeremy D. Finn

According to the U.S. Department of Education, in 1995 about 12 percent of all persons in the United States between ages 16 and 24 (or about 3.9 million individuals) had not earned a high school diploma.[1] In the same year, the Bureau of the Census reported that 18.3 percent of all persons 25 years old and over had not completed high school.[2] These rates represent significant declines from previous years. For example, the Census reported that the percentages of persons over 25 who had not completed a high school degree in 1950, 1960, 1970, 1980, and 1990 were 65.7 percent, 58.9 percent, 47.7 percent, 33.5 percent, and 22.4 percent respectively.

Although the percentage of noncompleters has declined over the past several decades, the number of American adults who do not hold a high school diploma is substantial. Chapter 2 of this report indicates that literacy proficiencies are strongly associated with levels of formal schooling; those with the least schooling often have poor literacy skills. Further, chapter 5 shows that many employees do not have the literacy skills needed to change workplaces or to meet upgraded job requirements. Those who terminate their formal education may encounter literacy difficulties in work, family, and citizenship roles alike.

Three questions are addressed in this chapter about literacy and high school completion. First, how does the population of high school graduates compare with individuals who did not complete high school, who completed alternative certification programs (GED), or who continued formal schooling beyond the high school years? Second, what additional educational and training experiences are undertaken by high school noncompleters and how are these experiences related to literacy proficiencies? Finally, we examine diversity among high school noncompleters. In particular, is leaving school without graduating necessarily associated with continuing hardship, or have some

[1] National Center for Education Statistics. (1997). *Dropout Rates in the United States: 1995* Report NCES 97-473. Washington, DC: U.S. Government Printing Office. (Does not include persons still enrolled in high school.)

[2] U.S. Bureau of the Census. (1996). *Statistical Abstract of the United States: 1996* (116th ed.). Washington, DC: U.S. Government Printing Office.

groups maintained employment, literacy practices, and literacy proficiency in spite of the absence of a high school diploma?

Completers, Alternative Completers, and Noncompleters

The percentages of respondents in four educational attainment categories are given in table 3.1.[3] Overall, about 24 percent of all individuals aged 16 and over did not complete high school or a high school equivalency program (termed *noncompleters* or *dropouts*). About 4 percent of the population earned a GED diploma, but did not go on to further schooling. Twenty-eight percent graduated from high school but did not go on to further schooling, while 44 percent of individuals 16 and over completed some post-high school education.[4]

The percentages of males and females who dropped out or attained a GED are similar, but more males than females reported postsecondary experience. There are substantial differences in attainment by race/ethnicity. The percentage of noncompleters among Hispanics is the highest of the four racial/ethnic groups, comprising about 46 percent of all Hispanic individuals aged 16 and over. The percentages of GED holders are similar for Black, White, and Hispanic individuals. White and Asian/Pacific Islander adults have the lowest percentages of dropouts, while the highest percentage of individuals with postsecondary education are of Asian/Pacific Island origins.[5]

There are substantially more noncompleters among older Americans (55 to 64; 65 or older) than among the younger groups.[6] The percentage of GED recipients is relatively stable across age cohorts, although the percentage for those 65 and older is less than that for other groups. At the same time, the percentage of individuals with postsecondary schooling is lowest among the two older age groups. Further information about the educational attainments of various age groups is given in chapter 2.

[3] The dropout classification includes all individuals who are not currently enrolled in high school and who have not completed a high school or GED degree. Respondents who are still enrolled in high school are excluded from the tables in this chapter.

[4] In this survey, individuals who have earned a GED diploma or received a high school diploma and who have also gone on to some form of postsecondary education are counted in the postsecondary classification. Individuals who terminated their education with a GED certificate or high school diploma are the only respondents counted in the GED or high school classification, respectively. The literacy levels associated with these groups would probably be higher if continuing students were also included.

[5] The race/ethnicity figures are consistent with those published by the U.S. Bureau of the Census. The survey did not include a sufficient number of American Indians or Alaskan Natives to permit finer breakdowns to be made in this chapter. Thus, these groups are not included in any of the race/ethnicity categories in this chapter.

[6] The dropout percentage among 16-to-18-year-old adults is artificially inflated by the exclusion of individuals in that age bracket who are still in school. That is, most 16-year-old adults and some 17-year-old adults are not included in the counts, and few individuals in this age range would have the opportunity to have attended postsecondary education.

TABLE 3.1

Percentages of Adults at Each Education Level, by Sex, Race/Ethnicity, and Age

SEX, RACE/ETHNICITY, AND AGE			EDUCATION LEVEL			
			Dropout	GED	High school graduate	Any postsecondary education
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Total Population						
Total	25,054	182,427	24 (0.2)	4 (0.2)	28 (0.2)	44 (0.2)
Sex						
Male	11,231	87,044	23 (0.6)	4 (0.3)	27 (0.5)	46 (0.6)
Female	13,785	95,118	24 (0.3)	4 (0.3)	29 (0.5)	43 (0.4)
Race/Ethnicity						
Black	4,731	19,836	35 (1.2)	4 (0.4)	29 (1.1)	32 (1.2)
White	16,715	139,276	19 (0.3)	4 (0.2)	29 (0.4)	48 (0.4)
Hispanic	2,939	17,179	46 (1.2)	5 (0.6)	21 (1.0)	28 (1.1)
Asian/Pacific Islander	418	3,872	20 (2.7)	1 (0.6)	19 (3.1)	60 (2.7)
Age						
16 to 18	345	2,829	54 (3.9)	2 (0.8)	37 (3.9)	7 (1.8)
19 to 24	3,261	23,886	15 (0.8)	5 (0.7)	39 (0.8)	41 (0.7)
25 to 39	10,017	63,052	17 (0.5)	5 (0.3)	27 (0.5)	51 (0.6)
40 to 54	6,299	43,683	17 (0.7)	4 (0.3)	26 (0.7)	53 (0.8)
55 to 64	2,918	19,434	31 (1.2)	4 (0.5)	29 (1.2)	37 (1.0)
65 or older	2,203	29,512	48 (1.1)	2 (0.3)	24 (0.9)	27 (1.0)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

The Demographics of Noncompletion and Literacy Proficiency

The average literacy proficiencies for dropouts, GED holders, high school graduates, and those with at least some postsecondary education are given in table 3.2. These results tell a three-part story. First, the mean literacy proficiencies for dropouts are significantly lower than the proficiencies of GED

TABLE 3.2

Average Proficiencies on Each Literacy Scale of Adults: Sex and Race/Ethnicity, by Education Level

SEX AND RACE/ETHNICITY/ LITERACY SCALE			EDUCATION LEVEL			
			Dropout	GED	High school graduate	Any postsecondary education
	n	WGT N (/1,000)	PROF (SE)	PROF (SE)	PROF (SE)	PROF (SE)
Total Population	25,054	182,427				
Prose			208 (1.6)	268 (1.8)	270 (1.1)	310 (0.8)
Document			203 (1.7)	264 (2.2)	264 (1.1)	303 (0.7)
Quantitative			203 (1.9)	268 (2.7)	270 (1.1)	310 (0.9)
Male	11,231	87,044				
Prose			204 (2.3)	265 (2.7)	267 (2.0)	310 (0.9)
Document			201 (2.3)	262 (3.2)	264 (1.9)	306 (0.9)
Quantitative			205 (2.3)	270 (3.4)	273 (1.9)	317 (1.1)
Female	13,785	95,118				
Prose			212 (2.0)	272 (2.2)	273 (1.2)	309 (1.1)
Document			204 (2.2)	266 (3.0)	264 (1.1)	301 (1.0)
Quantitative			201 (2.2)	267 (3.3)	267 (1.2)	303 (1.1)
Black	4,731	19,836				
Prose			194 (2.6)	243 (4.1)	242 (1.6)	275 (1.7)
Document			187 (2.1)	235 (4.2)	235 (1.7)	267 (1.8)
Quantitative			177 (2.6)	235 (4.5)	232 (2.0)	266 (1.9)
White	16,715	139,276				
Prose			227 (1.7)	276 (2.0)	278 (1.2)	317 (0.9)
Document			220 (2.0)	272 (2.2)	271 (1.2)	310 (0.8)
Quantitative			224 (2.1)	277 (3.1)	279 (1.2)	318 (0.9)
Hispanic	2,939	17,179				
Prose			162 (3.4)	240 (6.8)!	242 (4.4)	275 (2.9)
Document			158 (3.7)	236 (6.4)!	242 (4.9)	273 (2.8)
Quantitative			155 (3.3)	240 (7.8)!	240 (4.8)	276 (3.0)
Asian/Pacific Islander	418	3,872				
Prose			164 (13.3)!	*** (****)	209 (16.0)!	277 (5.3)
Document			181 (12.2)!	*** (****)	214 (13.2)!	276 (6.2)
Quantitative			184 (18.2)!	*** (****)	227 (12.5)!	288 (5.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

holders or high school graduates. Second, the average literacy proficiencies of GED holders and high school graduates are similar. And third, the proficiencies of individuals with any postsecondary education are higher than all other groups. The same pattern is found on all three literacy scales. For the total population, the difference between the mean proficiencies of dropouts and high school graduates is just over nine-tenths of a standard deviation on each scale — a substantial difference indeed.[7]

There are also some noteworthy differences in literacy proficiencies by sex. For prose literacy, both female dropouts and female high-school graduates out perform their male counterparts. The gender gap disappears in the postsecondary group, however, with both groups demonstrating about the same average proficiency. For document and quantitative literacy, there are no significant differences between male and female dropouts or GED holders. In contrast, male high school graduates demonstrate higher quantitative proficiencies than females, and males with postsecondary education demonstrate higher document and quantitative proficiencies than females.

Nevertheless, the association of literacy proficiency with level of schooling reveals the same pattern for both males and females. For each group and each literacy scale, dropouts demonstrate lower proficiency than GED recipients or high school graduates, who in turn demonstrate lower proficiency than individuals with postsecondary experience.

White adults perform significantly better than Black or Hispanic adults on the three literacy scales at all levels of educational attainment.[8] The proficiencies of Black and Hispanic adults are very similar at most levels of schooling (except the quantitative proficiencies at the postsecondary level), but that is not the case for dropouts. On average, Hispanic adults who did not complete high school perform substantially below Black noncompleters on all three scales.

Racial/ethnic differences can also be viewed in terms of the relationship between educational attainment and proficiency. The *pattern* of association is the same for Black, Hispanic, and White adults: dropouts have lower proficiencies than high school graduates and GED holders, who, in turn, have lower proficiencies than adults with postsecondary schooling. However, the *magnitude* of the difference between dropouts and high school graduates and between dropouts and GED holders is substantially greater for Hispanic individuals than for other groups.

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[7] The standard deviations of the prose, document, and quantitative literacy scales are 65.97, 66.44, and 71.66, respectively.

[8] Asian/Pacific Islanders are omitted from these comparisons because of the small number of individuals in the lowest three education classifications.

The difference between the literacy scores of high school graduates and those of dropouts is about three-fourths of a standard deviation on each scale for White and Black adults, but about 1.2 standard deviations on each scale for Hispanic adults. The difference between individuals with postsecondary education and high school graduates is similar for Black, White, and Hispanic adults — just over one-third of a standard deviation. Thus, one result stands out with regard to the relationship of education level and literacy: the particularly low average literacy proficiencies of Hispanic individuals who have not completed high school or an alternative certification program.[9] Unfortunately, this group represents 46 percent of all Hispanic individuals sampled (table 3.1).[10]

Generally, individuals aged 16 through 54 demonstrate higher literacy proficiencies on all three scales when compared with older adults in the same education category (table 3.3).[11] Still, the same pattern in average proficiencies is found for both the younger and older groups: lower average proficiency for dropouts, similar proficiencies for high school graduates and GED holders, and higher average proficiency for those with postsecondary schooling. Leaving school without graduating was much more common in the older group (41 percent compared with 17 percent in the 16-to-54 age range), and participating in postsecondary schooling was less common (31 percent compared with 49 percent in the 16-to-54 age range). Yet the magnitude of the difference between the average literacy levels of dropouts and high school graduates is similar for both age groupings, that is, between eight- and nine-tenths of a standard deviation on each of the literacy scales. The relationship of literacy proficiency with high school graduation or completion of a GED diploma is remarkably consistent.

The distribution of family income for each educational attainment classification is given in table 3.4. About 28 percent of dropouts are in the lowest income category ($0 to $9,999) and about 30 percent are in the next lowest category ($10,000 to $19,999). In contrast, only 10 and 19 percent, respectively, of high school graduates have incomes as low as these, and only 6 and 11 percent, respectively, of individuals with postsecondary education. In fact, the median income category is $10,000 to $19,999 for high school noncompleters, $30,000 to $39,999 for high school graduates, and $40,000 to $49,999 for individuals with postsecondary experience.

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[9] Further analysis indicates that this effect is especially pronounced among younger Hispanic individuals, and somewhat less apparent among those over 54 years of age. (tables B3.1 to B3.3.)

[10] A number of these individuals report *no* formal schooling (see chapter 2).

[11] The age groups were collapsed to allow for a sufficient sample size for some of the subcategories.

The relationship of educational attainment with employment is parallel to that of income. Table 3.5 indicates that 30 percent of high school dropouts reported holding a full-time job and another 10 percent reported holding a part-time job. In contrast, 52 percent of high school graduates held full-time jobs and another 13 percent held part-time jobs.

TABLE 3.3

Percentages and Average Proficiencies on Each Literacy Scale of Adults in Each Age Group, by Education Level

LITERACY SCALE/AGE			EDUCATION LEVEL			
			Dropout	GED	High school graduate	Any postsecondary education
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Prose						
16 to 54 years old	19,922	133,450	17 (0.3) 216 (2.0)	5 (0.2) 271 (1.8)	29 (0.3) 275 (1.2)	49 (0.3) 315 (0.8)
55 years old or greater	5,121	48,945	41 (0.6) 200 (2.4)	2 (0.2) 256 (5.4)!	26 (0.6) 256 (2.0)	31 (0.6) 287 (2.1)
Document						
16 to 54 years old	19,922	133,450	17 (0.3) 214 (2.2)	5 (0.2) 268 (2.2)	29 (0.3) 272 (1.1)	49 (0.3) 310 (0.7)
55 years old or greater	5,121	48,945	41 (0.6) 189 (2.2)	2 (0.2) 244 (5.2)!	26 (0.6) 241 (1.8)	31 (0.6) 274 (1.8)
Quantitative						
16 to 54 years old	19,922	133,450	17 (0.3) 211 (2.1)	5 (0.2) 270 (2.4)	29 (0.3) 275 (1.2)	49 (0.3) 314 (0.8)
55 years old or greater	5,121	48,945	41 (0.6) 193 (3.0)	2 (0.2) 261 (7.7)!	26 (0.6) 256 (2.0)	31 (0.6) 292 (2.2)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Tables 3.4 and 3.5 also show the proficiencies for respondents classified by income and employment status. In terms of educational attainment, the pattern found for the total population is generally seen at all income levels and for all employment patterns as well. That is, high school noncompleters have the lowest average literacy proficiencies, high school graduates and GED

TABLE 3.4

Percentages and Average Proficiencies on Each Literacy Scale of Adults at Each Education Level, by Household Income

LITERACY SCALE/EDUCATION LEVEL	n	WGT N (/1,000)	INCOME CATEGORIES: $0 to $9,9999	$10,000 to $19,999	$20,000 to $29,999	$30,000 to $49,999	$50,000 or greater
			RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Prose							
Dropout	3,239	28,142	28 (1.3)	30 (1.1)	18 (0.9)	17 (0.9)	7 (0.6)
			196 (2.6)	210 (3.0)	226 (3.5)	231 (4.5)	246 (6.4)!
GED	683	5,377	17 (1.9)	20 (2.0)	19 (2.4)	27 (2.2)	18 (2.0)
			258 (5.4)!	262 (6.6)!	275 (4.0)!	280 (4.9)!	282 (6.7)!
High school graduate	4,513	37,606	10 (0.5)	19 (0.9)	20 (0.8)	32 (1.1)	20 (1.1)
			253 (2.8)	266 (2.6)	273 (1.7)	280 (1.7)	289 (2.6)
Any postsecondary education	10,006	65,614	6 (0.5)	11 (0.5)	14 (0.4)	28 (0.7)	42 (0.8)
			291 (4.8)	297 (1.9)	302 (2.0)	311 (1.4)	327 (1.2)
Document							
Dropout	3,239	28,142	28 (1.3)	30 (1.1)	18 (0.9)	17 (0.9)	7 (0.6)
			187 (2.8)	204 (3.1)	221 (4.0)	227 (5.2)	244 (5.9)!
GED	683	5,377	17 (1.9)	20 (2.0)	19 (2.4)	27 (2.2)	18 (2.0)
			255 (5.2)!	258 (6.3)!	270 (4.3)!	274 (5.3)!	276 (8.1)!
High school graduate	4,513	37,606	10 (0.5)	19 (0.9)	20 (0.8)	32 (1.1)	20 (1.1)
			245 (3.3)	259 (2.6)	267 (1.8)	274 (2.1)	283 (2.7)
Any postsecondary education	10,006	65,614	6 (0.5)	11 (0.5)	14 (0.4)	28 (0.7)	42 (0.8)
			285 (5.2)	290 (2.1)	297 (1.7)	305 (1.5)	319 (0.9)
Quantitative							
Dropout	3,239	28,142	28 (1.3)	30 (1.1)	18 (0.9)	17 (0.9)	7 (0.6)
			181 (3.1)	209 (3.2)	225 (3.9)	236 (4.7)	251 (6.0)!
GED	683	5,377	17 (1.9)	20 (2.0)	19 (2.4)	27 (2.2)	18 (2.0)
			253 (5.6)!	265 (6.3)!	274 (4.8)!	278 (6.3)!	285 (8.3)!
High school graduate	4,513	37,606	10 (0.5)	19 (0.9)	20 (0.8)	32 (1.1)	20 (1.1)
			245 (3.1)	267 (2.7)	273 (1.6)	282 (2.1)	290 (2.5)
Any postsecondary education	10,006	65,614	6 (0.5)	11 (0.5)	14 (0.4)	28 (0.7)	42 (0.8)
			287 (5.0)	296 (1.8)	302 (2.1)	312 (1.6)	327 (1.2)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE 3.5

Percentages and Average Proficiencies on Each Literacy Scale of Adults at Each Education Level, by Employment Status

LITERACY SCALE/EDUCATION LEVEL			EMPLOYMENT STATUS			
			Full-time	Part-time	Unemployed	Out of work force
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Prose						
Dropout	4,828	42,031	30 (1.0) 217 (2.7)	10 (0.4) 223 (2.9)	9 (0.6) 217 (3.6)	51 (1.0) 198 (2.4)
GED	857	6,918	52 (2.5) 272 (2.4)	9 (1.3) 274 (8.0)!	12 (1.7) 267 (6.5)!	27 (1.8) 259 (4.6)
High school graduate	5,760	49,831	52 (1.0) 275 (1.4)	13 (0.7) 279 (3.1)	8 (0.4) 259 (2.8)	27 (1.0) 260 (1.7)
Any postsecondary education	11,717	77,603	61 (0.6) 316 (0.8)	13 (0.4) 315 (1.9)	5 (0.2) 298 (3.0)	21 (0.5) 290 (1.7)
Document						
Dropout	4,828	42,031	30 (1.0) 215 (2.5)	10 (0.4) 216 (3.1)	9 (0.6) 214 (3.4)	51 (1.0) 190 (2.4)
GED	857	6,918	52 (2.5) 269 (2.7)	9 (1.3) 270 (9.1)!	12 (1.7) 263 (6.9)!	27 (1.8) 253 (4.3)
High school graduate	5,760	49,831	52 (1.0) 272 (1.5)	13 (0.7) 270 (2.3)	8 (0.4) 256 (3.3)	27 (1.0) 248 (1.8)
Any postsecondary education	11,717	77,603	61 (0.6) 311 (0.7)	13 (0.4) 306 (1.6)	5 (0.2) 293 (2.4)	21 (0.5) 281 (1.8)
Quantitative						
Dropout	4,828	42,031	30 (1.0) 218 (2.5)	10 (0.4) 219 (3.9)	9 (0.6) 208 (3.5)	51 (1.0) 189 (3.0)
GED	857	6,918	52 (2.5) 275 (3.0)	9 (1.3) 269 (8.1)!	12 (1.7) 263 (6.7)!	27 (1.8) 258 (5.5)
High school graduate	5,760	49,831	52 (1.0) 278 (1.5)	13 (0.7) 275 (2.7)	8 (0.4) 256 (3.2)	27 (1.0) 257 (1.8)
Any postsecondary education	11,717	77,603	61 (0.6) 318 (1.0)	13 (0.4) 311 (1.7)	5 (0.2) 296 (2.3)	21 (0.5) 291 (1.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

holders have higher average proficiencies, and individuals with postsecondary schooling have the highest average proficiencies.[12]

Proficiency is positively related to income among dropouts, high school graduates, and individuals with postsecondary education alike.[13] The pattern that emerges is that proficiencies increase with increases in income brackets. On all three scales, dropouts with the lowest incomes ($0 - $9,999 and $10,000 - $19,999) are those whose proficiencies are clearly below other dropouts. Likewise, high school graduates in the lowest income category ($0 to $9,999) are those with the lowest proficiencies of all high school graduates. Thus, whether or not an individual has completed high school, those with the lowest literacy proficiencies have the lowest family incomes.

Although dropouts who were more literate had higher incomes, there was little relationship between literacy and employment for this group. High school dropouts who were employed during the preceding year did not have higher proficiencies than those who were unemployed but were still seeking work, except on the quantitative scale. For high school graduates and persons with postsecondary experience, employment was associated with significantly higher proficiency than unemployment on all three scales. Thus, it appears that for individuals who do not graduate from high school, higher literacy levels do not provide an advantage in obtaining part-time or full-time work. Only when an individual completes high school or some postsecondary schooling is literacy related to employment status.

High school dropouts who were out of the workforce perform substantially below all other groups on all three literacy scales. Their mean proficiencies are 198, 190, and 189 on the prose, document, and quantitative scales, respectively — all in the lowest literacy level (Level 1). Twenty-seven percent of high school dropouts under 55 years of age and 78 percent of dropouts 55 years or older are out of the workforce (table 3.6). In contrast, among 16- to 54-year-old adults, only 15 percent of high school graduates and 13 percent of adults with postsecondary schooling are out of the workforce. When compared with the younger population, more of the 55 and older population are out of the workforce (66 percent of high school graduates and 57 percent of those with some postsecondary), which is to be expected because the age group includes retirees; however, the percentages are significantly below the 78 percent of dropouts who are 55 or older. The literacy proficiencies of high school

[12] Although the pattern repeats itself, specific results marked with an exclamation point (!) in tables 3.4 and 3.5 must be interpreted with caution due to small sample sizes.

[13] The pattern for GED holders is similar to that of high school graduates; however, since many GED results are based on small samples, this group is not described explicitly in the discussion of income or employment.

graduates and postsecondary school adults who are out of the workforce, while lower than those of their employed age-counterparts, are not nearly so extreme as those of dropouts who are out of the workforce (table 3.5).

TABLE 3.6

Percentages of Adults Reporting Education Level and Age, by Employment Status

EDUCATION LEVEL/ AGE			EMPLOYMENT STATUS			
			Full-time	Part-time	Unemployed	Out of the labor force
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Dropout						
16 to 54 years old	3,016	22,109	45 (1.5)	13 (0.6)	15 (1.0)	27 (1.3)
55 years and older	1,812	19,922	14 (1.0)	6 (0.6)	2 (0.5)	78 (1.2)
GED						
16 to 54 years old	727	5,736	56 (2.7)	10 (1.4)	14 (2.0)	21 (1.7)
55 years and older	130	1,183	34 (5.0)	4 (1.7)	3 (1.9)	59 (5.1)
High School Graduate						
16 to 54 years old	4,494	37,463	61 (1.2)	14 (0.7)	10 (0.5)	15 (1.0)
55 years and older	1,265	12,359	23 (1.4)	10 (1.0)	2 (0.3)	66 (1.6)
Any Postsecondary						
16 to 54 years old	9,920	62,946	68 (0.6)	13 (0.4)	6 (0.3)	13 (0.5)
55 years and older	1,790	14,636	29 (1.1)	12 (0.9)	2 (0.3)	57 (1.0)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Language Background

The language an individual speaks plays a central role in facilitating or hindering educational attainment and literacy in English.[14] According to the Census Bureau, the number of U.S. residents 5 years old and over who speak a language other than English at home in 1990 was approximately 31,845,000, an increase of almost 38 percent from 1980. The most reported non-English second language at home was Spanish (17.3 million) followed by French (1.7 million), with German, Italian, and Chinese close behind.

In this survey, respondents were asked what language or languages were spoken in their home when they were growing up and which single language they usually speak now. Table 3.7 gives the percentages of individuals reporting particular languages at each level of educational attainment. The dropout rate is lower for adults growing up in English-speaking homes (21 percent), compared with the rates for those growing up in homes where Spanish, another language, or English and Spanish were spoken; the rate is highest for adults who grew up with Spanish spoken in the home (60 percent). The high school graduation rate for individuals reporting Spanish in the home is similar to that for the category of other languages (about 20 percent), but fewer individuals reporting Spanish have gone on to postsecondary schooling. For those who grew up in bilingual English/Spanish homes, the dropout rate and high school graduation rate are similar to those of individuals who grew up speaking other languages or English and another language.

An estimated 8 percent of the adult population grew up in homes where Spanish was spoken, while relatively few respondents reported that Spanish was their primary adult language (an estimated 4 percent of the adult population).[15] Seventy-two percent of these individuals, however, did not complete high school. In comparison, only 22 percent of adult English speakers and 41 percent of adults who speak other languages did not complete high school.

The average literacy proficiencies for dropouts and high school graduates by language spoken are given in table 3.8. The column labeled *effect size* is the

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[14] D. Bradley, (1992). *Language Characteristics and Academic Achievement: A Look at Asian and Hispanic Eighth Graders in NELS: 88* Report No. NCES 92-479. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement; K. Gutierrez. (1990). "Enhancing Academic Literacy for Language Minority Students." In J.G. Bain and J.L. Herman (Eds.) *Making Schools Work for Underachieving Minority Students: Next Steps for Research, Policy, and Practice.* New York: Greenwood Press, pp. 127-136; M. Saville - Troike. (Spring 1991). *Teaching and Testing for Academic Achievement: The Role of Language Development* (occasional papers in Bilingual Education No. 4). Washington, DC: National Clearinghouse for Bilingual Education.

[15] These percentages were calculated using the weighted Ns in table 3.7. For present language the weighted N for Spanish was divided by the total weighted N. For childhood language the sum of the weighted Ns for Spanish and English/Spanish was divided by the total weighted N.

TABLE 3.7

Percentages of Adults Reporting Childhood Language and Current Language, by Education Level

CHILDHOOD LANGUAGE AND CURRENT LANGUAGE			EDUCATION LEVEL			
			Dropout	GED	High school graduate	Any postsecondary education
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Childhood Language						
English	20,417	149,515	21 (0.4)	4 (0.2)	30 (0.3)	46 (0.3)
Spanish	1,759	10,262	60 (1.9)	4 (0.6)	17 (1.5)	20 (1.6)
Other	818	7,890	32 (2.2)	2 (0.7)	20 (1.5)	46 (2.0)
English and Spanish	745	4,082	30 (2.3)	6 (1.1)	25 (1.9)	40 (2.5)
English and other	1,283	10,429	25 (2.0)	2 (0.6)	24 (1.6)	48 (2.0)
Current Language						
English	23,558	172,790	22 (0.3)	4 (0.2)	29 (0.2)	46 (0.2)
Spanish	1,246	7,202	72 (1.7)	3 (0.6)	13 (1.2)	12 (1.3)
Other	216	2,233	41 (5.2)	2 (1.0)	25 (3.9)	32 (3.8)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

difference between the mean proficiency score for graduates and the mean for dropouts, divided by the standard deviation of the scale; it is the number of standard deviations between the mean for graduates and the mean for dropouts.

The same patterns are seen in table 3.8 for all three literacy scales. Individuals who grew up in an English-speaking home, whether it was the only language *or* one of several, demonstrate significantly higher English literacy proficiencies than individuals who reported only Spanish or only another language in the home. This difference is found among dropouts and high school graduates alike. Dropouts who grew up in Spanish-speaking homes demonstrate lower proficiencies than dropouts from other language homes — a difference that is not found among high school graduates.

TABLE 3.8

Average Proficiencies and Effect Size on Each Literacy Scale of Dropouts and High School Graduates Reporting Childhood Language and Current Language

CHILDHOOD LANGUAGE AND CURRENT LANGUAGE/SCALE			EDUCATION LEVEL		
			Dropout	High school graduate	
	n	WGT N (/1,000)	PROF (SE)	PROF (SE)	Effect Size
Childhood Language					
Prose					
English	20,417	149,515	223 (1.6)	275 (1.2)	0.79
Spanish	1,759	10,262	144 (2.8)	212 (4.7)	1.03
Other	818	7,890	168 (6.6)	209 (7.8)!	0.62
English and Spanish	745	4,082	220 (5.3)!	262 (5.7)!	0.64
English and other	1,283	10,429	222 (6.3)!	265 (3.9)!	0.65
Document					
English	20,417	149,515	216 (1.8)	269 (1.1)	0.80
Spanish	1,759	10,262	141 (3.1)	214 (4.7)	1.10
Other	818	7,890	171 (5.3)	214 (7.5)!	0.65
English and Spanish	745	4,082	220 (4.9)!	261 (6.5)!	0.62
English and other	1,283	10,429	209 (5.8)!	252 (3.9)!	0.65
Quantitative					
English	20,417	149,515	217 (1.8)	275 (1.3)	0.81
Spanish	1,759	10,262	139 (3.1)	216 (5.4)	1.07
Other	818	7,890	170 (7.0)	223 (8.0)!	0.74
English and Spanish	745	4,082	217 (6.7)!	255 (4.9)!	0.53
English and other	1,283	10,429	214 (8.4)!	262 (4.3)!	0.67
Current Language					
Prose					
English	23,558	172,790	220 (1.6)	273 (1.1)	0.80
Spanish	1,246	7,202	134 (3.3)	187 (6.3)!	0.80
Other	216	2,233	148 (12.4)!	153 (11.6)!	0.08
Document					
English	23,558	172,790	213 (1.7)	267 (1.0)	0.81
Spanish	1,246	7,202	131 (3.5)	192 (6.1)!	0.92
Other	216	2,233	169 (11.2)!	170 (10.7)!	0.02
Quantitative					
English	23,558	172,790	214 (1.9)	273 (1.1)	0.82
Spanish	1,246	7,202	129 (3.6)	190 (7.0)!	0.85
Other	216	2,233	166 (17.9)!	179 (10.2)!	0.18

Prof = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty); ES = Effect Size.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution — the nature of the sample does not allow accurate determination of the variability of this statistic.

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

The advantage of graduating from high school (the effect size), with no further formal education, is about four-fifths of a standard deviation for individuals who grew up in an English-speaking home. The advantage of high school graduation for individuals from Spanish-speaking homes is over one full standard deviation. Thus, graduation from high school is accompanied by a reduced gap in literacy between individuals from Spanish-speaking homes and individuals from homes where English was spoken. The survey data do not reveal whether high school graduation increased the literacy of individuals from Spanish-speaking homes relative to the English group or whether more literate individuals from Spanish-speaking homes managed to graduate from high school. There is little question, however, that the interaction of literacy and schooling is a two-way street. Literacy skills mediate the effects of formal education on learning. At the same time, the failure to participate in school precludes any possibility that individuals' English literacy will be improved from this experience.

The advantage of high school graduation for bilingual groups is about three-fifths of a standard deviation; they demonstrate significantly higher proficiencies than graduates from Spanish only or other language homes.

The literacy proficiencies of adults who currently speak English as their primary language are much the same as adults who grew up in a home only where English was spoken. The adults who speak Spanish as their primary language have slightly lower proficiencies than the larger group of individuals who grew up in Spanish-speaking homes. This deficit is found for dropouts and high-school graduates alike. Current Spanish speakers also seem to have benefited slightly less by graduation from high school, compared with the group of graduates from Spanish-speaking homes — about four-fifths or nine-tenths of a standard deviation compared with slightly over a full standard deviation for adults from Spanish-speaking homes. The small number of adults who currently speak other languages primarily show little or no benefit in their literacy proficiencies from high school graduation — less than one-tenth of a standard deviation.

One of the mechanisms by which speakers of other languages may become more proficient in English is to enroll in a course that teaches English as a second language (ESL). Respondents who did not learn to speak English before starting school were asked if they had ever taken an ESL course. Of individuals who spoke only a language other than English during their childhood, approximately 39 percent of high school dropouts, 49 percent of high school graduates, and 61 percent of individuals with postsecondary experience reported taking an ESL course (table 3.9). In general, the proficiencies of individuals who took ESL classes are not significantly different from those who did not take an ESL class. Of nine comparisons, there are two

TABLE 3.9

Percentages and Average Proficiencies of Adults Speaking Non-English Childhood Language at Each Education Level, by ESL Course

LITERACY SCALE/EDUCATION LEVEL			DID YOU TAKE AN ESL COURSE?		
			Total	ESL course taken	No ESL course taken
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Prose					
Dropout	1,221	8,389	100 (0.0)	39 (2.0)	61 (2.0)
			149 (2.7)	147 (4.8)	151 (3.4)
GED	78	472	100 (0.0)	57 (7.1)	43 (7.1)
			211 (10.2)	*** (****)	*** (****)
High School Graduate	380	3,134	100 (0.0)	49 (3.3)	51 (3.3)
			208 (4.9)	200 (7.8)	215 (5.4)
Any Postsecondary	816	5,435	100 (0.0)	61 (2.2)	39 (2.2)
			258 (2.7)	248 (3.6)	274 (5.5)
Document					
Dropout	1,221	8,389	100 (0.0)	39 (2.0)	61 (2.0)
			148 (2.8)	153 (4.3)	144 (3.1)
GED	78	472	100 (0.0)	57 (7.1)	43 (7.1)
			209 (9.5)	*** (****)	*** (****)
High School Graduate	380	3,134	100 (0.0)	49 (3.3)	51 (3.3)
			212 (4.8)	210 (7.7)	214 (5.9)
Any Postsecondary	816	5,435	100 (0.0)	61 (2.2)	39 (2.2)
			259 (2.6)	254 (3.5)	269 (5.4)
Quantitative					
Dropout	1,221	8,389	100 (0.0)	39 (2.0)	61 (2.0)
			146 (2.7)	155 (4.5)	140 (3.6)
GED	78	472	100 (0.0)	57 (7.1)	43 (7.1)
			215 (11.2)	*** (****)	*** (****)
High School Graduate	380	3,134	100 (0.0)	49 (3.3)	51 (3.3)
			217 (4.6)	215 (7.4)	219 (6.1)
Any Postsecondary	816	5,435	100 (0.0)	61 (2.2)	39 (2.2)
			269 (3.1)	264 (3.7)	277 (6.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

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

exceptions. Dropouts who took ESL classes perform significantly better on the quantitative scale than dropouts who did not, and people with postsecondary experience who did not take ESL classes perform significantly better on the prose scale than those who did. The overall picture is one of little or no difference in mean literacy proficiencies of adults who did and did not take ESL courses. Because the data of this survey are from one point in time, it is not possible to examine improvement that may have occurred as a result of ESL classes, leaving several possible interpretations of these results. It is possible that ESL classes did not affect the literacy levels of the participants, or that those who chose to enroll in ESL programs were the most deficient initially and the courses brought them up to the level of their more proficient counterparts.

Among those who did not take ESL classes, 45 percent dropped out of high school, 23 percent graduated from high school or obtained a GED certificate, and 32 percent went on to some postsecondary education. (See table B3.1.) The percentages for individuals who had taken an ESL course were 38 percent, 22 percent, and 40 percent, respectively. That is, fewer ESL participants dropped out of high school and more went on to postsecondary schooling. Again, several explanations are possible. The ESL class may have provided the motivation or additional skills needed to promote further schooling, or else individuals with higher levels of motivation initially may have undertaken both ESL classes and additional years of education.

In terms of literacy proficiencies, the advantage of graduation from high school was slightly larger for individuals who had not taken an ESL class — between 1.0 and 1.1 standard deviation on each scale, compared with .8 to .9 standard deviation for individuals who had taken an ESL class.[16] While the findings regarding ESL classes are mixed, the literacy assessment does not permit us to examine the full range of effects of participation in such training.

Literacy Practices

A personal literacy practices index was created from respondents' answers to questions about how often they engaged in literacy-related activities for personal use. The practices include reading letters, magazines, and directions for medicines or home products, writing letters, writing bills, invoices, or budgets, and doing calculations that involve adding, subtracting, multiplying, dividing, or measuring. Table 3.10 gives the percentages of individuals who engaged in personal literacy practices rarely, weekly, and often, and the mean literacy proficiencies for each group. Altogether, 18 percent of American adults

[16] That is, the difference in mean literacy proficiencies between those who graduated from high school and those who dropped out.

TABLE 3.10

Percentages and Average Proficiencies on Each Scale of Adults at Each Level of Education Reporting Frequency of Personal Literacy Practices

LEVEL OF EDUCATION/ LITERACY SCALE			FREQUENCY					
			Rarely		Weekly		Often	
	n	WGT N (/1,000)	RPCT PROF	(SE) (SE)	RPCT PROF	(SE) (SE)	RPCT PROF	(SE) (SE)
Total	23,904	181,614	18	(0.4)	43	(0.5)	39	(0.6)
Dropout	4,932	42,932	41	(1.1)	40	(1.0)	19	(0.9)
Prose			177	(2.3)	226	(2.2)	239	(2.5)
Document			171	(2.4)	220	(2.2)	234	(2.9)
Quantitative			166	(2.8)	224	(2.1)	238	(3.1)
GED	879	7,094	14	(1.5)	42	(2.1)	44	(2.2)
Prose			240	(6.5)!	268	(3.6)!	277	(2.9)!
Document			235	(6.5)!	263	(3.4)!	274	(2.7)!
Quantitative			233	(6.9)!	270	(4.1)!	279	(3.6)!
H.S. Graduate	5,953	51,183	17	(0.5)	49	(1.1)	40	(0.9)
Prose			244	(2.9)	271	(1.3)	283	(1.6)
Document			239	(2.8)	264	(1.3)	277	(1.4)
Quantitative			242	(2.4)	271	(1.5)	284	(1.8)
Any Postsecondary	12,140	80,405	7	(0.3)	41	(0.6)	53	(0.7)
Prose			273	(2.8)	306	(1.2)	317	(0.9)
Document			266	(2.9)	300	(1.1)	311	(0.8)
Quantitative			268	(3.1)	307	(1.0)	318	(1.1)

n = sample size; WGT N = population size estimate /1,000 (the sample sizes for subpopulations may not add up to the total sample sizes because of missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution — the nature of the sample does not allow accurate determination of the variability of this statistic.

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

engaged in personal literacy practices rarely, about 43 percent weekly, and about 39 percent often. The first of these figures is cause for concern. Over 32,000,000 Americans rarely if ever engaged in such literacy activities as reading magazines or instructions, filling in forms, or adding or subtracting. Some of these individuals (27 percent) graduated from high school and others (16 percent) undertook some postsecondary schooling (table B3.2).

The relationship of literacy activities to educational attainment is also clear from table B3.2. Over half (54 percent) of those who rarely engaged in personal literacy practices dropped out of high school; at the other extreme, 60

percent of those who often engaged in literacy practices completed some postsecondary education. Higher educational attainment is generally associated with higher degrees of engagement in personal literacy practices.

Literacy proficiency is related both to educational attainment and to literacy practices. The association of higher literacy proficiency with high school or GED completion is discussed in the preceding section of this chapter. In addition, table 3.10 shows that mean proficiency scores increase with increases in the frequency of literacy practices. It is not surprising that those individuals who engage in literacy activities regularly have higher proficiencies on all three scales. In each case, however, the difference in proficiencies between "rarely" and "weekly" is substantially larger than the difference between "weekly" and "often." That is, the decrement in proficiency scores for individuals who rarely engaged in personal literacy activities is especially pronounced. High school dropouts who rarely engage in literacy practices seem to have a double handicap. The literacy proficiencies of this group of about 17.7 million American adults are approximately three-fourths of a standard deviation *below the next lowest group* in the table, that is, substantially lower than high school dropouts who engage in literacy practices weekly. In contrast, the literacy proficiencies of dropouts who engage in literacy practices weekly are only one-fifth of a standard deviation below dropouts who engage in literacy practices often.

Heterogeneity among Noncompleters

The act of leaving school without graduating does not have the same meaning for everyone; in fact, dropouts comprise a very heterogeneous group. Individuals' reasons for dropping out vary and so do their employment patterns, literacy practices, and motivation for further schooling after they leave school. A national longitudinal study of high school students indicated that, among the 15 percent of students who were sophomores in 1980 but did not complete school in 1982, not liking school and getting poor grades were only two in a list of self-reported reasons for leaving.[17] Males also reported choosing to work and helping to support a family among the most common reasons, and females reported marriage and pregnancy. It is likely that the reasons for leaving school without graduating are reflected in attitudes toward school and to subsequent post-schooling activities.

[17] R.B. Ekstrom, M.E. Goertz, J.D. Pollack, and D.A. Rock. (1986). "Who Drops Out of High School and Why? Findings from a National Study." *Teachers College Record, 87,* pp. 356-373.

Reasons for Dropping Out

The literacy survey asked respondents who did not graduate from high school to state the main reason for leaving school. The results are summarized in table 3.11. Leaving school for work or military service was the most common response (24 percent) and academic problems were cited the least (3 percent).[18] Although the percentages of male and female dropouts are similar (table 3.1), significantly more males than females gave financial problems, work or military service, and lost interest or behavior problems as reasons for dropping out, while more females cited pregnancy and family or personal problems. Older age groups also gave different reasons from those of 16- to 24-year-old adults. Both older groups of respondents reported financial problems and the need to work more often than younger respondents; older adults cited lack of interest or behavior problems and pregnancy less often.

On all three literacy scales, those who dropped out because of financial problems generally perform significantly below all other groups.[19] For example, those who cited financial problems as the primary reason score between one-third and two-fifths of a standard deviation below those who cited work or military service. Forty-nine percent of those citing financial problems indicated that they read, wrote, or did arithmetic computations only rarely (table B3.3).

In contrast, those who cited pregnancy and lost interest or behavior problems as reasons for dropping out generally demonstrate the highest mean literacy proficiencies.[20] While not at the level of high school completers, the literacy proficiencies of these individuals are significantly above those of other noncompleters. Furthermore, fewer of these two groups reported engaging in literacy activities rarely when compared with those who dropped out because of financial reasons (table B3.3). At the time of this survey, people in these two groups had not attained a high school equivalency diploma, but 36 percent of those who left because of pregnancy and 28 percent of those who left because they lost interest or had behavior problems reported studying for an equivalency degree (table B3.4). Thus, at least some high school dropouts are able to maintain moderate literacy skills, habits, and motivation even after leaving school. It may be productive to explore whether their failing to graduate could have been avoided and what ways there are to continue to foster their engagement in intellectual activities.

[18] Of course, this response does not preclude the possibility that these individuals were not doing well academically.

[19] Those who dropped out for academic reasons demonstrate about the same proficiency on the prose and quantitative scales, although the data should be interpreted with caution.

[20] Exceptions are when the proficiencies of these two groups are compared with the proficiencies for those who dropped out for academic reasons, although the data should be interpreted with caution.

TABLE 3.11

Percentages and Average Proficiencies on Each Literacy Scale of Dropouts: Age, Gender, and Total, by Reason for Dropping Out

AGE, GENDER, AND TOTAL			REASON FOR STOPPING SCHOOLING						
			Financial problems	Work or military	Pregnancy	Lost interest or behavior	Academic problems	Family or personal problems	Other reasons
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Age									
16 to 24	883	4,935	8 (1.1)	12 (1.9)	14 (1.5)	24 (2.0)	3 (1.0)	15 (1.5)	24 (2.0)
25 to 54	2,675	17,726	15 (0.9)	19 (1.2)	9 (0.7)	18 (1.0)	4 (0.5)	20 (1.4)	17 (1.0)
55 or older	1,827	19,957	20 (1.6)	32 (1.3)	1 (0.2)	8 (0.6)	2 (0.3)	20 (1.3)	18 (1.1)
Gender									
Male	2,459	19,880	19 (1.3)	34 (1.5)	1 (0.2)	17 (1.1)	3 (0.5)	14 (1.1)	11 (0.9)
Female	2,920	22,684	14 (1.0)	15 (0.9)	11 (0.7)	11 (0.7)	2 (0.3)	24 (1.2)	24 (1.2)
Total Population									
Total	5,386	42,619	16 (1.0)	24 (0.8)	6 (0.4)	14 (0.7)	3 (0.3)	19 (1.0)	18 (0.8)
			PROF (SE)	PROF (SE)	PROF (SE)	PROF (SE)	PROF (SE)	PROF (SE)	PROF (SE)
Prose			185 (4.1)	208 (3.0)	230 (3.5)	224 (2.9)	211 (7.7)!	208 (3.1)	208 (3.0)
Document			179 (3.4)	201 (2.9)	228 (3.6)	221 (2.9)	208 (7.4)!	201 (3.7)	204 (3.2)
Quantitative			179 (4.9)	207 (3.3)	213 (3.8)	221 (3.7)	204 (8.2)!	201 (4.0)	202 (3.5)

n = sample size; WGT N = population size estimate /1,000 (the sample sizes for subpopulations may not add up to the total sample sizes because of missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution — the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Further Education and Training

While 24 percent of American adults have not completed high school (table 3.1), another 4 percent dropped out but later attained a high school equivalency degree.[21] The percentage attaining a GED diploma is similar among males and females, Black, White, and Hispanic adults, and most age groups. Fewer Asians and fewer individuals in the youngest and oldest age brackets (i.e., 16 to 18 and 65 or older) completed a GED program.[22]

[21] The actual percentage is greater than this, since individuals who attained a GED and also attended college are included with the postsecondary education data. These may include a number of the more highly literate GED-attainers.

[22] Further information on GED recipients is given in J. Baldwin, I.S. Kirsch, D.A. Rock, & K. Yamamoto. (1995). *The Literacy Proficiencies of GED Examinees: Results from the GED-NALS Comparison Study.* Washington, DC: American Council on Education.

The reasons individuals with a GED gave for leaving school early were generally similar to those for dropouts (table B3.5), although somewhat fewer GED recipients than dropouts gave financial problems (9 percent compared with 16 percent) and family problems (14 percent compared with 19 percent) as the primary reason and somewhat more GED recipients reported leaving due to pregnancy (10 percent compared with 6 percent) and lost interest or behavior problems (20 percent compared with 14 percent). (See table 3.11 for dropout data.) Differences in mean proficiencies among the reasons for leaving seem to be smaller and less consistent than those among dropouts.[23]

In addition to adults who completed a GED program, 18 percent of high school dropouts reported having studied for but, at the time of this survey, not completing GED requirements.[24] (See table B3.6.) This group consisted of 23 percent of the Black dropouts, 18 percent of the White dropouts, and 12 percent of the Hispanic high school dropouts. As a group, the proficiencies of dropouts who reported studying for the GED were significantly above those of dropouts who did not. The means for GED studiers were 241, 239, and 236 on the prose, document, and quantitative scales, respectively, and for non-studiers 201, 195, and 196 on the three scales, respectively. The proficiencies of GED studiers, however, were still about two-fifths of a standard deviation below those of GED holders who averaged around 265 on the three scales.

High school dropouts and GED recipients were asked whether they were currently enrolled in a part-time or full-time school program (e.g., a high school equivalency program, a vocational, trade, or business school, or even a college program) or if they have ever taken part in a program to improve their basic skills, that is, reading, writing, and arithmetic. Basic skills training could have been obtained in courses given by an employer or union, publicly sponsored programs such as those offered by the Job Training Partnership Act, or local tutoring that might be available through a library or church.

Only 5 percent of high school dropouts reported being enrolled in a school program and 9 percent reported having taken a basic skills course (table 3.12). Among GED recipients, 9 percent were currently enrolled in school and 16 percent had participated in basic skills training. Participation rates for high school dropouts differ by age and by race/ethnicity.[25] Twenty-four percent of the youngest group (16 to 24) were currently enrolled in school. These

[23] The data for GED holders need to be interpreted with caution due to small sample sizes.

[24] According to a 1992 survey of participants in the U.S. Department of Labor's Job Training Partnership Act and Employment Service/Unemployment Insurance programs, approximately 60 percent of high-school dropouts who reported studying for the GED actually completed the certification requirements. (See I.S. Kirsch, 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.)

[25] The sample sizes for GED recipients are too small to permit further breakdowns by age or race/ethnicity.

TABLE 3.12

Percentages of GED Holders and Dropouts Reporting Enrollment in School and in Basic Skills Program; and of Dropouts, by Age and Race/Ethnicity

EDUCATION LEVEL/AGE AND RACE/ ETHNICITY			ENROLLMENT			
			Currently in school	Not currently in school	Ever in a basic skills program	Never in a basic skills program
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Total GED	879	7,084	9 (1.5)	91 (1.5)	16 (1.9)	84 (1.9)
Total Dropout	4,934	42,799	5 (0.4)	95 (0.4)	9 (0.7)	91 (0.7)
Age						
16 to 24	737	4,917	24 (1.9)	76 (1.9)	13 (1.5)	87 (1.5)
25 to 54	2,366	17,742	5 (0.7)	95 (0.7)	12 (1.2)	88 (1.2)
55 or older	1,831	20,140	1 (0.1)	99 (0.1)	6 (0.7)	94 (0.7)
Race/ Ethnicity						
Black	1,284	6,726	8 (0.8)	92 (0.8)	14 (1.4)	86 (1.4)
White	2,291	26,788	4 (0.5)	96 (0.5)	7 (0.7)	93 (0.7)
Hispanic	1,244	7,796	5 (0.8)	95 (0.8)	10 (1.1)	90 (1.1)

n = sample size; WGT N = population size estimate /1,000 (the sample sizes for subpopulations may not add up to the total sample sizes due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution — the nature of the sample does not allow accurate determination of the variability of this statistic.

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

individuals may still be completing high school requirements but taking longer than the rest of their age cohort or they may be pursuing their high school equivalency by an alternative route. Small percentages of both groups over age 24 were enrolled in school programs, and only 6 percent of individuals aged 55 and older had participated in any basic skills training. Significantly higher percentages of Black dropouts than Hispanic or White dropouts were currently enrolled in school, and more Black dropouts than White dropouts had taken a basic skills course.

The average literacy proficiencies of dropouts who were enrolled in a school program are significantly higher than those who were not enrolled, on all three scales (table 3.13). It is not clear whether more literate individuals are electing to continue their education or whether the additional schooling is increasing their literacy levels. It is clear, however, that higher literacy levels are associated with continued schooling, even beyond the usual age of graduation. Although the data should be interpreted with caution, individuals who completed a GED program and were still enrolled in school seem to

TABLE 3.13

Average Proficiencies on Each Literacy Scale of Dropouts and GED Holders, by Enrollment in School and in Basic Skills Program

EDUCATION LEVEL/LITERACY SCALE			ENROLLMENT			
			Currently in school	Not currently in school	Ever in a basic skills program	Never in a basic skills program
	n	WGT N (/1,000)	PROF (SE)	PROF (SE)	PROF (SE)	PROF (SE)
Dropout	4,934	42,799				
Prose			230 (6.1)	207 (1.6)	210 (4.6)	208 (1.7)
Document			229 (6.2)	201 (1.7)	207 (4.2)	202 (1.8)
Quantitative			222 (5.0)	202 (1.9)	205 (4.2)	203 (1.9)
GED	879	7,084				
Prose			271 (8.6)!	268 (2.0)	270 (4.5)!	268 (2.1)
Document			267 (9.1)!	264 (2.1)	267 (4.9)!	263 (2.5)
Quantitative			264 (6.8)!	269 (2.8)	269 (4.9)!	268 (3.2)

n = sample size; WGT N = population size estimate /1,000 (the sample sizes for subpopulations may not add up to the total sample sizes due to missing data); PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution — the nature of the sample does not allow accurate determination of the variability of this statistic.

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

demonstrate about the same average proficiencies as GED completers who were not enrolled in school.

At the same time, dropouts who reported participating in basic skills training performed no better, on average, than those who did not participate in such programs. To this extent, the effects of community and work courses on high school dropouts are minimal.

School Noncompletion and Work

Table 3.14 gives the number of weeks that dropouts worked during the 12 months prior to the survey. Overall, an estimated 53 percent of high school dropouts did not work at all during the year. The rate is significantly higher among females and among adults 55 years and older, many of whom may be retired or otherwise out of the workforce. Forty-two percent of younger

dropouts (16 to 24 years) worked for part of the year (one to 39 weeks) while 48 percent of 25- to 54-year-old adults worked more than 40 weeks. While Hispanic adults have a higher dropout rate than other racial/ethnic groups (table 3.1), the percentage of Hispanic dropouts who did not work during the

TABLE 3.14

Percentages and Average Prose Proficiencies of Dropouts: Sex, Race/Ethnicity, and Age, by Number of Weeks Worked

SEX, RACE/ETHNICITY, AND AGE			NUMBER OF WEEKS WORKED		
			Zero weeks worked	1 to 39 weeks worked	40 or more weeks worked
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Total Population					
Total	4,936	42,961	53 (1.1) 199 (2.0)	16 (0.6) 219 (3.4)	31 (1.1) 219 (2.4)
Sex					
Male	1,998	19,926	42 (1.5) 192 (3.7)	18 (1.0) 210 (4.2)	40 (1.4) 212 (3.2)
Female	2,931	22,980	62 (1.3) 202 (2.4)	14 (1.0) 229 (4.8)	24 (1.1) 228 (3.7)
Race/Ethnicity					
Black	1,284	6,734	54 (2.3) 184 (3.0)	15 (0.9) 209 (6.0)!	30 (2.2) 203 (4.2)
White	2,292	26,906	55 (1.8) 212 (2.3)	15 (0.9) 240 (3.5)	30 (1.6) 247 (2.9)
Hispanic	1,245	7,823	44 (2.3) 160 (4.6)	17 (1.1) 164 (6.5)	39 (2.1) 162 (4.2)
Age					
16 to 24	737	5,007	29 (2.2) 224 (5.6)	42 (2.4) 237 (5.0)	29 (2.9) 237 (6.0)
25 to 54	2,366	17,791	32 (1.4) 201 (3.2)	19 (0.9) 210 (4.7)	48 (1.6) 217 (2.9)
55 or older	1,833	20,163	76 (1.3) 195 (2.8)	6 (0.7) 214 (6.4)!	17 (1.2) 214 (4.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

year (44 percent) was below that of Black (54 percent) or White (55 percent) dropouts.[26]

Literacy patterns among the groups are very similar for the prose, document, and quantitative scales, so that only the averages for prose literacy are given in table 3.14. (The document and quantitative data are found in tables B3.7D and B3.7Q.) Dropouts who worked at all during the past 12 months demonstrate significantly higher proficiencies than those who did not work at all. Further, there is no significant difference between the average proficiency of dropouts who worked part of the year and those who worked for the entire year. The proficiencies for those who worked during the year are approximately three-tenths to two-fifths of a standard deviation above those who did not work but are still far below those of the full sample of high school graduates (table 3.2).

The difference between *workers* and *non-workers* is found for both males and females and for Black and White dropouts. In each case the proficiency scores of dropouts who worked are higher than those of dropouts who did not work. In contrast, no significant difference in proficiencies is found between Hispanic dropouts who worked and those who did not work during the preceding year.[27] The mean proficiencies of Hispanic dropouts are generally below those of other racial/ethnic groups, regardless of work status.

The differences in proficiencies for age groups are mixed. For the youngest group, the proficiencies of dropouts who had worked and who had not worked are generally about the same. At the other extreme, for 55-or-older dropouts working seems to be related to proficiency. For example, those who worked over 40 weeks during the preceding year have significantly higher proficiencies than non-workers on all three scales.

Is working related to the literacy practices of dropouts, either on the job or in their personal lives? The literacy proficiencies of dropouts classified by personal literacy practices and weeks worked are given in table 3.15.

The relationship of personal literacy activities to employment is clear. Among dropouts who reported rarely reading, writing, or doing arithmetic tasks for their own use, fully 64 percent did not work at all during the preceding year. Fewer adults who engaged in literacy activities weekly or more often were unemployed: 47 percent and 39 percent, respectively. While these unemployment rates are high compared with adults who completed their schooling (see chapter 5), personal literacy habits may be an additional factor that influences the ability to secure a job. Among dropouts who engaged in

[26] Although we use the term *dropout,* this group also includes individuals who reported no formal schooling at all. As indicated in chapter 2, this was a substantial percentage of Hispanic respondents (10.9 percent).
[27] The same pattern was found for all three literacy scales.

TABLE 3.15

Percentages and Average Proficiencies on Each Literacy Scale of Dropouts Reporting Personal Literacy Practices, by Weeks Worked

LITERACY SCALE/ PERSONAL PRACTICES			NUMBER OF WEEKS WORKED		
			Zero weeks worked	1 to 39 weeks worked	40 or more weeks worked
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Prose					
Personal practices rarely	2,066	17,689	64 (1.5) 177 (2.8)	12 (0.9) 178 (5.3)!	24 (1.3) 177 (4.8)
Personal practices weekly	1,990	17,265	47 (1.7) 217 (2.6)	18 (0.9) 233 (4.5)	34 (1.6) 234 (3.1)
Personal practices often	876	7,978	39 (2.1) 230 (4.7)	19 (1.5) 246 (5.1)!	42 (2.1) 245 (3.6)
Document					
Personal practices rarely	2,066	17,689	64 (1.5) 168 (2.7)	12 (0.9) 175 (5.1)!	24 (1.3) 175 (4.6)
Personal practices weekly	1,990	17,265	47 (1.7) 209 (2.7)	18 (0.9) 232 (4.0)	34 (1.6) 230 (2.9)
Personal practices often	876	7,978	39 (2.1) 222 (4.7)	19 (1.5) 245 (5.6)!	42 (2.1) 240 (3.6)
Quantitative					
Personal practices rarely	2,066	17,689	64 (1.5) 162 (3.5)	12 (0.9) 172 (5.3)!	24 (1.3) 174 (5.2)
Personal practices weekly	1,990	17,265	47 (1.7) 213 (3.3)	18 (0.9) 233 (4.5)	34 (1.6) 236 (3.1)
Personal practices often	876	7,978	39 (2.1) 226 (5.2)	19 (1.5) 245 (5.5)!	42 (2.1) 245 (3.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

literacy practices often, 42 percent worked for 40 weeks or more during the preceding year, a higher percentage than dropouts who engaged in literacy practices only weekly or rarely.

Among dropouts who reported they rarely engaged in literacy activities, increased employment is not associated with increased proficiency. That is, individuals who do not engage in literacy practices generally maintain low proficiencies regardless of whether they hold a regular job or not. In contrast, among dropouts who engage in literacy practices on a regular basis (either weekly or more often), those who worked during the preceding year generally

have higher literacy proficiencies than those who did not. It is not clear whether employers give preference to individuals who are both more literate and engaged in personal literacy practices, or if more active high school dropouts seek jobs that utilize or reward their higher proficiencies. Nevertheless, there is a substantial number of dropouts who have regular employment, who engage more frequently in literacy practices, and who have higher literacy levels than other groups of school noncompleters.

In addition to the personal literacy practices index, a job literacy practices index was obtained by asking respondents how often they read a range of documents, wrote letters, reports, or other documents, or performed arithmetic tasks as part of their job. Job literacy practices reflect the tasks an employee must perform for his or her work. While an individual may seek a job that involves more or fewer literacy practices, most employees have less ability to influence their job literacy practices than their literacy practices for personal use. The connections among job literacy practices, employment patterns, and literacy proficiency are complex, and the workplace may serve as a setting that promotes or discourages literacy activities and literacy proficiency.

The results for job literacy practices are shown in table 3.16. Altogether an estimated 47 percent of high school noncompleters held short-term (1 to 39 weeks) or longer-term (40 or more weeks) jobs during the previous year.[28] Many positions held by school noncompleters required literacy practices only rarely (49 percent for 1 to 39 weeks, and 37 percent for 40 or more weeks). Nevertheless, about half the jobs of those working 1 to 39 weeks and well over half the jobs of those working 40 or more weeks required literacy practices weekly or more often. On average, the individuals holding positions that required literacy activities demonstrated significantly higher literacy proficiencies than those working in jobs that did not require reading, writing, or arithmetic. At the same time, the lowest average proficiencies are demonstrated by dropouts working 40 or more weeks in jobs that rarely required literacy tasks to be performed (except on the quantitative scale).

In total, the results for literacy practices and employment exhibit diversity. Noteworthy numbers of high school dropouts held jobs that required reading, writing, and arithmetic skills, and others maintained long-term employment in spite of poor literacy proficiencies. While the literacy proficiencies of noncompleters are generally poor relative to those of high school graduates, dropouts are not by any means a homogeneous group with regard to literacy proficiencies, literacy practices, or the number of weeks they work.

[28] This percent was computed using the weighted Ns in table 3.16. The sum of the weighted Ns for 1 to 39 and 40 or more weeks was divided by the sum of the weighted Ns for all three categories.

TABLE 3.16

Percentages and Average Proficiencies on Each Literacy Scale of Dropouts: Number of Weeks Worked, by Frequency of Job Practices

LITERACY SCALE BY NUMBER OF WEEKS WORKED	n	WGT N (/1,000)	FREQUENCY OF JOB LITERACY PRACTICES: Job practices rarely RPCT (SE) PROF (SE)	Job practices weekly RPCT (SE) PROF (SE)	Job practices often RPCT (SE) PROF (SE)
Prose					
1 to 39 weeks worked	868	6,799	49 (2.2) 201 (4.1)	29 (2.0) 230 (5.1)	22 (1.8) 243 (5.0)
40 or more weeks worked	1,605	13,526	37 (1.8) 183 (4.4)	29 (1.4) 232 (3.6)	34 (1.8) 246 (2.5)
Document					
1 to 39 weeks worked	868	6,799	49 (2.2) 198 (3.9)	29 (2.0) 229 (5.0)	22 (1.8) 243 (4.8)
40 or more weeks worked	1,605	13,526	37 (1.8) 180 (4.3)	29 (1.4) 227 (3.8)	34 (1.8) 243 (3.0)
Quantitative					
1 to 39 weeks worked	868	6,799	49 (2.2) 196 (4.0)	29 (2.0) 231 (5.3)	22 (1.8) 244 (5.3)
40 or more weeks worked	1,605	13,526	37 (1.8) 179 (4.2)	29 (1.4) 232 (3.9)	34 (1.8) 250 (2.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Summary

The results of the National Adult Literacy Survey show clearly that average literacy proficiencies are lowest among individuals who did not complete high school, higher among high school completers and individuals who completed an alternative GED program, and highest among those with some postsecondary schooling. Proficiencies of individuals with a GED certificate are no lower, and are often slightly above, the proficiencies of high school graduates. These differences are found consistently among males and females, among younger and older adults, among individuals of four racial/ethnic groups, and among individuals at all income levels and employment statuses.

Leaving school without graduating is more common among Hispanic and Black populations than among White or Asian populations. An estimated 46

percent of all Hispanic adults have not completed high school. This high percentage figure is accompanied by mean proficiencies that are substantially lower than those of any other racial/ethnic group regardless of educational attainment.

In terms of language background, the dropout rate among individuals who grew up in Spanish-speaking homes was high — an estimated 60 percent. At the same time, the advantage of graduating from high school is greatest for Spanish-speaking individuals, that is, the difference in literacy proficiency is greatest between Spanish-speakers who graduated from high school and Spanish-speakers who did not.

Individuals who grew up in bilingual Spanish/English homes did not have a higher dropout rate than other non-English-speaking groups. The mean proficiencies of individuals who grew up in English speaking homes and bilingual homes are higher, on average, than those of individuals who grew up in a non-English speaking home. In general, growing up in a bilingual home is not associated with as great a literacy handicap as growing up in a home in which English is not spoken at all.

The personal literacy practices in which individuals engage are also related to educational attainment and to literacy proficiency. High school dropouts read, write, or perform simple arithmetic tasks only infrequently in daily life. Individuals who both dropped out of school and rarely engage in literacy activities have by far the lowest average literacy proficiencies of any group identified in this survey. Unfortunately, this is not a small group of American adults.

The literacy assessment also reveals that individuals who do not complete high school with their age cohort are a diverse group. They left school for a variety of reasons and engaged in a wide range of work, education, and literacy-related activities after they left. Those who gave financial problems as their primary reason for dropping out have the lowest literacy proficiencies and poorest patterns of education and literacy activities after leaving school, suggesting that the reasons for leaving may have been broader than just financial conditions.

At the other extreme, those who cited lost interest or behavior problems and pregnancy as reasons for leaving school have significantly higher average literacy proficiencies than other groups of dropouts and engaged in significantly more post-high school literacy practices. Behavior problems in school are highly visible to teachers and administrators but are not necessarily indicative of academic failure. It is possible that among these groups of dropouts, many could, conditions permitting, successfully complete high school or even further years of schooling.

A small number of high school dropouts engaged in further educational activities after leaving school. About 5 percent reported being enrolled in a part-time or full-time school program at the time of the survey, and 18 percent reported having studied for GED certification. Their average literacy proficiency is significantly above those who did not undertake further education. Another 4 percent of the sample who did not graduate from high school with their age cohort later completed the requirements for GED certification. Their average literacy proficiency is higher still and, in fact, is at least as high as that of high school graduates.[29]

The employment rate for high school dropouts is indeed poor, with about 53 percent reporting that they did not work at all during the preceding year. The percentages not working were higher still among females and among individuals over 55 years of age. While the dropout rate for Hispanic adults was substantially above other groups, the percentage not working was significantly lower than that for Black or White dropouts.

In general, high school noncompleters who worked during the previous year have significantly higher average literacy proficiencies than those who did not work. Higher proficiencies associated with employment were found for males and females and for Black and White dropouts alike. In contrast, Hispanic dropouts who worked did not have higher proficiencies than those who were unemployed. The literacy proficiencies of dropouts whose jobs required them to engage in literacy practices on a regular basis are especially elevated in comparison with those whose jobs did not involve reading, writing, or arithmetic activities.

In summary, the results of this survey indicate that the average literacy proficiencies of individuals who dropped out of high school are substantially below those of high school or GED completers. At the same time, it is clear that even among high school dropouts, a substantial group of adults undertake further educational activities, engage in literacy practices regularly, hold fairly regular jobs, and demonstrate literacy levels that are significantly higher than those of their less active and/or unemployed counterparts. Failure to complete high school, while associated with many adverse consequences, does not necessarily mean that an individual has ceased to engage in educational and literacy-related endeavors.

[29] The reader is reminded that still other dropouts who completed the GED requirements went on to participate in postsecondary schooling. These individuals are included with the postsecondary data.

CHAPTER 4

Adults Performing at the Two Lowest Literacy Levels
by Sylvia T. Johnson

Literacy is an outcome of education and an enabler of achievement and vocational advancement. Literacy skills, improved proficiencies, and active involvement in reading probably work in complex, interactive ways to influence one another. Yet, the adults who performed in the two lowest levels on the National Adult Literacy Survey are a surprisingly diverse group in terms of their educational and language background, age, and other characteristics. Even within the two lowest literacy levels, the range of proficiency skills is also diverse.

Because of this range of skills in Levels 1 and 2 on all three scales, it is not accurate or appropriate to characterize those whose skills fall in these levels as non-readers. Respondents varied a great deal as to the extent of meaning and inferences they drew from words, sentences, paragraphs, documents and quantitative information. While these results constitute a current snapshot of literacy proficiency at a single point in the adult life cycle, it is important to recognize that over time, the literacy skills of adults can change based on cumulative educational and life experiences.

This chapter examines the meaning of literacy proficiency by exploring the prose, document, and quantitative tasks that most adults in these levels are likely to be able to perform and the backgrounds and literacy activities of people who perform in these levels. Adults in Level 2 showed themselves to be consistently successful with all tasks in Level 1, and were successful with most Level 2 tasks. In addition, some adults at the upper end of Level 2 were more likely to succeed than to fail with Level 3 tasks, but they did not reach the criterion success rate of 80 percent.[1] Adults in Level 1 have more limited skills. Unlike the other four levels, Level 1 includes adults who are not able to meet the requirements of Level 1 tasks. For this and other reasons, adults in Level 1 display a very broad range of proficiencies.

[1] Literacy tasks are mapped onto the literacy scale at the point at which a person has at least an 80 percent chance of correctly answering the question. For example, a person whose proficiency score is 210 or more has at least an 80 percent chance of correctly answering a task that is mapped at 210 on one of the literacy scales and is described as "able to do" that task.

- Some adults near the upper end of Level 1 were consistently successful with Level 1 tasks and were more likely to succeed than to fail with Level 2 tasks, though they were not consistent enough with Level 2 tasks to reach the 80 percent success criterion.
- Some adults, particularly those with a limited educational or English language background, were successful with most of the simpler literacy tasks that are found in Level 1.
- Some adults were unable to succeed consistently even with the simplest of literacy tasks. This group can be found at the low end of Level 1 on the three literacy scales.
- Some adults in Level 1 have skills that are too low to be tested. It would not make sense to limit reporting of literacy skills to that population literate enough to be assessed. In spite of inevitable inaccuracies in placement, those who have such low skills were included at the low end of the literacy scales, so that the assessment would reflect the full range of literacy skills of all adults.
- Some adults may appear in Level 1 or 2 because they performed below their true abilities. This can occur when respondents had low motivation to succeed on the assessment or did not invest the amount of time required to complete the assessment carefully. The National Adult Literacy Survey was a low-stakes test, with no job or career decisions depending on the outcome of one's performance.

The importance of context in interpreting the proficiency findings is explored, and the extent to which education is a sufficient intervention for raising literacy levels is also discussed. This chapter, then, presents a picture of the adults performing in the lowest levels of the survey. It describes the nature of their skills, their educational experiences, backgrounds, and ordinary literacy activities, as well as the procedures used for determining their scores and their prospects for improved literacy through education.

The Meaning of Prose Literacy Proficiency for Levels 1 and 2

The meaning of proficiency in prose literacy Levels 1 and 2 can be understood by examining the types of tasks that characterize these levels on the prose literacy scale. Survey evidence showed that 52 percent of the total adult population performed above Level 2 on the prose literacy scale, 27 percent of the total adult population performed in Level 2, and the remainder in Level 1. Some adults at the low end of Level 1 were unable to succeed consistently even with the simplest of literacy tasks — 4 percent of all adults (8.2 million) failed

to answer correctly a single prose literacy task (see appendix tables A.2 and A.5P).[2] This section discusses a variety of reasons why people might perform at these lower levels.

The literacy tasks in Level 1, which mapped onto the prose literacy scale between 149 and 224, required the respondent to read a relatively short text to locate a single piece of information that was identical to or synonymous with the information given in the question. If the text contained plausible but incorrect information, it was not located near the correct information. For example, one task with a difficulty level of 210 required respondents to read a newspaper article and to underline the sentence that tells what a swimmer ate during her swim (see appendix A for the full text). There was only one reference to food, and although it did not use the word "ate," it said that the swimmer "kept up her strength with banana and honey sandwiches, hot chocolate, lots of water and granola bars." The reader had to match the word "ate" in the question with the only food reference in the article.

Prose tasks in Level 2, which mapped onto the literacy scale from 226 to 274, also required the reader to locate a single piece of information in the text; however, for some tasks in this level several distractors or plausible but incorrect pieces of information were present, or lower-level inferences were required. Other tasks in this level required the integration of two or more pieces of information, or the comparison or contrast of easily identifiable information based on a criterion provided in the question or directive. For example, a Level 2 question based on the sports article mentioned above asked at what age the swimmer began to swim competitively. The second paragraph of the article provided the current age of the swimmer, 23, a plausible but incorrect answer. The correct information, age 15, could be found later in the article.

Prose literacy tasks in Level 3 were more difficult because they required the reader to perform several steps or to deal with text that contains factors that increase difficulty or inhibit the easy location of the correct answer. The reader may have had to match literal or synonymous information in the text with that which the task requests, integrate multiple pieces of information, or generate a response based on information that could easily be identified in the text. The text may have been dense, lengthy, or contained no headings or other organizational aids; distracting information may have be present, but not located near the correct information; or low-level inferences may have been required. Prose literacy tasks in Levels 4 and 5 shared many of the same factors

[2] This estimate of the proficiency distribution is partially based on information from the twelve percent of survey respondents who did not complete the assessment. Such respondents constituted 41 percent of the adults scoring in Level 1, and 8 percent of adults scoring in Level 2 on the prose scale (table 4.11). The procedures used in detecting adults with such low literacy skills that they could not be assessed and the pitfalls in estimating their literacy skills are described below and in Appendix A.

that made Level 3 tasks difficult, but in addition, required the reader to make use of background knowledge, to make higher-level inferences from incomplete information, or to make a more elaborate response. At higher levels of difficulty on the prose scales, materials generally were more complex and more distracting information was present. (Appendix A provides a more detailed description of the nature of the tasks that comprise the three literacy scales.)

Background, Educational Experiences, and Literacy Practices: Prose Literacy

Nearly half the total adult population was estimated to perform in Level 1 or 2 on the prose literacy scale, and they were a diverse group in many respects. Adults with limited schooling were more likely to perform in the lower prose literacy levels (table 4.1). Ninety-five percent of adults who did not begin high school and 80 percent who did not complete high school demonstrated prose proficiencies in Level 1 or 2. Still, limited schooling is not the only reason for performance in these low levels. Among adults in prose literacy Level 1 (see table 4.1A), those who did not complete high school still comprised 62 percent of the Level 1 cases, but only 26 percent of the level 2 cases. Thus, sizable proportions of those performing in Level 1 or 2 earned high school diplomas or continued towards more advanced schooling.

The average prose literacy performance of men and women did not differ significantly (table 4.1), and similar proportions of males and females (48 percent) performed in Level 1 or 2. Still, more men than women performed in the lowest level (22 and 20 percent, respectively).

More adults from Black and Hispanic backgrounds than from a White background performed in Level 1 or 2. Among Hispanic and African American adults, 49 percent and 38 percent, respectively, performed in Level 1 compared with 14 percent of White adults. Similarly, 75 percent of both Hispanic and African American adults performed in Level 1 or 2, compared with 39 percent of White adults (table 4.1).

While prose literacy skills are also related to employment status, many adults with relatively low literacy skills do maintain full-time employment. Among those working full time, 13 and 24 percent demonstrate proficiency in Levels 1 and 2, respectively. Performance in these levels is more characteristic of the unemployed, of whom 24 and 35 percent perform in Levels 1 and 2, respectively (table 4.1).

TABLE 4.1

Percentages at Each Level and Prose Proficiencies, by Sex, Race/Ethnicity, Education Level, Employment Status, and Literacy Practices

DEMOGRAPHIC SUBPOPULATIONS			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total Population								
Total	26,091	191,289	21 (0.4)	27 (0.6)	32 (0.7)	17 (0.4)	3 (0.2)	272 (0.6)
Sex								
Male	11,770	92,098	22 (0.6)	26 (0.9)	31 (1.2)	18 (0.5)	4 (0.3)	272 (0.9)
Female	14,279	98,901	20 (0.5)	28 (0.7)	33 (0.7)	17 (0.5)	3 (0.2)	273 (0.8)
Race/Ethnicity								
Black	4,963	21,192	38 (1.1)	37 (1.3)	21 (1.0)	4 (0.5)	0† (0.1)	237 (1.4)
White	17,292	144,968	14 (0.4)	25 (0.6)	36 (0.8)	21 (0.5)	4 (0.3)	286 (0.7)
Hispanic	3,126	18,481	49 (1.4)	26 (1.4)	19 (1.4)	6 (0.8)	1 (0.3)	215 (2.2)
Level of Education								
Still in school	973	8,268	16 (1.8)	36 (2.2)	37 (2.6)	11 (1.9)	0† (0.5)	271 (2.0)
Less than high school	2,167	18,356	75 (1.7)	20 (1.4)	4 (0.9)	0† (0.3)	0† (0.0)	177 (2.6)
Some high school	3,311	24,982	42 (1.4)	38 (1.1)	17 (1.0)	2 (0.4)	0† (0.1)	231 (1.5)
GED or high school diploma	7,169	58,514	16 (0.7)	36 (1.1)	37 (1.4)	10 (0.8)	1 (0.2)	270 (1.0)
Some college (no degree)	6,587	39,634	8 (0.5)	23 (0.8)	45 (0.9)	22 (0.8)	3 (0.3)	294 (1.0)
College degree (2 or more years)	5,820	40,941	3 (0.4)	11 (0.8)	33 (1.2)	41 (1.2)	12 (0.7)	325 (1.1)
Employment Status								
Full-time	12,466	89,723	13 (0.6)	24 (0.7)	36 (1.0)	23 (0.7)	5 (0.3)	288 (0.9)
Part-time	3,051	23,600	14 (0.8)	26 (1.5)	36 (1.8)	20 (1.3)	4 (0.5)	284 (1.4)
Unemployed	1,942	13,557	24 (1.3)	35 (1.7)	29 (2.7)	11 (1.8)	1 (0.4)	260 (2.1)
Out of work	4,207	30,386	29 (0.9)	29 (1.1)	29 (0.9)	13 (1.1)	2 (0.4)	256 (1.5)
Retired	2,527	27,921	41 (1.4)	32 (1.4)	21 (1.5)	5 (1.0)	1 (0.3)	235 (1.8)
Personal Practices								
Rarely	4,163	33,885	53 (1.3)	27 (1.2)	15 (1.0)	4 (0.6)	1 (0.2)	212 (1.9)
Weekly	10,580	81,912	18 (0.6)	30 (0.9)	33 (1.1)	16 (0.7)	3 (0.3)	275 (0.8)
Often	10,189	74,650	9 (0.5)	24 (0.9)	38 (0.9)	25 (0.6)	5 (0.4)	297 (0.8)
Job Practices								
Rarely	3,907	29,660	35 (1.0)	30 (1.3)	25 (1.2)	10 (0.8)	1 (0.2)	243 (1.4)
Weekly	5,024	38,187	15 (0.7)	30 (1.3)	35 (1.3)	17 (0.8)	3 (0.3)	280 (1.3)
Often	11,204	80,016	7 (0.4)	22 (0.6)	39 (1.1)	26 (0.8)	6 (0.4)	301 (0.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE 4.1A

Percentages of Adults at Each Prose Literacy Level, by Educational Attainment

EDUCATIONAL ATTAINMENT	PROSE LEVELS									
	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	
	CPCT	(SE)	CPCT	(SE)	CPCT	(SE)	CPCT	(SE)	CPCT	(SE)
Still in school	3	(1.5)	6	(1.9)	5	(2.0)	3	(1.4)	1	(0.6)
0 to 8 years	35	(1.6)	7	(1.3)	1	(0.7)	0	(0.3)	0	(0.0)
9 to 12 years	27	(1.3)	19	(1.0)	7	(1.0)	2	(0.4)	0	(0.3)
GED	3	(1.4)	6	(1.8)	5	(2.4)	2	(1.1)	1	(0.7)
High school	21	(0.6)	36	(1.3)	31	(1.2)	16	(1.0)	4	(1.0)
Some college (no deg)	8	(0.5)	18	(0.8)	29	(0.9)	28	(0.8)	17	(0.9)
2-year degree	1	(0.8)	3	(1.8)	5	(2.2)	7	(2.4)	4	(0.9)
4-year college deg	2	(0.6)	4	(1.1)	10	(1.2)	22	(1.3)	30	(2.5)
Graduate studies/degree	1	(0.4)	2	(0.8)	8	(1.2)	23	(1.3)	43	(3.0)

Percentages less than 0.5 were rounded to zero.

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

Extent and type of literacy activities were related to proficiency. Personal literacy practices (as defined in appendix D) were strongly associated with level of prose literacy (table 4.1); 53 percent of the people who rarely engaged in personal literacy activities performed in Level 1, compared with 9 percent of those who often engaged in these activities. Similarly, on-the-job literacy practices (as defined in appendix D) were strongly associated with level of prose literacy; 65 percent of adults who reported rarely using prose materials at work performed in Level 1 or 2, compared with 29 percent of those who often used prose materials at work.

Early familiarity with English, as one would expect, is related to prose proficiency in English. Among adults who spoke only English in the home when growing up, 43 percent performed in Level 1 or 2, while among adults who spoke only Spanish while growing up, 91 percent performed in Level 1 or 2 (table 4.2). Among adults who grew up in a home where only a language other then English and Spanish was spoken, 73 percent performed in Level 1 or 2. Those who spoke English and another language while growing up were more similar in performance to those adults who spoke only English when growing up. Among those who spoke either English and Spanish or English and another language, 57 percent and 46 percent, respectively, performed in Level 1 or 2.

TABLE 4.2

Percentages at Each Level and Average Prose Proficiencies of Adults Reporting Language in Home, Current Language and Age

DEMOGRAPHIC SUBPOPULATIONS			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Language Spoken in Home								
English only	21,242	156,620	16 (0.4)	27 (0.6)	34 (0.8)	19 (0.5)	4 (0.2)	282 (0.7)
Spanish only	1,886	10,979	71 (2.1)	20 (1.7)	7 (1.3)	2 (0.7)	0† (0.2)	178 (3.1)
Other	849	8,274	46 (2.6)	27 (2.9)	19 (1.9)	7 (1.3)	1 (0.6)	222 (3.9)
English and Spanish	789	4,406	23 (2.4)	34 (3.3)	32 (2.9)	10 (2.1)	1 (0.7)	261 (3.2)
English and other	1,308	10,722	19 (2.1)	27 (1.8)	34 (2.1)	17 (2.0)	3 (0.6)	276 (3.2)
Current Language								
English	24,513	180,996	17 (0.4)	28 (0.6)	34 (0.8)	18 (0.5)	3 (0.2)	279 (0.6)
Spanish	1,311	7,634	85 (2.2)	12 (1.7)	3 (1.1)	1 (0.3)	0† (0.3)	153 (3.8)
Other	227	2,393	75 (4.1)	17 (3.4)	7 (2.1)	1 (1.0)	0† (0.1)	174 (6.9)
Age								
16 to 18 years old	1,237	10,424	16 (1.3)	35 (1.9)	38 (2.4)	11 (1.7)	1 (0.4)	271 (1.8)
19 to 24 years old	3,344	24,515	14 (1.1)	29 (1.7)	37 (1.8)	18 (1.3)	2 (0.4)	280 (1.3)
25 to 39 years old	10,050	63,278	15 (0.5)	24 (0.7)	34 (0.8)	22 (0.8)	5 (0.4)	284 (0.9)
40 to 54 years old	6,310	43,794	15 (0.7)	23 (1.0)	34 (1.4)	22 (0.9)	5 (0.4)	288 (1.4)
55 to 64 years old	2,924	19,503	26 (1.5)	31 (1.3)	30 (1.5)	12 (1.1)	1 (0.3)	260 (1.9)
65 years old or older	2,214	29,735	44 (1.6)	32 (1.6)	19 (1.3)	5 (0.9)	1 (0.3)	230 (2.1)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

Prose proficiencies in Level 1 or 2 are prevalent among the nearly 10 percent of the population who reported that they had been born outside of the United States. Seventy-five percent of this group (see table 4.2A), or about 7.5 percent of the total population,[3] perform in Level 1 or 2 on the prose scale. These values need cautious interpretation, however, since nearly one-third of the Hispanic sample did not answer the cognitive questions and their scores were estimated.

Age of respondents was related to prose proficiency (table 4.2). Although the proportions performing in Level 1 were stable at about 15 percent for the age groups from 16 through 54, the percentage performing in Level 1 increased to 26 percent for the group aged 55 to 64 and to 44 percent for those

[3] This figure was calculated by dividing the sum of the weighted Ns of those born outside of the United States by the total population size to get 10 percent, and then multiplying that figure by the 75 percent of those born in another country or territory who perform in Level 1 or 2.

TABLE 4.2A

Percentages at Each Prose Literacy Level of Adults Reporting Country of Birth

WHERE BORN	PROSE LEVELS									
	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	
	RPCT	(SE)	RPCT	(SE)	RPCT	(SE)	RPCT	(SE)	RPCT	(SE)
In the USA	17	(0.4)	27	(0.6)	34	(0.8)	18	(0.5)	3	(0.2)
Outside the USA or in a US territyr	53	(1.4)	22	(1.1)	17	(1.3)	7	(0.7)	1	(0.4)

Rowe totale may not exactly equal 100 percent becauee of rounding.
Source: U.S. Department of Education, National Center for Education Statetice, National Adult Literacy Survey, 1992

65 or older. Older adults (that is, adults 55 and over) were over-represented in the two lowest proficiency levels. The combined proportion performing in Levels 1 and 2 was 51 percent among those aged 16 to 18. Among the subsequent age groups, the combined proportions in Levels 1 and 2 decreased or stayed the same through age 54 (43, 39, and 38 percent). Then for the group aged 55 to 64, the proportion in Level 1 or 2 was 57 percent, and for those 65 years old or older, 76 percent. While the lower proficiencies for older respondents may reflect some lowering of functioning with age, their educational attainment, along with the content and context of their educational experiences in terms of changing vocabulary and language usage, should be considered. The older age group had much more limited educational opportunities, and their parents, whose literacy activities would have had some influence on them, would have had even fewer educational opportunities.

Educational attainment across age groups varied widely. Among 16- to 19-year olds, over half (56 percent) were still in high school, 21 percent had graduated and were not currently in school, 8 percent had some college or postsecondary work underway or completed, and 15 percent had terminated their education prior to high school completion (table 4.3). Adults who did not complete high school were heavily concentrated at the two lowest prose proficiency levels (table 4.1). Dropouts among all age groups were discussed in detail in chapter 3 (see table 3.1).

Among those aged 20 to 29, 16 percent dropped out of school prior to or during high school (table 4.3), and again, adults who did not complete high school were concentrated in proficiency Levels 1 and 2 (table 4.1). Thirty-eight percent of this age group had completed high school and were not currently in

TABLE 4.3

Percentages of Adults at Each Age Group Reporting Education Level

AGE			EDUCATION LEVEL					
			Still in high school	0 to 8 years	9 to 12 years	GED/High school	Some postsecondary	College graduate
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)
16 to 19 year olds	1,728	14,310	58 (1.4)	3 (0.5)	12 (1.0)	21 (1.0)	8 (0.7)	0† (0.1)
20 to 29 year olds	6,132	41,229	0† (0.1)	3 (0.3)	13 (0.5)	38 (0.7)	27 (0.6)	19 (0.7)
30 to 39 year olds	6,731	42,376	0† (0.0)	5 (0.4)	11 (0.5)	31 (0.7)	24 (0.6)	29 (0.6)
40 to 49 year olds	4,681	32,376	0† (0.1)	6 (0.5)	9 (0.6)	29 (1.0)	23 (0.9)	33 (0.7)
50 to 59 year olds	3,039	21,109	0† (0.0)	12 (0.9)	13 (0.8)	33 (0.9)	19 (0.8)	23 (0.9)
60 to 69 year olds	2,262	20,043	0† (0.2)	19 (1.1)	19 (1.2)	29 (1.2)	16 (0.7)	17 (0.9)
70 years or older	1,443	19,220	0† (0.1)	31 (1.3)	19 (1.4)	24 (1.2)	14 (1.0)	12 (0.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

school, 27 had some postsecondary education, and 19 percent had completed college.

The group aged 30 to 39 is the largest numerically of the decade groups. Sixteen percent of this group left school prior to completing high school (table 4.3). Thirty-one percent had completed high school, 24 percent had some postsecondary work, and 29 percent had completed college. Among respondents aged 40 to 49, 15 percent had not completed high school, 29 percent were high school graduates, 23 percent had some postsecondary education, and one-third had college degrees. Among those aged 50 to 59, 25 percent reported that they had not completed high school. One-third had completed high school, 19 percent had some postsecondary education, and 23 percent had completed college. Among the group aged 60 to 69, 38 percent had not completed high school. High school graduates or GED holders make up 29 percent of this age group, along with 16 percent who have some postsecondary education, and 17 percent who completed college. Educational distributions for the group aged 70 or older reflect the lesser educational opportunities available to them in their earlier years. Half had not completed high school, 24 percent were high school graduates or GED holders, 14 percent had some postsecondary education, and 12 percent were college graduates.

Where adults learned to use printed and written text is related to their prose literacy skills. Most respondents learned to read books and to write letters in school. Among adults who learned to read books either in school or at home, 47 percent performed in Level 1 or 2 on the prose scale, compared with 64 percent of those who learned this at work (table 4.4). Among adults who learned to write letters in school, 45 percent performed in Level 1 or 2,

TABLE 4.4

Percentages at Each Level and Average Prose Proficiencies of Adults Reporting Where They Learned Various Skills

WHERE LEARNED BY SKILL			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Read books								
In school	15,103	114,780	19 (0.5)	28 (0.7)	33 (0.8)	17 (0.6)	3 (0.3)	275 (0.7)
At home	9,245	71,149	21 (0.6)	26 (0.9)	31 (0.9)	18 (0.8)	3 (0.3)	273 (1.1)
At work	307	2,333	41 (4.7)	23 (4.6)	27 (4.7)	8 (2.4)	1 (0.6)	239 (5.7)
Did not learn	217	1,605	98 (2.1)	2 (2.1)	1 (0.3)	0† (0.0)	0† (0.0)	108 (6.1)
Other	38	313	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Read graphs								
In school	19,996	149,609	15 (0.3)	27 (0.7)	35 (0.8)	20 (0.5)	4 (0.3)	282 (0.6)
At home	2,239	18,480	30 (1.4)	31 (1.5)	27 (1.6)	11 (1.0)	2 (0.4)	253 (2.2)
At work	1,387	11,470	24 (2.2)	29 (2.5)	33 (2.2)	13 (1.1)	2 (0.4)	265 (2.1)
Did not learn	1,097	8,826	75 (1.9)	19 (2.2)	6 (1.1)	0† (0.7)	0† (0.1)	173 (3.5)
Other	184	1,728	61 (4.6)	21 (3.4)	13 (4.3)	4 (1.6)	0† (1.3)	205 (5.3)
Fill out forms								
In school	15,283	114,133	17 (0.4)	28 (0.7)	34 (0.8)	18 (0.7)	4 (0.3)	280 (0.8)
At home	4,715	36,733	26 (0.9)	27 (1.1)	29 (1.4)	16 (1.0)	3 (0.3)	265 (1.6)
At work	4,121	32,751	18 (1.0)	27 (1.1)	34 (1.5)	18 (0.8)	3 (0.6)	278 (1.5)
Did not learn	599	5,103	85 (2.3)	11 (2.3)	4 (1.3)	1 (0.6)	0† (0.2)	148 (5.0)
Other	187	1,487	41 (6.5)	28 (4.7)	18 (3.4)	12 (3.2)	1 (2.6)	237 (9.7)
Write letters								
In school	18,235	137,491	17 (0.3)	28 (0.6)	34 (0.9)	18 (0.6)	3 (0.3)	278 (0.6)
At home	3,665	29,550	33 (1.4)	27 (1.3)	25 (1.2)	12 (0.9)	2 (0.2)	251 (1.9)
At work	2,520	19,301	12 (1.1)	21 (1.3)	36 (1.9)	26 (1.5)	6 (0.7)	295 (1.8)
Did not learn	393	3,148	86 (2.6)	10 (2.4)	3 (1.7)	1 (0.6)	0† (0.3)	142 (4.9)
Other	86	715	60 (7.7)	23 (7.5)	12 (5.1)	5 (2.0)	0† (0.4)	202 (11.1)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

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

compared with 60 percent of those who learned this at home and 33 percent of those who learned at work. The preponderance of the very small proportion of adults who reported that they had not yet learned to read books (about 1 percent) or to write letters (less than 2 percent) performed in Level 1 (98 and 86 percent, respectively). Again, it should be noted that Level 1, unlike the other four levels, includes adults who are unable to perform successfully the requirements of the prose tasks in this level.

The Meaning of Document Literacy Proficiency for Levels 1 and 2

The meaning of proficiency in document literacy Levels 1 and 2 can be understood by examining the tasks that map onto these levels on the document literacy scale. Survey evidence showed that 49 percent of the total adult population performed above Level 2 on the document literacy scale, 28 percent of the total adult population performed in Level 2, and the remainder in Level 1 (table 4.5). Some adults at the low end of Level 1 were unable to succeed consistently even with the simplest of literacy tasks — 2 percent of all adults (4.7 million) failed to answer correctly a single document literacy task (see appendix tables A.2 and A.5D).[4]

The literacy tasks in Level 1, which map onto the document literacy scale between 69 and 224, require the respondent 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. For example, in one task, readers were asked to complete a section of a job application by providing several pieces of information. Respondents had to conduct a series of one-feature matches, rather than a single match, so the difficulty of this task (218) was near the high end of Level 1.

Document literacy tasks in Level 2, which map on the scale from 228 to 275, may require the reader to match on two pieces of information in the document or to integrate information from different parts of the document by looking for similarities or differences. For example, a task with difficulty of 268 asked 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 (graph shown in appendix A).

[4] This estimate of the proficiency distribution is partially based on information from the 12 percent of survey respondents who did not complete the assessment. Such respondents constituted 38 percent of the adults scoring in Level 1, and 7 percent of adults scoring in Level 2 on the document literacy scale (table B4.3D).

Document literacy tasks in Level 3 are more difficult because they require the reader to integrate multiple pieces of information from one or more documents, to cycle through rather complex tables or graphs that contain information that is irrelevant or inappropriate to the task, or to make low-level inferences. For tasks at higher levels of difficulty on the document scale, materials generally are more complex, there is more distracting information, a greater degree of inferencing or specialized knowledge is required, or multiple, but an unspecified number of responses, are needed.

Background, Educational Experiences, and Literacy Practices: Document Literacy

The population distribution on the document literacy scale is similar to that on the prose literacy scale (table 4.5). Around half the total population in the United States demonstrated proficiency in Level 1 or 2 on the document literacy scale. Level of education is strongly associated with document literacy performance. Among those with less than a high school education, 97 percent performed in Level 1 or 2, and among those who attended but did not complete high school, 83 percent performed in Level 1 or 2. Thus, when one considers the population proportions that did not attend or complete high school, 89 percent[5] are estimated to perform in Level 1 or 2.

On average, men performed somewhat better than women on the document literacy scale (table 4.5). The proportion of men in Level 1 or 2 (50 percent) was slightly lower than the proportion of women in the two lower levels (53 percent).

More adults from Black and Hispanic backgrounds than from a White background performed in Level 1 or 2. Among Hispanic and African American adults, 50 percent and 43 percent, respectively, performed in Level 1 compared with 16 percent of White adults. Similarly, among Hispanic and African American adults, 76 and 79 percent, respectively, performed in Level 1 or 2 compared with 43 percent of White adults (table 4.5).

While document literacy skills are related to employment status, many adults with relatively low document literacy skills do maintain full-time employment. Among those working full-time, 40 percent demonstrated document proficiency in Level 1 or 2 — 14 and 26 percent, respectively (table

[5] This percentage was calculated using data in table 4.5. The weighted Ns performing in Levels 1 and 2 for the two education levels were calculated by multiplying the weighted N for each education level by the percentages performing in Levels 1 and 2. The sum of these weighted Ns was divided by the sum of the weighted N for the two education levels.

TABLE 4.5

Percentages at Each Level and Document Proficiencies, by Sex, Race/Ethnicity, Education Level, Employment Status, and Literacy Practices

DEMOGRAPHIC SUBPOPULATIONS			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total Population								
Total	26,091	191,269	23 (0.4)	28 (0.5)	31 (0.5)	15 (0.4)	3 (0.2)	267 (0.7)
Sex								
Male	11,770	92,098	23 (0.6)	27 (0.5)	31 (0.8)	17 (0.5)	3 (0.2)	269 (0.9)
Female	14,279	98,901	23 (0.6)	30 (0.7)	31 (0.6)	14 (0.5)	2 (0.2)	265 (0.9)
Race/Ethnicity								
Black	4,963	21,192	43 (1.0)	36 (1.2)	18 (0.9)	3 (0.4)	0† (0.1)	230 (1.2)
White	17,292	144,968	16 (0.5)	27 (0.6)	34 (0.7)	19 (0.5)	3 (0.2)	280 (0.8)
Hispanic	3,126	18,481	50 (1.7)	26 (1.6)	18 (1.4)	5 (0.8)	1 (0.3)	213 (2.5)
Level of Education								
Still in school	973	8,268	15 (1.5)	35 (2.3)	38 (2.6)	12 (1.5)	1 (0.6)	274 (1.9)
Less than high school	2,167	18,356	79 (1.7)	18 (1.6)	3 (0.8)	0† (0.1)	0† (0.0)	170 (2.4)
Some high school	3,311	24,982	46 (1.7)	37 (1.6)	15 (1.3)	2 (0.4)	0† (0.1)	227 (1.6)
GED or high school diploma	7,169	58,514	19 (0.8)	38 (0.9)	33 (1.0)	9 (0.5)	0† (0.2)	264 (1.0)
Some college (no degree)	6,587	39,634	9 (0.4)	27 (0.8)	42 (1.0)	20 (0.8)	2 (0.4)	290 (0.9)
College degree (2 or more years)	5,820	40,941	4 (0.5)	14 (0.8)	37 (0.8)	36 (1.2)	9 (0.8)	316 (0.9)
Employment Status								
Full-time	12,466	89,723	14 (0.7)	26 (0.6)	35 (0.7)	21 (0.7)	4 (0.3)	284 (0.9)
Part-time	3,051	23,600	17 (0.9)	29 (1.3)	34 (1.7)	17 (1.0)	3 (0.4)	277 (1.3)
Unemployed	1,942	13,557	26 (1.2)	34 (1.7)	29 (1.6)	9 (1.1)	1 (0.4)	257 (1.7)
Out of work	4,207	30,386	31 (0.9)	28 (1.0)	28 (1.2)	11 (1.1)	1 (0.2)	251 (1.5)
Retired	2,527	27,921	48 (1.7)	33 (1.6)	16 (1.1)	3 (0.6)	0† (0.2)	223 (2.1)
Personal Practices								
Rarely	4,163	33,885	56 (1.4)	26 (1.3)	14 (0.8)	4 (0.6)	0† (0.2)	207 (2.0)
Weekly	10,580	81,912	21 (0.6)	31 (0.7)	32 (0.9)	14 (0.6)	2 (0.3)	270 (0.8)
Often	10,189	74,650	10 (0.7)	26 (0.6)	37 (0.7)	22 (0.6)	4 (0.4)	291 (0.8)
Job Practices								
Rarely	3,907	29,660	36 (1.1)	30 (1.4)	25 (1.6)	8 (0.6)	1 (0.2)	239 (1.4)
Weekly	5,024	38,187	17 (0.9)	32 (1.0)	34 (0.9)	16 (0.8)	2 (0.4)	275 (1.3)
Often	11,204	80,016	8 (0.4)	25 (0.6)	39 (0.7)	24 (0.7)	5 (0.5)	296 (0.8)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

4.5). Performance in these levels was more prevalent among the unemployed. For comparison, 60 percent of unemployed respondents performed in Level 1 or 2 — 26 and 34 percent, respectively.

Extent and type of literacy practices were related to document proficiency. Personal literacy practices were strongly associated with level of document literacy (table 4.5). Among those who rarely read books, magazines and related materials for personal use, 56 percent performed in Level 1, while among those often reading such materials, 10 percent performed in Level 1. This relationship was stronger when these literacy activities are pursued for personal use than when they are carried out in the workplace. The results for job literacy practices found that among those rarely using written materials on the job, 36 percent demonstrated document literacy in Level l, while among those often using written materials on the job, 8 percent performed in Level 1.

Where adults learned to use document information is related to their document literacy skills (table 4.6). Most adults learned to read graphs and fill out forms at school. Among those who learned to read graphs at school, 46 percent performed in Level 1 or 2 on the document scale, compared with 58 percent of those who learned to read them at work and 65 percent of those who learned at home. Among adults who learned to fill out forms either at school or at work, 48 percent performed in Level 1 or 2, compared with 56 percent of those who learned to fill out forms at home. Most adults learned to write letters at school. Among those who learned to write letters at home, 65 percent performed in Level 1 or 2 on the document literacy scale, compared with 50 percent of those who learned this skill in school and 37 percent of those who learned it at work. This difference in favor of learning this skill at work may reflect the writing of formal business letters by those in a white-collar job setting.

More than three-quarters of the small proportions of the adult population who had not yet learned to read graphs (about 5 percent), to fill out forms (about 3 percent), or to write letters (about 2 percent) performed in Level 1 on the document literacy scale (78, 86, and 87 percent, respectively). Level 1, unlike the other four levels, includes adults who are unable to perform successfully the requirements of the document literacy tasks in this level.

The Meaning of Quantitative Literacy Proficiency for Levels 1 and 2

Understanding the requirement of quantitative literacy tasks in Levels 1 and 2 helps to illustrate the meaning of proficiency on the quantitative literacy scale. Survey evidence showed that 52 percent of the total adult population

TABLE 4.6

Percentages at Each Level and Average Document Proficiencies of Adults Reporting Where They Learned Various Skills

WHERE LEARNED BY SKILL			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Read books								
In school	15,103	114,780	21 (0.5)	29 (0.7)	32 (0.6)	16 (0.5)	3 (0.2)	270 (0.7)
At home	9,245	71,149	24 (0.8)	28 (0.7)	30 (0.9)	16 (0.6)	3 (0.2)	266 (1.2)
At work	307	2,333	43 (4.1)	26 (4.3)	24 (3.4)	6 (2.0)	0† (0.3)	235 (5.2)
Did not learn	217	1,605	95 (3.2)	4 (2.6)	1 (2.0)	0† (0.0)	0† (0.0)	121 (5.9)
Other	38	313	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Read graphs								
In school	19,996	149,609	18 (0.5)	28 (0.7)	33 (0.6)	18 (0.4)	3 (0.2)	277 (0.6)
At home	2,239	18,480	35 (1.7)	30 (1.3)	24 (1.6)	9 (1.0)	1 (0.4)	246 (2.3)
At work	1,387	11,470	25 (1.8)	33 (2.0)	30 (2.1)	11 (1.3)	1 (0.4)	259 (2.0)
Did not learn	1,097	8,826	78 (2.1)	18 (2.8)	3 (1.2)	0† (0.4)	0† (0.1)	166 (3.3)
Other	184	1,728	66 (4.8)	21 (4.2)	11 (2.6)	3 (1.5)	0† (0.0)	199 (5.1)
Fill out forms								
In school	15,283	114,133	19 (0.5)	29 (0.5)	33 (0.6)	16 (0.5)	3 (0.3)	274 (0.8)
At home	4,715	36,733	29 (1.3)	27 (1.4)	28 (1.2)	14 (0.8)	2 (0.4)	259 (1.8)
At work	4,121	32,751	20 (0.9)	28 (1.2)	33 (1.5)	16 (0.9)	3 (0.4)	272 (1.1)
Did not learn	599	5,103	86 (2.1)	10 (2.5)	3 (1.4)	1 (0.5)	0† (0.2)	146 (4.4)
Other	187	1,487	46 (6.1)	24 (4.2)	17 (4.8)	10 (3.3)	2 (1.5)	227 (11.6)
Write letters								
In school	18,235	137,491	20 (0.4)	30 (0.6)	32 (0.5)	16 (0.5)	3 (0.2)	272 (0.8)
At home	3,665	29,550	38 (1.4)	27 (1.5)	23 (1.2)	11 (0.7)	2 (0.3)	243 (1.9)
At work	2,520	19,301	13 (1.1)	24 (1.2)	35 (1.3)	23 (1.2)	4 (0.5)	289 (1.9)
Did not learn	393	3,148	87 (2.7)	10 (2.5)	3 (1.5)	1 (0.6)	0† (0.2)	142 (5.2)
Other	86	715	62 (8.3)	14 (5.1)	18 (6.4)	5 (2.4)	1 (0.7)	202 (12.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

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

performed above Level 2 on the quantitative literacy scale, 25 percent of the total adult population performed in Level 2, and the remainder in Level 1 (table 4.7). Some adults performed below the level of the easiest quantitative literacy tasks and were unable to succeed with any literacy task. An estimated 6

percent of all adults (10.6 million) failed to answer correctly a single quantitative literacy task (see appendix tables A.2 and A.5Q).[6]

The literacy tasks in Level 1, which mapped onto the quantitative literacy scale between 191 and 220, required the respondent to locate easily identifiable numbers and perform a single operation, such as addition, when the operation is made explicit. For example, the least demanding task on the quantitative scale (191) required the reader to total two numbers that had already been entered on a bank deposit slip. In this task, both the numbers and the arithmetic operation were easily identifiable and the addition was already set up in column format.

Quantitative literacy tasks in Level 2, which mapped onto the scale from 238 to 270, required the reader to perform a single operation using numbers that were either stated in the task or easily located in the document. The operation to be performed was stated in the question or easily determined from the format of the material. For example, one task near the high end of Level 2 (270) required the reader to use a table on an order form for office supplies 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 literacy tasks in Level 3 were more difficult because they required the reader to work with two or more numbers found in the document and to determine the needed operation from the language used to describe the arithmetic relationships. For tasks at higher levels of difficulty on the quantitative scale, materials generally were more complex, there was more distracting information, the operations consisted of a longer sequence of steps, features of the problem had to be disembedded from the text, or background knowledge was required to determine the quantities or operations needed.

Background, Educational Experiences, and Literacy Practices: Quantitative Literacy

Nearly half of the total U.S. population demonstrated quantitative proficiencies in Level 1 or 2 (table 4.7). Level of education is again strongly related to quantitative literacy, as it was for prose and document literacy. Among those whose schooling ended prior to high school, 94 percent demonstrated

[6] This estimate of the proficiency distribution is partially based on information from the 12 percent of survey respondents who did not complete the assessment. Such respondents constituted 39 percent of the adults scoring in Level 1, and 7 percent of adults scoring in Level 2 on the quantitative literacy scale (table B4.3Q).

TABLE 4.7

Percentages at Each Level and Quantitative Proficiencies, by Sex, Race/Ethnicity Education Level, Employment Status, and Literacy Practices

DEMOGRAPHIC SUBPOPULATIONS			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total Population								
Total	26,091	191,269	22 (0.5)	25 (0.6)	31 (0.6)	17 (0.3)	4 (0.2)	271 (0.7)
Sex								
Male	11,770	92,098	21 (0.7)	23 (0.5)	31 (0.6)	20 (0.4)	5 (0.3)	277 (0.9)
Female	14,279	98,901	23 (0.5)	28 (0.9)	31 (1.0)	15 (0.6)	3 (0.3)	266 (0.9)
Race/Ethnicity								
Black	4,963	21,192	46 (1.0)	34 (1.1)	17 (1.0)	3 (0.4)	0† (0.1)	224 (1.4)
White	17,292	144,968	14 (0.5)	24 (0.6)	35 (0.7)	21 (0.4)	5 (0.2)	287 (0.8)
Hispanic	3,126	18,481	50 (1.3)	25 (1.3)	19 (1.3)	5 (1.1)	1 (0.2)	212 (2.5)
Level of Education								
Still in school	973	8,268	19 (1.7)	35 (3.0)	32 (2.3)	12 (2.0)	1 (0.9)	269 (2.2)
Less than high school	2,167	18,356	76 (2.0)	18 (1.8)	5 (1.1)	1 (0.3)	0† (0.2)	169 (3.1)
Some high school	3,311	24,982	45 (1.6)	34 (1.6)	17 (1.3)	3 (0.6)	0† (0.1)	227 (1.7)
GED or high school diploma	7,169	58,514	18 (0.7)	34 (1.1)	36 (1.0)	11 (0.5)	1 (0.2)	270 (1.0)
Some college (no degree)	6,587	39,634	8 (0.6)	23 (1.2)	42 (1.4)	23 (1.3)	4 (0.4)	295 (1.4)
College degree (2 or more years)	5,820	40,941	3 (0.3)	12 (0.6)	34 (1.0)	38 (1.0)	13 (0.7)	324 (1.0)
Employment Status								
Full-time	12,466	89,723	13 (0.6)	23 (0.9)	35 (1.1)	23 (0.6)	6 (0.3)	290 (0.9)
Part-time	3,051	23,600	15 (1.1)	27 (1.3)	36 (1.6)	18 (1.3)	3 (0.5)	280 (1.5)
Unemployed	1,942	13,557	28 (1.5)	32 (1.8)	28 (2.0)	10 (1.3)	2 (0.4)	256 (1.9)
Out of work	4,207	30,386	33 (1.1)	27 (1.3)	26 (1.2)	12 (1.2)	2 (0.4)	249 (1.6)
Retired	2,527	27,921	42 (1.6)	27 (1.3)	22 (1.1)	8 (0.7)	1 (0.4)	233 (2.7)
Personal Practices								
Rarely	4,163	33,885	55 (1.4)	24 (1.1)	15 (0.8)	4 (0.6)	1 (0.2)	205 (2.1)
Weekly	10,580	81,912	19 (0.7)	28 (0.7)	33 (0.8)	16 (0.5)	3 (0.3)	275 (0.8)
Often	10,189	74,650	10 (0.5)	22 (1.1)	37 (1.0)	25 (0.6)	6 (0.3)	297 (0.9)
Job Practices								
Rarely	3,907	29,660	37 (1.0)	29 (1.0)	25 (1.0)	9 (0.7)	1 (0.2)	239 (1.4)
Weekly	5,024	38,187	16 (1.0)	29 (1.2)	34 (1.2)	17 (1.0)	3 (0.4)	279 (1.3)
Often	11,204	80,016	7 (0.4)	21 (0.8)	38 (0.9)	26 (0.6)	7 (0.4)	303 (0.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

quantitative proficiency in Level 1 or 2. Those who began but did not complete high school demonstrate somewhat better quantitative proficiency, with 79 percent performing in Level 1 or 2. Thus, among those who were old enough, but did not complete high school, 85 percent performed in Level 1 or 2 on the quantitative literacy scale.[7]

On average, men performed somewhat better than women on the quantitative literacy scale (table 4.7). The proportion of men in Level 1 or 2 (44 percent) was lower than the proportion of women in the two lower levels (51 percent).

More adults from Black and Hispanic backgrounds than from a White background performed in Level 1 or 2. Among Hispanic and African American adults, 50 percent and 46 percent, respectively, performed in Level 1 compared with 14 percent of White adults. Similarly, among Hispanic and African American adults, 75 and 80 percent, respectively, performed in Level 1 or 2 compared with 38 percent of White adults (table 4.7).

Quantitative literacy skills are related to employment status. Among adults working full-time, 36 percent demonstrated document proficiency in Level 1 or 2 — 13 and 23 percent, respectively (table 4.7). Performance in these lower levels was found more often among the unemployed; 60 percent of unemployed respondents performed in Level 1 or 2 — 28 and 32 percent, respectively.

Again, the extent and type of literacy practices were related to quantitative literacy. Relatively few respondents (15 percent) reported rarely reading books, magazines and related materials for personal use, but among those who did, 79 percent performed in Level 1 or 2. By comparison, among those often reading such materials, 32 percent performed in the lower levels.

Similar results were found for job literacy practices. Few respondents (18 percent) reported rarely practicing literacy activities in the workplace, but among those who did, 66 percent demonstrated quantitative literacy in Levels l or 2, while among those who practiced literacy skills often on the job, 28 percent performed in these levels. In the case of quantitative literacy, personal literacy practices showed a stronger relationship than did job literacy practices.

Language background, as shown in language spoken in the home while growing up and language currently spoken, is related to quantitative literacy (table 4.8). Among adults who spoke only English at home when growing up, 43 percent performed in Level 1 or 2, while among adults who spoke only Spanish while growing up, 88 percent performed in the lower levels; and

[7] This percentage was calculated using data in table 4.7. The weighted Ns performing in Levels 1 and 2 for the two education levels were calculated by multiplying the weighted N for each education level by the percentages performing in Levels 1 and 2. The sum of these weighted Ns was divided by the sum of the weighted N for the two education levels.

TABLE 4.8

Percentages at Each Level and Average Quantitative Proficiencies of Adults Reporting Language in Home, Current Language and Age

DEMOGRAPHIC SUBPOPULATIONS			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Language Spoken in Home								
English only	21,242	156,620	18 (0.6)	25 (0.6)	33 (0.7)	19 (0.4)	4 (0.2)	280 (0.8)
Spanish only	1,886	10,979	68 (1.9)	20 (1.9)	10 (1.2)	2 (1.0)	0† (0.3)	177 (3.4)
Other	849	8,274	41 (2.2)	26 (2.1)	21 (2.1)	9 (1.3)	2 (0.8)	232 (4.2)
English and Spanish	789	4,406	28 (2.5)	31 (2.4)	29 (3.1)	9 (2.2)	2 (0.9)	257 (3.8)
English and other	1,308	10,722	21 (2.2)	25 (1.9)	32 (2.3)	18 (1.7)	3 (0.9)	273 (3.8)
Current Language								
English	24,513	180,996	19 (0.5)	26 (0.6)	33 (0.6)	18 (0.3)	4 (0.2)	277 (0.8)
Spanish	1,311	7,634	81 (2.2)	13 (2.0)	4 (1.0)	1 (0.5)	0† (0.3)	150 (3.9)
Other	227	2,393	63 (3.5)	19 (3.8)	12 (3.2)	5 (2.6)	1 (1.1)	194 (8.4)
Age								
16 to 18 years old	1,237	10,424	20 (1.7)	35 (2.6)	33 (1.9)	12 (1.5)	1 (0.5)	268 (1.8)
19 to 24 years old	3,344	24,515	16 (1.1)	28 (1.4)	37 (1.4)	16 (1.0)	2 (0.5)	277 (1.6)
25 to 39 years old	10,050	63,278	17 (0.6)	23 (0.7)	33 (0.6)	21 (0.6)	5 (0.4)	283 (0.9)
40 to 54 years old	6,310	43,794	16 (0.9)	22 (1.0)	33 (1.1)	23 (1.1)	6 (0.4)	286 (1.2)
55 to 64 years old	2,924	19,503	25 (1.5)	30 (1.9)	30 (1.6)	13 (1.2)	2 (0.6)	261 (2.0)
65 years old or older	2,214	29,735	45 (1.6)	26 (1.2)	20 (1.2)	7 (0.7)	2 (0.4)	227 (2.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

among those who spoke both English and Spanish while growing up, 59 percent performed in those levels. Among those currently speaking English, 19 percent perform in Level 1, while among those currently speaking Spanish, 81 percent perform in Level 1.

Age of respondents was related to quantitative literacy (table 4.8), but not in the regularly increasing way of the other two scales. The proportions of adults in Level 1 were similar for the age groups ranging from 16 to 18 years of age to 40 to 54 years of age — 20 percent or less. Among adults aged 55 to 64, however, 25 percent performed in Level 1, and among adults aged 64 or older, 45 percent performed in Level 1. Older adults were also over-represented in the two lowest proficiency levels. The combined proportion performing in Levels 1 and 2 was 55 percent among the 16- to 18-year olds. Among the subsequent age groups, the combined proportions in Levels 1 and 2 decreased or stayed the same through age 54 (44, 40, and 38 percent). Then for the 55- to

64-year-old group, the combined proportion in Levels 1 and 2 was 55 percent, and for those 65 years old or older, 71 percent.

Where adults learned to read graphs and fill out forms is related to their quantitative literacy (table 4.9). Most adults learned to read graphs and fill out forms in school. Among those who learned to read graphs in school, 17 percent performed in Level 1 on the quantitative scale, compared with 22 percent of

TABLE 4.9

Percentages at Each Level and Average Quantitative Proficiencies of Adults Reporting Where They Learned Various Skills

WHERE LEARNED BY SKILL			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Read books								
In school	15,103	114,780	20 (0.5)	26 (0.5)	32 (0.6)	18 (0.4)	4 (0.2)	275 (0.7)
At home	9,245	71,149	23 (0.8)	25 (1.0)	31 (0.9)	18 (0.6)	4 (0.4)	271 (1.3)
At work	307	2,333	38 (4.4)	25 (4.4)	25 (4.7)	11 (4.9)	1 (1.6)	246 (5.5)
Did not learn	217	1,605	97 (2.3)	2 (2.3)	0† (0.2)	0† (0.3)	0† (0.0)	89 (6.2)
Other	38	313	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Read graphs								
In school	19,996	149,609	17 (0.4)	25 (0.5)	33 (0.6)	20 (0.4)	5 (0.2)	281 (0.6)
At home	2,239	18,480	31 (1.5)	28 (1.5)	28 (1.4)	11 (1.0)	2 (0.6)	252 (2.2)
At work	1,387	11,470	22 (1.7)	28 (1.7)	32 (2.4)	16 (2.2)	2 (0.7)	270 (2.2)
Did not learn	1,097	8,826	77 (1.7)	17 (1.4)	6 (1.3)	0† (0.2)	0† (0.1)	161 (3.5)
Other	184	1,728	61 (5.7)	20 (3.7)	14 (3.5)	4 (1.5)	1 (1.3)	201 (8.5)
Fill out forms								
In school	15,283	114,133	18 (0.5)	26 (0.6)	33 (0.7)	18 (0.6)	4 (0.3)	278 (0.7)
At home	4,715	36,733	27 (1.2)	25 (1.3)	29 (1.2)	15 (0.9)	3 (0.6)	263 (1.7)
At work	4,121	32,751	18 (0.9)	24 (1.2)	33 (1.2)	20 (1.0)	5 (0.6)	281 (1.3)
Did not learn	599	5,103	67 (1.7)	8 (1.3)	4 (1.2)	1 (0.5)	0† (0.2)	132 (5.1)
Other	187	1,487	36 (7.9)	19 (4.4)	25 (6.8)	14 (3.8)	6 (2.4)	252 (12.4)
Write letters								
In school	18,235	137,491	19 (0.5)	27 (0.6)	33 (0.7)	18 (0.5)	4 (0.2)	276 (0.7)
At home	3,665	29,550	35 (1.4)	25 (1.3)	26 (1.6)	12 (0.9)	2 (0.3)	246 (2.0)
At work	2,520	19,301	11 (1.2)	19 (1.1)	36 (1.3)	27 (1.1)	8 (0.9)	300 (1.7)
Did not learn	393	3,148	88 (2.5)	8 (2.6)	3 (1.6)	1 (0.8)	0† (0.4)	127 (4.4)
Other	86	715	51 (9.2)	20 (9.4)	23 (9.3)	5 (3.8)	1 (0.9)	216 (13.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

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

those who learned graphs at work and 31 percent of those who learned to read them at home. Among adults who learned to fill out forms either at school or at work, 18 percent performed in Level 1 on the quantitative scale, compared with 27 percent of those who learned to fill out forms at home. Again, it should be noted that age could be a factor here, since those who are more likely to have had less schooling and to have learned these skills at home are also more likely to be in the higher age groups.

Assignment of Proficiency Scores to Nonrespondents

Some adults in Level 1 have skills that are too low to be tested. It would be misleading to limit reporting of skills for the nation to that part of the population that is literate enough to be assessed. In spite of inevitable inaccuracies in placement, those who did not complete the assessment, but who, from available information, were believed to have such low skills were included at the low end of the literacy scales. In this way, the assessment would reflect the full range of literacy skills of all adults. The procedures used in estimating proficiencies of adults with such low literacy skills that they could not be assessed and the pitfalls in this estimation of their literacy skills are described here. (See appendix A of this report and the *Technical Report and Data File User's Guide for the National Adult Literacy Survey* for further discussion of the methods used.)

The methods used in the National Adult Literacy Survey relied primarily on interviewers to report the reasons for nonresponse to the assessment. Different procedures were used to fill in missing data, depending on whether the reason reported for not completing the assessment was literacy related or not. If the reason for nonresponse was thought to be literacy related, missing data were treated as wrong answers, and proficiency scores at the low end of Level 1 were assigned. The methods for the assignment of literacy scores for nonrespondents may set some limits on interpretations of these data, especially among groups in which large proportions of scores were assigned.

The estimation problem is further complicated by the fact that the values being estimated are at the extreme of the lower end of the continuum of proficiency. There is no real "zero point" of literacy, and assessment questions that tap performance at very low levels are sparse. Thus, if an individual is not able or willing to answer the easiest of the tasks posed, it is difficult to know if the person might have been more responsive to a simpler task, had one been provided.

The assessment consisted of two parts — a background questionnaire that asked questions about the characteristics of the respondent and a cognitive

section that presented prose, document, and quantitative literacy tasks. Among the sample of 26,091 individuals participating in the survey, 2,994 completed fewer than five items per scale, and most of those completed two or fewer items, although they had answered the background demographic and descriptive questions. This group represents 12 percent of the U.S. adult population (the total of which is estimated to be 191,289,000). About half (5.7 percent) of these individuals indicated to the interviewer that they had a reading or language difficulty or a mental or learning disability, or the interviewer obtained this information from another household member or from observation; thus, these individuals are referred to as literacy-related nonrespondents. The other half were recorded by interviewers as either refusing or having a physical disability, but not as having reading or mental difficulty as the basis for their non-response; they are referred to as non-literacy-related nonrespondents.

When the literacy-related nonrespondents (referred to as literacy-related incomplete in table 4.10) are broken down into racial/ethnic groups, they represent 2 percent of the White population, 8 percent of the African

TABLE 4.10

Percentages of Adults in Racial/Ethnic Groups by Completion of Literacy Tasks

RACE/ETHNICITY			COMPLETION OF LITERACY TASKS		
			Complete	Literacy related incomplete	Non-literacy related incomplete
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Race/Ethnicity					
Total	25,381	184,641	88 (0.4)	5 (0.2)	6 (0.3)
Black	4,963	21,192	84 (0.8)	8 (0.6)	8 (0.6)
White	17,292	144,968	91 (0.4)	2 (0.2)	6 (0.4)
Hispanic	3,126	18,481	68 (1.6)	27 (1.5)	5 (0.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

American population, and 27 percent of the Hispanic population. Furthermore, they represent 16, 21, and 54 percent of the White, African American, and Hispanic population, respectively, performing in Level 1 on the prose scale (table 4.11).[8] The proportions of non-literacy-related nonrespondents are much more similar across racial/ethnic groups. They represent 6 percent of the White population, 8 percent of the African American population, and 5 percent of the Hispanic population.

Proficiency scores for all survey respondents have been estimated using both their actual responses to the cognitive and background survey questions and the average scores of other respondents with background characteristics similar to any given respondent. This procedure is required because each

TABLE 4.11

Percentages at Each Level and Average Prose Proficiencies of Respondents and Non-Respondents, by Race/Ethnicity

RACE/ETHNICITY/ COMPLETION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (#,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Total Population								
Complete	22,504	162,701	60 (0.4)	92 (0.8)	98 (0.6)	98 (0.5)	99 (0.4)	285 (0.6)
Literacy related incomplete	1,469	9,944	27 (0.4)	0† (0.2)	0† (0.2)	0† (0.0)	0† (0.0)	126 (1.6)
Non-literacy related incomplete	1,408	11,996	14 (2.1)	8 (1.6)	4 (1.3)	2 (1.0)	1 (0.5)	237 (2.9)
Black								
Complete	4,232	17,757	66 (1.0)	94 (1.4)	96 (1.3)	97 (2.1)	*** (****)	250 (1.3)
Literacy related incomplete	341	1,677	21 (0.7)	0† (0.6)	0† (0.1)	0† (0.0)	*** (****)	129 (3.7)
Non-literacy related incomplete	390	1,759	14 (3.1)	6 (2.7)	4 (2.1)	3 (2.1)	*** (****)	206 (4.0)
White								
Complete	16,144	132,337	67 (0.7)	91 (1.0)	98 (0.6)	98 (0.6)	99 (0.4)	293 (0.7)
Literacy related incomplete	283	3,284	16 (0.9)	0† (0.7)	0† (0.6)	0† (0.0)	0† (0.0)	138 (2.9)
Non-literacy related incomplete	865	9,347	17 (2.4)	8 (2.0)	4 (1.6)	2 (1.2)	1 (0.6)	245 (3.6)
Hispanic								
Complete	2,128	12,608	40 (1.4)	96 (1.8)	98 (2.0)	96 (1.8)	*** (****)	254 (1.8)
Literacy related incomplete	845	4,984	54 (0.4)	0† (0.2)	0† (0.2)	0† (0.5)	*** (****)	116 (1.8)
Non-literacy related incomplete	153	890	6 (5.1)	4 (4.7)	4 (3.5)	4 (2.8)	*** (****)	219 (7.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

[8] Note that the percentages in table 4.11 are column percentages. See tables B4.3D and B4.3Q for document and quantitative literacy data.

survey respondent was given less than a quarter of all assessment questions, not enough to score reliably any one individual. This procedure results in an estimated distribution of scores for each case, rather than a single specific score, and is a more valid and reliable procedure in general for estimating population values from samples.

For the nonresponders (those answering fewer than five cognitive questions per scale), however, because there was little of the proficiency component to use, answers to the background questions had to be utilized. If the basis for nonresponse was not literacy-related, scores were mostly determined from the average scores of those who did respond and who had characteristics similar to the nonrespondents. If the basis for nonresponse was literacy-related, scores were estimated by presuming they had answered the cognitive questions incorrectly and combining the resulting wrong answers with a component based on scores of people with characteristics similar to their own.

This procedure resulted in each half of the nonrespondents receiving proficiency scores which combined their initial cognitive scores with those of actual respondents similar to them in age, education, occupation, initial score, and other characteristics. For the literacy-related nonrespondents, however, the initial cognitive score was based on assigning wrong answers to cognitive questions that had been left blank. For the non-literacy-related nonrespondents, the initial cognitive score was based on omitting all of the missing answers.

As a result of this procedure, the literacy-related nonrespondents were assigned scores at the low end of the score range, averaging over 100 points below the scores for the other nonrespondents. For example, on the prose scale, the average scores for the two groups of nonrespondents were 126 and 237, respectively (table 4.11). Though a majority (73 percent) of non-literacy-related nonrespondents (referred to as non-literacy-related incomplete in table 4.12) were assigned prose scores in Level 1 or 2, their scores were distributed throughout the five levels (table 4.12).

In contrast, the prose literacy scores of literacy-related nonrespondents (referred to as literacy related incomplete in table 4.12) were concentrated almost entirely in Level 1 (99 percent). Thus, the results for these two groups show large differences, but part of the differences is a function of the initial score assignment. When the two groups of nonrespondents are combined with data from those who responded more fully to the cognitive questions, the proportions of cases in Level 1 are significantly increased (see table 4.12A). While these outcomes may be viewed as a pitfall of the procedure for handling nonrespondents, it is probably the most sound way of estimating population values under difficult circumstances.

TABLE 4.12

Percentages at Each Level and Average Proficiencies on Each Literacy Scale, by Respondent Samples

RESPONDENT SAMPLE BY SCALE	n	WGT N (1,000)	Level 1 225 or lower RPCT (SE)	Level 2 226 to 275 RPCT (SE)	Level 3 276 to 325 RPCT (SE)	Level 4 326 to 375 RPCT (SE)	Level 5 376 or higher RPCT (SE)	Average Proficiency PROF (SE)
Prose								
Complete exercise	23,097	168,042	14 (0.3)	28 (0.6)	35 (0.8)	19 (0.5)	4 (0.2)	285 (0.6)
Literacy related incomplete	1,547	10,850	99 (0.4)	1 (0.3)	0† (0.2)	0† (0.0)	0† (0.0)	124 (1.5)
Non-literacy related incomplete	1,447	12,398	42 (2.3)	31 (2.2)	19 (1.8)	6 (1.2)	1 (0.4)	237 (3.0)
Document								
Complete exercise	23,097	168,042	16 (0.4)	30 (0.5)	34 (0.5)	17 (0.5)	3 (0.2)	279 (0.5)
Literacy related incomplete	1,547	10,850	100 (0.2)	0† (0.2)	0† (0.0)	0† (0.0)	0† (0.0)	116 (1.4)
Non-literacy related incomplete	1,447	12,398	49 (2.1)	29 (1.9)	17 (1.5)	5 (0.9)	1 (0.4)	228 (2.8)
Quantitative								
Complete exercise	23,097	168,042	15 (0.5)	27 (0.6)	34 (0.6)	19 (0.3)	4 (0.2)	284 (0.6)
Literacy related incomplete	1,547	10,850	99 (0.5)	1 (0.3)	0† (0.3)	0† (0.1)	0† (0.1)	114 (1.9)
Non-literacy related incomplete	1,447	12,398	46 (2.2)	26 (1.7)	19 (1.9)	7 (1.3)	2 (0.6)	231 (3.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE 4.12A

Percentages of Adults in Prose, Document, and Quantitative Literacy Level 1, by Response Status

RESPONSE STATUS	PROSE, DOCUMENT AND QUANTITATIVE LEVEL 1					
	Prose		Document		Quantitative	
	Pct	(SE)	Pct	(SE)	Pct	(SE)
Respondents who completed 5 or more cognitive questions per scale	14	(0.3)	16	(0.4)	15	(0.5)
All respondents	21	(0.4)	23	(0.4)	22	(0.5)

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

This situation would be less of a problem if the literacy-related nonrespondents were distributed across social groups more or less randomly, but they are not. They constitute 27 percent of the Hispanic population and 8 percent of the African American population, compared with 2 percent of the White population.[9] Further, they constitute 54 and 21 percent, respectively, of Hispanic and African American adults performing in Level 1, compared with 16 percent of White adults in Level 1. These assigned values for missing data may tend to distort the overall results for minority groups.

The validity of these procedures depends on how limited the English reading abilities of the literacy-related nonrespondents actually were. It is likely that a good number were not able to read English at all. Yet, there may have been many reasons for the reluctance of the nonresponders to participate. It is certainly likely that many were relatively poor readers of English and embarrassed to reveal limited reading skills, but this does not necessarily mean that they were simply *unable* to read. They may, indeed, have been able to answer some cognitive questions.

The fact that participants with low education completion levels were much more likely to give literacy-related reasons for nonresponse provides some support for the validity of the estimation. Among those who dropped out before beginning high school, 34 percent did not complete the assessment for literacy-related reasons (table 4.13). Among those who began but did not complete high school, 7 percent provided literacy-related reasons for nonresponse. Among those who ended formal education with high school or GED completion, only 3 percent did not complete the survey for reasons related to literacy; among those who had attended but not completed college, just 2 percent failed to participate for literacy-related reasons. Among college graduates, less than five-tenths of 1 percent failed to complete the survey for literacy-related reasons. Thus, for those completing high school or some schooling beyond that, only a handful indicated literacy-based reasons for nonresponse.

Among those who gave literacy-related reasons for nonresponse (referred to as literacy-related incomplete in table 4.14), level of education made little difference in their prose literacy scores, in that more than 9 out of 10 scored in Level 1. Among other nonrespondents to the cognitive questions, however, prose literacy scores did vary with level of educational attainment. Among those who dropped out before beginning high school, 72 percent of those who gave non-literacy related reasons scored in Level 1. Among those who began

[9] These values were calculated by multiplying the proportions of Blacks (38 percent), Hispanics (49 percent) and Whites (14 percent at Level 1 (see table 4.1) by the proportions of Blacks (21 percent), Hispanics (54 percent) and Whites (16 percent) at Level 1 because of literacy related incompletes (see table 4.11).

TABLE 4.13

Percentages of Adults at Each Education Level by Completion of Literacy Tasks

EDUCATION LEVEL			COMPLETION OF LITERACY TASKS		
			Complete	Literacy related incomplete	Non-literacy related incomplete
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Education Level					
Total	26,027	190,695	88 (0.4)	6 (0.2)	6 (0.3)
Still in high school	973	8,268	98 (0.6)	1 (0.4)	1 (0.4)
Less than high school	2,167	18,356	49 (1.6)	34 (1.4)	17 (1.2)
Some high school	3,311	24,982	83 (1.0)	7 (0.5)	10 (0.9)
GED/high school diploma	7,169	58,514	91 (0.6)	3 (0.3)	6 (0.4)
Some college (no degree)	6,587	39,634	94 (0.4)	2 (0.2)	4 (0.3)
College degree	5,820	40,941	96 (0.3)	0† (0.1)	4 (0.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

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

but did not complete high school, 57 percent scored in Level 1. Among those who ended formal education with high school or GED completion, 28 percent scored in Level 1. Similarly, among those who had attended but not completed college, 25 percent scored in Level 1. Lack of success in formal education, however, does not necessarily imply a complete lack of literacy skills, though it does suggest the probability of limited skills.

Summary of Findings for Levels 1 and 2

The clearest finding from the National Adult Literacy Survey with regard to lower prose, document and quantitative literacy is that education is vitally important. It is important as a single variable and for its role as context for interpretation of all other dimensions. Nearly all adults who have not

TABLE 4.14

Percentages at Each Level and Average Prose Proficiencies of Respondent Samples by Education Level

SAMPLE BY TOTAL AND EDUCATION LEVEL			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Total								
Complete exercise	23,075	167,862	14 (0.3)	28 (0.6)	35 (0.8)	19 (0.5)	4 (0.2)	285 (0.6)
Literacy related incomplete	1,511	10,499	99 (0.3)	1 (0.3)	0† (0.2)	0† (0.0)	0† (0.0)	124 (1.6)
Non-literacy related incomplete	1,441	12,334	42 (2.3)	31 (2.4)	19 (1.8)	6 (1.2)	1 (0.4)	237 (3.1)
Still in High School								
Complete exercise	947	8,083	15 (1.7)	36 (2.3)	37 (2.8)	11 (2.0)	0† (0.5)	273 (1.9)
Literacy related incomplete	17	109	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Non-literacy related incomplete	9	75	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Less than High School								
Complete exercise	1,012	8,984	59 (2.5)	34 (2.2)	6 (1.5)	0† (0.3)	0† (0.0)	213 (2.4)
Literacy related incomplete	879	6,209	99 (0.5)	0† (0.3)	0† (0.4)	0† (0.1)	0† (0.0)	116 (1.9)
Non-literacy related incomplete	276	3,164	72 (5.2)	21 (3.9)	6 (3.0)	1 (1.4)	0† (0.1)	197 (6.1)
Some High School								
Complete exercise	2,761	20,740	36 (1.5)	43 (1.2)	19 (1.2)	3 (0.6)	0† (0.1)	241 (1.3)
Literacy related incomplete	274	1,771	99 (0.7)	1 (0.7)	0† (0.0)	0† (0.0)	0† (0.0)	131 (3.6)
Non-literacy related incomplete	276	2,471	57 (6.0)	31 (4.6)	11 (3.9)	1 (1.4)	0† (0.0)	215 (5.4)
GED/High School Diploma								
Complete exercise	6,556	53,499	13 (0.6)	37 (1.2)	39 (1.5)	11 (0.9)	1 (0.2)	275 (0.9)
Literacy related incomplete	205	1,575	99 (0.7)	1 (0.7)	0† (0.0)	0† (0.0)	0† (0.0)	136 (5.1)
Non-literacy related incomplete	408	3,440	28 (3.7)	43 (4.4)	24 (5.3)	6 (2.3)	0† (0.4)	253 (4.0)
Some College(No Degree)								
Complete exercise	6,207	37,351	5 (0.4)	23 (0.8)	46 (1.0)	23 (0.8)	3 (0.3)	298 (1.0)
Literacy related incomplete	112	681	97 (2.6)	3 (2.6)	0† (0.0)	0† (0.0)	0† (0.0)	144 (5.9)
Non-literacy related incomplete	268	1,603	25 (4.5)	36 (4.3)	31 (4.7)	8 (2.5)	0† (0.5)	261 (4.5)
College Degree								
Complete exercise	5,592	39,206	2 (0.4)	10 (0.8)	33 (1.3)	42 (1.2)	12 (0.7)	327 (1.1)
Literacy related incomplete	24	154	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
Non-literacy related incomplete	204	1,581	12 (3.8)	23 (5.6)	37 (5.9)	24 (4.4)	4 (3.0)	292 (5.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

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

completed high school or a GED certificate have skills in the lower literacy levels on all three scales, and most adults who have attained this level of education or higher have skills above Level 2. Completion of high school or its equivalent seems a necessary condition for moving to higher prose, document, and quantitative literacy levels.

Language background and current language use were strongly associated with prose and quantitative literacy, in that those adults who did not speak English at home when growing up or did not speak English currently were greatly overrepresented in Level 1 on these scales.

Proficiencies for men and women were basically similar, but there were some differences. On average, men and women did not differ in prose literacy, though slightly more men than women scored in the lowest prose literacy level. On the document and quantitative literacy scales, men performed somewhat better than women, in that men had slightly higher average scores and somewhat fewer men scored in the two lower literacy levels.

Among racial and ethnic groups, fewer White adults scored in Level 1 or 2 on all three scales than did Hispanic and African American adults. These findings need to be viewed in the context of known differences among racial and ethnic social groups, including differences in their language backgrounds, educational opportunities and experiences, and resulting family educational and socioeconomic attainments.

Employed workers less often received low proficiency scores on all three scales than did the unemployed, though sizable proportions of employed persons did demonstrate low literacy skills.

Age showed a relationship to proficiency on all three scales. Those 65 and over were overrepresented among adults with proficiencies in Level 1 or 2. These findings also need to be viewed in the context of known differences among age cohorts. Age groups differ in their personal and family educational attainments and in their language backgrounds (older adults were more likely not to have spoken English when growing up). Further, older adults faced more limited opportunities in school and when entering the work force than did adults in younger age groups.

Literacy practices were related to prose, document, and quantitative literacy. Adults who rarely read books, magazines, and related materials for personal reasons were more likely to score in Level 1 or 2 on each of the three literacy scales. Those who rarely used printed and written materials for their job were also more likely to score in Level 1 or 2 on each of the three literacy scales.

Most adults learned their literacy skills at school — such as how to read books, write letters, fill out forms, and read graphs, though some learned such

skills at home or at work. Those learning to read books at school or at home performed in Level 1 or 2 less often on the prose literacy scales than those who learned at work. Those learning to read graphs and fill out forms at school or at work performed in Level 1 or 2 less often on the document and quantitative literacy scales than those who learned at home. More than three-quarters of those who never learned to read graphs and more than five-sixths of those who never learned to read books, to write letters, or to fill out forms also performed in Level 1 on each scale. Level 1, unlike the other four levels, includes those who are unable to perform successfully the requirements of the tasks in this level.

Extending the Examination of Lower Literacy

Level of education, ethnicity and language background, and age (along with parent's educational background as discussed in chapter 2) are related to proficiency levels on all three scales. The interactions and contexts of these conditions, however, must be considered in interpreting these relationships. Level of education may refer to quite different educational experiences, too often depending on the ethnicity and socioeconomic background of an individual and his or her parents. The nature of schooling as a function of these factors has been widely documented, most recently by Darling-Hammond.[10]

The ground breaking nature of the adult literacy survey has made it possible to gain important information about the literacy activities and proficiencies of the nation's adults. The survey differed from previous assessments in several ways: the everyday realism of the assessment tasks themselves; the wide diversity in age, education, interest in literacy activities, and other characteristics among respondents; and the manner of administration, in that the assessment took place at the respondent's kitchen table or in the living room.

At the same time, these characteristics give rise to important issues for further discussion and study. Such discussion and study would be expected with the introduction of new assessment methodology, and the further investigation of these issues offers the promise of even better future assessments with innovative features.

Part of the construction of any measure, especially one designed for use in a broad population, includes a process for the culling of assessment items that

[10] L. Darling-Hammond. (1994). "Performance-Based Assessment and Educational Equity," *Harvard Educational Review*, *60* (1), pp. 5-30.

do not scale well with other items, in that they do not measure equally well across all groups. This culling is needed to ensure that all items broadly measure the same thing across an entire population. While the tasks included in this survey are relatively realistic, they do reflect a common cultural context.

Duràn has noted from cross-cultural research the extent to which socio-cultural experiences are connected to perceptions of the nature of the problem solving tasks, and the difficulty that exists in the assessment of persons from non-English backgrounds "because of the confound existing among culture, language, and thought."[11] Further research with realistic activities aimed at examining task perceptions among language and culture groups should broaden our understanding.

The use of a more individualized focus of procedures and instruments for examining proficiency among those with limited skills has support in the literature on improving adult literacy. For example, the use of participant-generated text has been employed as a vehicle for workplace literacy,[12] and such an approach might serve to build a portfolio for more fully examining literacy skills. Also, the use of generative themes[13] to involve adults in choosing and developing literacy tasks that have real meaning and significance for them is a related approach, but more personal than work related in its focus.

The extent to which one's forbears had access to education is another factor to consider, especially in view of the relationship between parental education level and proficiency. For example, in many states it was illegal for the grandparents of African American octogenarians to learn to read, and severe consequences accrued to these individuals and anyone teaching them.[14] For their parents, access to education, while not illegal, was still greatly limited, since the southern states where they were largely concentrated forbade their attendance at White public schools, and there were few schools for African American children even at the primary level, and only a handful of secondary schools.[15]

It may be that more information on proficiency among diverse adults may be provided by using some tasks for assessment of individuals with lower educational levels that have higher problem-solving difficulty, but that are based on familiar content. Kirsch and Mosenthal have analyzed several

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[11] R.P. Duràn. (1989). "Testing of Linguistic Minorities." In R.L. Linn, ed., *Educational Measurement.* New York: American Council on Education/Macmillan Publishing Co.

[12] A. D'Annunzio. (1990). "A Nondirective Combinatory Model in an Adult ESL Program." *Journal of Reading, 34*, pp.198-202; and C.A. Rhoder and J.N. Frenc. (1995). "Participant-generated text: A vehicle for workplace literacy." *Journal of Adolescent and Adult Literacy, 39,* pp. 110-118.

[13] P. Freire. (1971). *Pedagogy of the Oppressed*. New York: Continuum.

[14] C.G. Woodson. (1968). *The Education of the Negro Prior to 1861.* New York: Arno Press.

[15] H.M. Bond. (1970). *The Education of the Negro in the American Social Order.* New York: Octagon Books; J.D. Anderson. (1988). *The Education of the Blacks in the South, 1860-1935.* Chapel Hill, NC: University of North Carolina Press.

elements that influence task difficulty in the 1992 National Adult Literacy Survey and in the 1991 assessment of the literacy of job seekers. In the course of their research, they identified several factors (type of match, plausibility of distractors, concreteness of information, complexity of numerical operation, and specificity of numerical operation) that predict task difficulty quite well.[16] In some cases when the prediction is not accurate, literacy tasks with more familiar content can be performed much better than these factors predict by participants who did poorly on other items of similar complexity. Familiarity is likely to be culturally specific.

Yet, an instrument that works well when applied to a general population may yield less information for some subpopulations.[17] It turns out that some items that would be effective for assessment among subpopulations must be excluded in developing a broadly based instrument. For such a broad population as assessed by this survey, it may be that in addition to a common core of questions, some additional questions dependent on the respondent's educational level or cultural or linguistic background should be included, especially among respondents who have limited success on broader items.

Despite the relationships between proficiency levels and the variables noted above, substantial numbers of individuals from all ethnic, age, and educational background groups received scores in the lower proficiency levels, and this finding has important implications for the planning of literacy development programs. For example, age is correlated with proficiency, and there is a larger percentage (44) of adults 65 years of age or older in Level 1 on the prose scale than of any other age group (table 4.2). Yet, among the 25- to 39-year-old group, the 15 percent in Level 1 constitute an estimated 9,492,000 persons, about three-quarters the number of adults aged 65 or older who perform in Level 1.

Similarly, ethnic background is related to proficiency, with larger proportions of African American and Hispanic adults performing in Level 1. Yet, among the White population, an estimated 20.3 million adults perform in Level 1, which is a little over twice the population estimate of the Hispanic total in Level 1, and about two and a half times the population estimate of the African American total in Level 1. Thus, despite the fact that certain characteristics are correlated with proficiency, there are large numbers of individuals with relatively low literacy skills among all groups.

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[16] I.S. Kirsch, A. Jungeblut, and P.B. Mosenthal. (1999). "Evaluating the Constructs of the Scales." In U.S. Department of Education. National Center for Education Statistics. *Technical Report and Data File User's Manual for the National Adult Literacy Survey,* NCES 1999-469, by Irwin Kirsch, *et al.* Project Officer: Andrew Kolstad. Washington, DC.

[17] S.T. Johnson. (1979). *The Measurement Mystique: Issues in Selection for Professional Schools and Employment*. Washington, DC: Institute for the Study of Educational Policy, Howard University.

Motivational factors may also have influenced the decisions of respondents to continue with the survey. Children are often required to take tests in school. Adults can choose whether or not to take tests, and many real-world priorities and concerns could lessen the likelihood that an adult would participate maximally in an optional literacy assessment. Among individuals who see themselves as highly competent readers and want to be so perceived by others, it would be important to take the time and effort to go as far as possible with the survey. On the other hand, among those whose experiences and education are such that they might not place the same value on the achievement and demonstration of literacy skills, participation would not be as important, and even identifying oneself as not able to do the task might be preferable to actually doing it. Furthermore, respondents with superior proficiency in a language other than English, but with modest English skills, may have preferred not to demonstrate those limited skills to the interviewer.

Consider the standard methods used for the assessment of cognitive skills among adults, and the usual motivation involved. Assessments for adults are typically done for employment, admission to academic programs, professional certification, or appraisal for treatment or placement. Such assessments occur in workplace, academic, or medical settings under the control and supervision of another adult. The person being assessed usually has some stake in the outcome of the assessment which helps to assure that maximum performance will be obtained in the assessment activities.

This innovative literacy assessment has changed the rules, by moving the locus of a cognitive assessment to turf controlled by the person being assessed. We have limited information on the extent to which the important assumption of maximum performance continues to apply. For example, an adult might have provided about the same level of courtesy as one might to an insurance salesman with a commitment of "about an hour" of time for completing the assessment, but as the minutes pass, the ordinary concerns of picking up spouse or children, preparing meals, preparing to go to work, or other typical pursuits might interfere with the intention to exhibit maximum performance. One might conjecture that such "real life" intrusions could shift high scoring individuals to a middle range, and middle-proficiency performers into a lower range.

It is also possible that the effect of such intrusions would be unrelated to score level. In that case, the entire proficiency distribution would be shifted to a somewhat lower level. Since the proficiency levels are not based on norms, but instead are defined in terms of the type of tasks required at each level, such an effect would be reflected in somewhat larger numbers of adults

demonstrating proficiency in Levels 1 and 2 than would be the case without such intrusions.

Education as a Sufficient Intervention for Raising Literacy

The previous sections reported the decreasing proportions of respondents with scores in proficiency Level 1 or 2 as educational attainment increased. Since educational experiences should by their very nature influence literacy status, this finding is not surprising. It seems equally important to know, however, whether providing education alone is sufficient to raise literacy levels. The educational level of each survey respondent was achieved in the context of circumstances which facilitated or impeded progress toward whatever level was eventually attained. Can literacy proficiency among individuals currently possessing relatively low proficiency be raised by providing educational experiences?

Without follow-up data on a particular cohort, a firm answer to this question is not available from these data; but as we have argued in chapter 2, they do indirectly support the efficacy of education in raising literacy proficiency. Among each age, sex, racial/ethnic, and language group and for those born in and outside of the United States, higher educational levels are accompanied by lower proportions of respondents in the two lowest proficiency levels. There is an increasing body of literature supporting the conclusion that educational intervention does improve academic and literacy outcomes and that early intervention at the preschool level is particularly effective.[18]

Further indirect support for the effectiveness of education in improving literacy is the finding that educationally related activity is associated with higher literacy. Those who participate often in reading activities have much less incidence of low literacy than those who rarely participate in those activities, and these differences are greater when these literacy activities are pursued for personal use than when they are carried out in the workplace. The activities surveyed included the reading of newspapers and magazines, books of all sorts, letters, memos, articles, reference books, catalogs, recipes, diagrams, bills, invoices, budgets, and instructions for use of products.

[18] F.A. Campbell and C.T. Ramey. (1993). *Mid-Adolescent Outcomes for High Risk Students: An Examination of the Continuing Effects of Early Intervention*. Unpublished manuscript: University of North Carolina at Chapel Hill, NC and University of Alabama at Birmingham, AL; and L.I. Schweinhart, H.V. Barnes, and D.P. Weikart. (1993). *Significant Benefits: The High/Scope Perry Pre-School Study through Age 27*. Monographs of the High/Scope Educational Research Foundation, Number Ten. Ypsilanti, MI: The High Scope Press.

When considering the utility of education as an intervention to improve literacy, the willingness of individuals scoring at Level 1 or 2 to use their literacy skills, both in the workplace and for personal growth and development, must also be considered. The point has been emphasized in this chapter that respondents with relatively low literacy skills may have been reluctant to demonstrate their skills publicly and, thus, may have chosen not to answer the cognitive questions in the survey. If so, this reluctance is not likely to be manifested solely in the context of the survey. It is possible that individuals with relatively low level skills may be hesitant to undertake tasks in a workplace with literacy demands and may have difficulty in building an information base from newspapers, magazines, and other written materials that would be useful in dealing with the demands of family and community life.

Thus, low-level literacy attainment is essentially double jeopardy. It represents proficiency that is less than what is necessary for many personal and better-paying workplace activities, and it represents a level likely to be perceived by an individual as embarrassing to display to others. Since literacy is further developed by participating in literacy activities, an avoidance of situations demanding literacy is unlikely to foster an increase in proficiency. Individuals in such circumstances may face frustrating years of decreasing competencies *and* opportunities.

Programs aimed at adults with low literacy proficiencies must recognize and respect the context in which these skill levels were attained and the challenges posed by change. To put oneself in a position to increase literacy skills meaningfully is a significant personal challenge in many respects. One must disclose skill levels for diagnosis and treatment, make all of the financial and logistical arrangements necessary to obtain help, and be prepared to deal with the possibility of failure, which is likely to have been a frequent experience in past literacy settings. The educational settings for such students should be structured so as to recognize their full attainment of adult status and to help undo the effects of long-term lower literacy functioning, while developing personally satisfying literacy skills that can lead to increasing proficiencies and broadened opportunities. The need for this approach to education represents a significant challenge for adult educators, particularly those involved with retraining members of the labor force whose jobs face elimination due to technological change, as well as those helping younger adults with limited literacy skills who are seeking a toehold on the rungs of career employment.

CHAPTER 5

Education for the Workplace
by Larry J. Mikulecky

The goal of this chapter is to present to providers of adult, adolescent, and workplace education programs information about the literacy proficiencies, practices, and educational patterns of adults in various occupation areas. This information can help educators to plan and deliver instruction more effectively to their students. The chapter is organized into six major sections that address the following:

- how the survey's literacy tasks are related to particular occupational areas
- the relationship of literacy proficiencies of adults in various occupational areas to what is known about occupational literacy demands
- literacy practices reported by adults in various occupational areas
- the characteristics and literacy proficiencies of adults enrolled in various types of basic skills training programs
- where adults reported learning various literacy skills
- the literacy proficiencies of various subgroups of particular concern to educators, including ethnic minorities, non-English speakers, and learning disabled adults

Previous research has provided us with a good deal of information about literacy demands in the workplace. Researchers have consistently found the vast majority of prose material in the workplace (i.e., memos, manuals, trouble-shooting directions, new product information) to be of high school to college level difficulty.[1] These difficulty levels are comparable to the difficulty levels of most newspapers and magazines.[2] The number of workers being called upon to use printed materials at these high levels is being influenced by technological

[1] T.G. Sticht. (1982). *Basic Skills for Defense*. Alexandria, VA: Human Resources Research Organization; L. Mikulecky. (1982). "Job Literacy: The Relationship between School Preparation and Workplace Actuality," *Reading Research Quarterly*, *17*, pp. 400-419; T. Rush, A. Moe, and R. Storlie. (1986). *Occupational Literacy*. Newark, DE: International Reading Association.

[2] T. Wheat, M. Lindberg, and M. Nauman. (1977). "An Exploratory Investigation of Newspaper Readability," *Illinois Reading Council Journal*, *5*, pp. 4-7.

and organizational changes in the workplace. As workplaces restructure to become more productive, workers in many manufacturing and service occupations are being called upon to monitor quality by gathering information from charts, graphs, and computer screens, taking measurements, calculating averages, graphing information, entering information onto various forms, and writing brief reports indicating problems and attempted solutions. Others must gather information from print to participate effectively in quality assurance groups and to play active roles in improving productivity.[3] The U.S. Department of Labor has reviewed changing demands in many industries and described increased workplace skill requirements in publications produced by the Labor Secretary's Commission on Achieving Necessary Skills.[4] Literacy is regularly used in multi-step problem-solving applications.[5] What is more, since workers in restructured workplaces are expected to be more flexible and do each other's jobs, workers are much more likely to encounter relatively unfamiliar information, which they sometimes need to manage independently, and to face new print demands as part of on-going workplace retraining.[6]

This survey does not set out to assess directly the abilities of adults to perform workplace literacy tasks. Many of the survey tasks, however, parallel tasks which have been reported as common in workplaces and use materials of comparable difficulty to workplace materials. Information about adult performance on the three literacy scales can help educators to better anticipate potential gaps between workplace demands and adult literacy proficiencies.

Relating Adult Responses to Occupational Categories

Respondents who had worked during the three years prior to the survey were asked three questions about their most recent industry and occupation. Responses were coded using the U.S. Census Bureau's 1990 Occupational Classification system, which includes nearly 500 hundred occupational categories.[7] Many analyses in this chapter are done using eleven of the more

[3] F.P. Chisman. (1992). *The Missing Link: Workplace Education for Small Businesses*. Washington, DC: Southport Institute for Policy Analysis; T.E. Faison, M.P. Vencill, J.W. McVey, K.M. Hollenbeck, and W.C. Anderson. (1992). *Ahead of the Curve: Basic Skills Programs in Four Exceptional Firms*. Washington, DC: Southport Institute for Policy Analysis.

[4] *What Work Requires of Schools*. (1991). Washington, DC: The Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor.

[5] L.J. Mikulecky and J. Ehlinger. (1986). "The Influence of Metacognitive Aspects of Literacy on Job Performance of Electronic Technicians," *Journal of Reading Behavior*, *18* (1), pp. 41-62; J.T. Guthrie. (1988.) "Locating Information in Documents: Examination of a Cognitive Model," *Reading Research Quarterly*, *23*, pp. 178-199.

[6] S. Reder. (1994). *Learning to Earn: The Reward of Workplace Literacy*. Philadelphia, PA: National Center on Adult Literacy, University of Pennsylvania.

[7] U.S. Department of Commerce. (January 1992). *Alphabetical Index of Industries and Occupations*. Washington, DC: U.S. Government Printing Office.

major categories within the classification system — i.e., managerial, professional, technical, sales, clerical, laborer, service, farming-forestry-fishing, craft, machine operative, and transportation operative. In other cases, subcategories were created using smaller aggregations of individual occupational classifications. For example, professionals were more tightly defined as engineers, architects, scientists, researchers, physicians, etc. (043-089 in the classification system), but did not include health support and educational professionals, who were examined in their own right.

Subcategories which were specifically targeted were as follows.

Occupation	Classification Code
Health support (nurses, therapists, hygienists, aids, etc.)	095-106, 203-208, 445-447
Teachers (elementary, secondary, postsecondary)	113-159
Sales occupations (cashiers, representatives, vendors)	243-285
Secretaries, steno, typists	313-315
Clerks	317-343, 356, 374, 365-366, 379
Food preparation (cooks, kitchen workers, waitress, etc.)	433-444
Cleaning and maintenance	449-454
Child care workers	466-468
Non-supervisory farming, nursery, etc.	473-474, 479, 483-484, 486, 495-496
Non-supervisory construction	563-599
Non-supervisory motor vehicle operator	804-814

These subcategories were selected for a variety of reasons; some to provide anchors of comparison, some because the occupations are growth areas, and many because they are jobs currently sought by learners in adult basic skills classes. Knowing the average performances of individuals currently in such occupations can give teachers and students a clearer sense of skills of those currently employed. Similarly, knowing that there are high percentages of people with low levels of proficiency in particular occupations can help industries focus efforts for workplace basic skills programs.

Literacy Proficiencies of Workers in Various Occupational Categories

Proficiency scores are reported in terms of the average score for members of an occupational group on each of the prose, document, and quantitative scales.

(See appendix A for a detailed discussion of proficiencies and levels.) By examining particular levels and the items which reflect proficiencies at these levels, it is possible to develop a more concrete sense of what numerical scores mean. Since some items parallel workplace literacy tasks, it is possible (to a lesser degree) to draw inferences about the ability of adults to perform workplace literacy tasks independently. For example, being able to locate the name of a country in a short newspaper article falls at 149 on the prose scale. An individual scoring at 149 would have an 80 percent probability of being able to perform successfully this locate task. Individuals with lower scores might also be able to succeed, but probabilities would be lower. Many workplace tasks involve skimming brief prose descriptions to find a detail such as a product number or name. Consistent accuracy is expected. Individuals scoring below 149 on the prose scale are not likely to be accurate consistently, although they are likely to be correct some of the time and perhaps even a majority of the time. Performing below 170 on the document scale would indicate less than an 80 percent probability of being able to perform a task like locating the expiration date on a driver's license — a task very similar to search strategies for receipt dates and delivery dates on work orders. A proficiency below 191 on the quantitative scale indicates less than 80 percent probability of being able to total accurately a fairly simple bank deposit entry. Again, this task reflects widespread job tasks involving simple calculations in which consistency and accuracy are crucial (see research cited in previous section). All of these items fall in Level 1 (scores of 0 to 225), the lowest of the five proficiency levels defined in the National Adult Literacy Survey.[8]

Level 2 scores range from 226 to 275. Items that represent tasks within Level 2 are listed below along with the difficulty scores of the items.

Scale	Difficulty Score	Description of Task
Prose	250	Locate two features of information from a sports article.
	275	Interpret instructions from an appliance warranty.
Document	232	Locate an intersection on street map.
	259	Locate and enter background information on an application for a social security card.
Quantitative	238	Calculate postage and fees for certified mail.
	270	Calculate total costs of purchase from an order form.

[8] See chapter 1 and appendix A for a more thorough discussion of each of the levels for the three scales.

Most of the discussion in this chapter will revolve around the percentages of workers in various occupational categories who perform in Levels 1 and 2. Each of the tasks reported above have common correlates in workplaces. Workers regularly are called upon to interpret written instructions, enter information on forms, and calculate totals. Again, given the fact that mistakes are costly in terms of quality control, the 80 percent level of probable success seems reasonable. Some in industry might argue for higher cutoffs since current industrial quality control standards often tolerate fewer than one mistake per thousand or more interactions or parts produced. A review of the research and visits to several hundred workplaces over the past decade suggest that workers in Levels 1 and 2 are probable candidates for basic skills instruction if they must train for new jobs, or handle the increasing difficulty of basic skill demands brought about by technological and organizational changes in their current jobs.

Average proficiencies of workers in about half of the occupational areas tend to be in Level 3 (276 to 325) or the very low end of Level 4 (326 to 375). Examples of tasks which reflect these levels are given in figure 1.1 of chapter 1. Again, several Level 3 and low Level 4 items, such as using sign-out sheets to respond to requests for information, using a calculator to compute savings from a sale, and determining correct change from items on a menu, clearly reflect common workplace tasks.

Table 5.1 presents the average prose, document, and quantitative proficiencies of adults in major occupational categories. They range from proficiencies of around 245 for the machine operative and the farming/forestry/fishing occupations to proficiencies of around 320 for the professional and managerial categories. No average proficiency of any group falls in level 5, the highest level of proficiency. Only the professional group demonstrates proficiencies in Level 4, averaging 329 on the prose scale and 326 on the quantitative scale. Average proficiencies for all other groups range from the middle of Level 2 (226 to 275) to the top of Level 3 (276 to 325). Many of the problem-solving literacy tasks called for in workplaces are similar to tasks in Level 3 and above.[9] Average proficiencies of all job classifications listed below clerical (i.e. laborer, service, farming, forestry, fishing, craft, machine operative, and transportation operative) on table 5.1 are below Level 3 indicating that half or more of these workers may be ill-equipped to meet consistently the literacy demands called for in restructured workplaces.

[9] L.J. Mikulecky and J. Ehlinger. (1986). "The Influence of Metacognitive Aspects of Literacy on Job Performance of Electronic Technicians," *Journal of Reading Behavior, 18* (1), pp. 41-62; *What Work Requires of Schools*. (1991). Washington, DC: The Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor.

TABLE 5.1

Average Proficiencies on Each Literacy Scale of Adults in Major Occupational Categories

OCCUPATION			LITERACY SCALE		
			Prose	Document	Quantitative
	n	WGT N (/1,000)	PROF (SE)	PROF (SE)	PROF (SE)
Managerial	1,639	11,906	319 (2.1)	311 (1.5)	322 (1.6)
Professional	2,705	18,510	329 (1.4)	321 (1.4)	326 (1.3)
Technical	721	4,918	308 (2.5)	308 (2.9)	308 (2.7)
Sales	2,385	17,901	290 (2.0)	285 (1.6)	291 (1.8)
Clerical	3,550	23,394	296 (1.3)	290 (1.4)	293 (1.4)
Laborer	1,054	7,595	248 (3.8)	247 (3.2)	249 (3.5)
Service	3,908	26,916	262 (1.4)	259 (1.5)	258 (1.7)
Farming, forestry, fishing	576	4,990	245 (4.8)	245 (5.3)	253 (6.6)
Craft	1,992	15,460	267 (2.1)	267 (2.0)	274 (2.3)
Machine operative	1,355	9,878	247 (2.2)	242 (2.3)	248 (2.3)
Transportation operative	758	5,387	258 (2.5)	260 (2.4)	266 (2.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

Similar information about more specific occupations can be found in table 5.2 and tables B5.1D and Q. (Since there are few major differences in performance across the scales, prose tables are included in the body of the text and corresponding document and quantitative tables are in appendix B. Any tables identified with a B are found in that appendix.) Individuals in the occupations of cleaning and maintenance and non-supervisory farming and nursery demonstrate proficiencies, on average, below the midpoint of Level 2 on the three scales. For example, cleaning and maintenance workers demonstrate a prose proficiency of 233, and nonsupervisory farming and nursery workers average 238 on the prose scale. Individuals employed in food preparation, construction, or as motor vehicle operators have average proficiencies ranging from the middle to the top of Level 2 on the three scales. Furthermore, 40 percent of cleaning and maintenance workers perform in Level 1 on the prose scale. Twenty percent of workers in food preparation, 13 percent in child care, 36 percent in farming and nursery, 25 percent in

TABLE 5.2

Percentages at Each Level and Average Prose Proficiencies of Adults in Occupational Subcategories

OCCUPATION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Administrators and managers	1,638	11,904	4 (0.9)	14 (1.8)	35 (2.7)	37 (2.0)	10 (1.2)	319 (2.1)
Professional	507	3,592	2 (0.8)	7 (2.0)	27 (3.0)	44 (2.6)	20 (2.9)	339 (3.5)
Health support	1,337	8,159	13 (1.5)	25 (2.1)	33 (2.5)	24 (2.6)	5 (1.2)	290 (2.7)
Teachers	887	6,057	1 (0.5)	9 (1.6)	34 (2.3)	44 (2.1)	12 (1.9)	328 (2.2)
Sales	2,385	17,901	9 (0.9)	27 (1.9)	40 (2.2)	21 (1.7)	3 (0.7)	290 (2.0)
Secretaries, steno, typist	657	4,118	5 (1.7)	23 (2.9)	49 (2.3)	21 (3.0)	2 (0.7)	296 (2.5)
Clerks	1,506	10,430	6 (0.7)	23 (1.7)	45 (1.9)	23 (1.9)	3 (0.8)	298 (1.8)
Food preparation	1,442	10,556	20 (1.5)	33 (2.3)	34 (2.6)	13 (1.3)	1 (0.4)	266 (2.0)
Cleaning and maintenance	592	3,952	40 (3.4)	36 (3.7)	19 (3.2)	5 (1.9)	0† (0.6)	233 (3.9)
Child care workers	253	1,844	13 (3.0)	31 (5.2)	42 (5.1)	13 (4.1)	1 (0.8)	276 (5.4)
Non-supervisory farming, nursery	478	4,071	36 (4.0)	28 (3.0)	27 (4.2)	9 (1.7)	0† (0.5)	238 (6.1)
Non-supervisory construction	623	4,799	25 (3.1)	32 (2.9)	32 (2.1)	10 (1.9)	1 (0.8)	261 (3.9)
Non-supervisory motor vehicle operator	552	4,019	24 (2.2)	34 (2.6)	32 (3.0)	9 (1.6)	1 (0.6)	260 (2.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

construction, and 24 percent in motor vehicle operation also perform in this lowest proficiency level on the prose scale.

Although some workers demonstrating proficiencies in Level 1 are likely to have some literacy and computational abilities, there are others who can not consistently succeed with basic information-locating and computational tasks such as those represented by Level 1 items and reported by researchers to be present in the vast majority of jobs (see research cited on pages 109 and 110). In high performance workplaces, such as those examined by the SCANS and

by other researchers,[10] where heightened training and information processing requirements abound, many workers in the Level 2 category are likely to experience difficulty in consistently succeeding with high performance workplace requirements. For example, such workplaces call for consistent, high quality performance with the problem solving and computational tasks similar to the more complex information searching and calculating tasks described above for Level 3. Group problem-solving using print information calls for estimating and making comparisons and performing multi-step calculations. These tasks are somewhat akin to the comparison and problem-solving tasks required by Level 4 items like comparing credit cards or using a calculator to determine total cost of a carpet to cover a room.

In each occupational area, some individuals perform in the lowest level of the prose scale. The percentages range from 1 percent of teachers to a relatively high 13 percent in health support occupations. Approximately 9 percent of sales personnel also perform in the lowest level, while about 5 percent of clerks and secretaries perform in Level 1. Thus, even in occupations calling for a good deal of paperwork (i.e., health support, sales, clerical, and secretarial), many workers are unlikely to succeed consistently with the kind of moderately simple materials and tasks found in Level 2. About 40 percent of health support personnel and sales personnel perform in Level 1 or 2, while approximately 30 percent of clerks and secretaries perform in these levels. It is also somewhat disturbing that about 10 percent of teachers and other professionals perform in or below Level 2 on the prose scale. Again, to reiterate, performing in Level 2 does not mean that one cannot read. It does mean, however, that being able to comprehend independently and consistently most training materials of a high school to college level difficulty and much current workplace print information is unlikely.

Nearly one-third of laborers and machine operatives perform in Level 1, while another third perform in Level 2 on all three scales (see tables B5.2P, D, and Q). A reasonable conclusion is that any employer who wants to make the transition to a high performance workplace faces considerable basic skills training challenges. Three of each ten laborers and machine operatives are likely to require some basic skills training to handle rudimentary literacy and computational tasks. Data synthesized from an adult basic education program report indicate that an average learner takes approximately 100 hours of practice to make a grade level gain on literacy tests. Learners in award-winning

[10] F.P. Chisman. (1992). *The Missing Link: Workplace Education for Small Businesses*. Washington, DC: Southport Institute of Policy Analysis; T.E. Faison, M.P. Vencill, J.W. McVey, K.M. Hollenbeck, and W.C. Anderson. (1992). *Ahead of the Curve: Basic Skills Programs in Four Exceptional Firms*. Washington, DC: Southport Institute for Policy Analysis; S. Reder. (1994). *Learning to Earn: The Reward of Workplace Literacy*. Philadelphia, PA: National Center on Adult Literacy, University of Pennsylvania.

programs are reported to cut this time in half, but still must take several hundred hours to move from simple literacy tasks (such as those at Level 1) to success with more complex literacy tasks such as those at Levels 3 and above.[11] Workers performing in Level 1 will predictably need a significant amount of practice and training before they are likely to comprehend and succeed with the high school to college level technical training materials currently used in most workplaces and technical schools. An additional three out of each ten laborers and machine operatives are likely to require some brushing up on literacy and computational skills before being able to benefit much from technical training activities.

Literacy Practices of Adults in Various Occupations

This section examines the types of reading and writing practiced by adults in various occupational categories. The goal is to provide educators with a sense of the kinds and amount of reading and writing performed in various occupations. The National Adult Literacy Survey provides, for the first time, a good deal of information about the types and amounts of literacy engaged in by adults in various occupation areas. Participants were asked several questions about their reading and writing on the job and away from work. They could indicate whether they engaged in various literacy practices daily, a few times a week, once a week, less than once a week, or never.

Work Related Literacy Practices

All employed participants were asked about the frequency with which they *read* work-related memos, reports, manuals, instructions, and diagrams. In addition, they were asked about the frequency with which they *wrote* memos and reports, and filled in forms on the job. From these questions, a job literacy practice index was derived by totaling responses across job literacy materials (i.e., frequency of reading memos, reports, manuals, instructions, and diagrams and writing memos and reports and filling in forms). (See appendix D for an explanation of this variable.) The following tables provide profiles of work-related literacy practices. *Often* refers to workers who reported reading materials daily or a few times a week; *weekly* indicates once a week; *rarely* collapses the rarely and never categories. In addition to the percentage of each

[11] L. Mikulecky. (1989). "Second Chance Basic Skills Education," in *Investing in People, Commission on Workforce Quality and Labor Force Efficiency*, Vol. 1. Washington, DC: U.S. Department of Labor, pp. 215-258.

occupational group reporting reading for the job, table 5.3 presents the average prose proficiency levels of workers in each category (see tables B5.3D and Q for document and quantitative literacy).

TABLE 5.3

Percentages and Average Prose Proficiencies of Workers in Major Occupational Categories, by Frequency of Job Literacy Practices

OCCUPATION			FREQUENCY OF JOB LITERACY PRACTICES		
			Often	Weekly	Rarely
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Managerial	1,612	11,890	89 (0.9) 322 (1.9)	9 (0.7) 302 (7.6)!	2 (0.5) *** (****)
Professional	2,698	18,506	73 (1.1) 333 (1.5)	19 (1.0) 323 (2.9)	8 (0.7) 309 (4.7)!
Technical	714	4,914	71 (2.1) 310 (3.2)	24 (2.3) 306 (5.4)!	5 (0.9) *** (****)
Sales	2,344	17,877	58 (1.3) 301 (2.2)	31 (1.6) 279 (2.7)	11 (0.9) 262 (5.1)!
Clerical	3,524	23,379	69 (1.3) 298 (1.3)	22 (1.2) 298 (2.3)	9 (0.6) 274 (5.1)!
Laborer	935	7,514	26 (2.3) 266 (4.9)	31 (2.3) 260 (4.0)	43 (2.6) 229 (5.6)
Service	3,764	26,821	30 (1.3) 276 (2.1)	30 (1.1) 274 (2.1)	40 (1.1) 244 (2.7)
Farming, forestry, fishing	533	4,961	29 (2.8) 267 (5.9)!	27 (2.7) 263 (7.3)!	44 (2.8) 220 (8.6)
Craft	1,850	15,366	54 (1.6) 281 (2.6)	30 (1.6) 263 (3.6)	16 (1.4) 227 (5.6)
Machine operative	1,300	9,842	33 (1.6) 273 (3.8)	32 (1.8) 251 (4.1)	35 (2.0) 219 (4.3)
Transportation operative	711	5,353	45 (2.4) 268 (3.1)	32 (2.0) 267 (5.0)	23 (2.1) 228 (6.5)!
Total	19,985	146,423	54 (0.6) 301 (0.7)	26 (0.5) 280 (1.3)	20 (0.4) 242 (1.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Survey results provide educators with evidence of a literacy-rich workplace. During a given week, literacy is required of the vast majority of workers in every job category (including laborer). In all occupational areas, a majority of workers reported reading at least on a weekly basis (table 5.3). This ranges from 98 percent of managers to 56 percent of farming, forestry, and fishing workers. (It should be noted that the survey only asked about a relatively few literacy practices and that some workers read or use other written or printed materials such as maps and instrument displays.)

It appears, on the surface, that if one wanted to avoid literacy use, there are still a few occupational areas in which one might work; for example, 40 percent of service workers, 43 percent of laborers, and 44 percent farm-forestry workers reported that they rarely read at work. These figures are somewhat misleading, however, because of large regional variations that, for example, are illustrated by the data in table B5.4. Nearly four times as many Southern laborers (46 percent) as Midwestern laborers (12 percent) reported never engaging in literacy activities. Comparably wide variations are seen for farm workers. In the South and West, 33 percent and 37 percent, respectively, of farm workers reported never engaging in literacy activities. In the Northeast and Midwest, the percentages are 9 percent and 21 percent, respectively.

For educators preparing adolescents and adults for workplace responsibilities, it is of use to see the degree to which various specific literacy practices are called for in particular occupational areas. Table 5.4 focuses upon the percentage of workers who engage in particular literacy practices frequently, that is, at least once a week. As one might expect, occupations which tend to require higher levels of education generally have higher percentages of members who report frequent reading of memos, reports, and manuals. Though frequent diagram reading was reported by the *majority* of workers only in crafts occupations, frequent diagram reading was reported for by a significant *fraction* of workers in many occupations. If schooling is to be in line with the literacy demands of the workplace, it might be appropriate to include instruction in how to read and use diagrams.

The survey data also provide a clearer picture of the extent to which Americans must write frequently on the job. Table 5.5 focuses upon the percentages of employees in various occupations who frequently write memos and reports or fill in forms. Surprisingly high percentages of workers reported that they frequently write on the job (at least once a week). More than half of workers (54 percent) reported frequently writing reports, while 45 percent reported frequently filling out forms and 40 percent frequently writing memos. For only two occupations — farming and laborer — did less than 30 percent of workers report frequently writing reports. Three-fourths of managers reported writing memos regularly, as one might expect, but so did 58 percent of clerical

TABLE 5.4

Percentages of Workers in Major Occupational Categories Reporting Frequent Reading of Materials

OCCUPATION	MATERIAL									
	Memos		Reports		Manuals		Instructions		Diagrams	
	RPCT	(SE)	RPCT	(SE)	RPCT	(SE)	RPCT	(SE)	RPCT	(SE)
Total	67	(0.7)	48	(0.6)	48	(0.6)	44	(4.8)	30	(0.8)
Managerial	93	(1.0)	83	(1.2)	71	(1.4)	31	(1.4)	42	(1.5)
Professional	86	(0.8)	73	(0.9)	69	(1.1)	39	(1.5)	41	(1.3)
Technical	82	(2.0)	68	(2.5)	71	(2.4)	54	(2.0)	49	(2.5)
Sales	70	(1.1)	50	(0.9)	50	(1.2)	28	(1.0)	23	(1.1)
Clerical	85	(0.9)	61	(1.0)	57	(1.2)	31	(1.0)	25	(1.0)
Service	46	(1.3)	28	(1.2)	25	(1.1)	37	(0.9)	12	(1.0)
Farming	37	(3.4)	27	(2.5)	28	(2.0)	24	(2.6)	17	(2.0)
Crafts	61	(1.5)	38	(1.6)	56	(1.6)	34	(1.3)	55	(2.0)
Machine Operative	47	(2.0)	27	(2.1)	31	(2.8)	25	(1.8)	30	(2.3)
Transportation Operative	54	(2.2)	32	(2.6)	28	(2.2)	25	(1.9)	22	(2.0)
Laborer	41	(3.1)	19	(2.3)	28	(2.3)	20	(1.9)	22	(2.3)

n = sample size; WGT N = population size estimate /1,000 (the sample sizes for subpopulations may not add up to the total sample sizes because of missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

workers, 51 percent of sales persons, and 40 percent of transportation operatives. In a majority of occupations, more than 40 percent of workers reported frequently filling out forms. For educators, this suggests a large percentage of students is likely to do some writing in the workplace. Surveys of writing practices in schools suggest that very little writing is required of many students and of that little writing, much is creative and narrative writing.[12] If we wish to match schooling with current writing demands in the workplace, greater emphasis on writing and reading memos and reports seems desirable.

Those Who Rarely Read

In addition to surveying workers about job-related reading and writing, the National Adult Literacy Survey asked about literacy practices for one's own use.

[12] J.I. Goodlad. (1983). *A Place Called School*. New York: McGraw Hill; A. Applebee. (1981). *Writing in the Secondary School*. Urbana, IL: National Council of Teachers of English; J. Langer, A. Applebee, I. Mullis, and M. Foertsch. (1990). *Learning to Read in Our Nation's Schools*. Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service.

TABLE 5.5

Percentages of Workers in Major Occupational Categories Reporting Frequent Writing of Materials

OCCUPATION	MATERIAL					
	Memos RPCT (SE)		Reports RPCT (SE)		Forms RPCT (SE)	
Total	40	(0.6)	54	(0.6)	45	(0.7)
Managerial	75	(1.4)	87	(1.3)	73	(1.5)
Professional	33	(1.1)	73	(1.0)	43	(1.4)
Technical	35	(2.4)	64	(2.5)	49	(2.5)
Sales	51	(1.3)	56	(1.1)	53	(1.2)
Clerical	58	(1.1)	71	(1.2)	63	(1.2)
Service	23	(1.0)	35	(1.0)	26	(1.1)
Farming	31	(3.1)	25	(2.3)	24	(2.2)
Crafts	34	(1.5)	47	(1.8)	42	(1.8)
Machine Operative	22	(1.3)	32	(2.0)	26	(1.7)
Transportation Operative	40	(2.0)	40	(2.9)	48	(2.7)
Laborer	28	(2.6)	26	(2.3)	28	(2.2)

n = sample size; WGT N = population size estimate /1,000 (the sample sizes for subpopulations may not add up to the total sample sizes because of missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

Table 5.6 shows the percentages and prose proficiencies of workers whose combined job and personal literacy practices were reported as often, weekly, or rarely. (Also see tables B5.5D and Q.)

In many occupational areas, the number of workers reporting rarely is so small that statistical analysis is not possible or interpretation must be made with caution. When comparison is possible (that is, for the laborer and service occupations), however, the proficiencies of workers who reported rarely engaging in literacy practices are significantly lower than the proficiencies of workers who reported doing so often. Workers in these occupations who reported reading rarely on the job and at home perform, on average, in Level 1 or barely into Level 2 on the proficiency scales.

Figures about the percentage of adults who rarely practice literacy at home or on the job are important because of the documented phenomenon of learning loss. Research with adults[13] and with low literate adolescents[14] indicates that when little literacy practice occurs, abilities actually decline. This

[13] T.G. Sticht. (1982). *Basis Skills for Defense*. Alexandria, VA: Human Resources Research Organization.
[14] L. Mikulecky. (April 1990). "Stopping Summer Learning Loss Among At-Risk Youth." *Journal of Reading*, *33* (7) pp. 516-521.

TABLE 5.6

Percentages and Average Prose Proficiencies of Workers in Major Occupational Categories, by Frequency of Combined Literacy Practices

OCCUPATION			FREQUENCY OF COMBINED LITERACY PRACTICES		
			Often	Weekly	Rarely
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Managerial	1,612	11,906	84 (1.1) 323 (1.8)	15 (1.1) 304 (5.9)	1 (0.2) *** (****)
Professional	2,698	18,510	73 (1.1) 333 (1.5)	23 (1.1) 321 (2.7)	4 (0.5) 299 (8.2)!
Technical	714	4,918	71 (2.3) 312 (3.2)	26 (2.5) 303 (5.3)!	3 (0.6) *** (****)
Sales	2,344	17,901	60 (1.2) 302 (2.0)	33 (1.3) 279 (2.6)	6 (0.7) 233 (7.9)!
Clerical	3,524	23,394	66 (1.2) 299 (1.3)	29 (1.2) 295 (1.9)	5 (0.4) 263 (6.9)!
Laborer	935	7,595	27 (2.4) 273 (4.2)	42 (2.3) 255 (4.3)	29 (2.0) 215 (6.0)
Service	3,764	26,916	32 (1.1) 279 (1.9)	43 (1.3) 270 (1.8)	25 (0.9) 228 (3.6)
Farming, forestry, fishing	533	4,990	30 (3.3) 272 (5.8)!	39 (3.2) 260 (5.6)	30 (2.8) 198 (11.7)!
Craft	1,850	15,460	49 (1.7) 282 (2.4)	39 (1.5) 264 (2.6)	11 (1.2) 212 (7.1)!
Machine operative	1,300	9,878	32 (2.0) 276 (3.6)	42 (2.2) 251 (3.7)	26 (1.9) 203 (5.2)!
Transportation operative	711	5,387	41 (2.7) 270 (3.7)	41 (2.6) 261 (4.5)	17 (1.8) 223 (7.4)!

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

is particularly disturbing as the worker population ages. The very workers who may need to improve in basic skills the most tend to practice the least and are likely to become less able as time passes unless they begin to practice more. Five percent or less of workers in managerial, professional, technical, or clerical occupations reported reading rarely for any purpose, and 6, 11, and 17 percent of sales, craft, and transportation operative workers, respectively, reported reading rarely. For the other occupational areas, however, the percentages are higher, ranging from about 25 percent of service and machine operative workers to 30 percent of laborer and farm, forestry, and fishing workers.

Enrollment in Basic Skills Programs

This section examines how many employees in different occupational categories reported enrolling in basic skills instruction and what type of programs they were. The purpose of this analysis is to provide developers of educational programs and policy makers a sense of where employees seek basic skills instruction as well as to profile the abilities and education levels of those pursuing basic skills instruction. In addition, this section examines where (i.e., home, school, work) adults from various occupational categories reported having learned to read charts, graphs, diagrams and do the sorts of writing called for in the workplace.

All employed adults in the National Adult Literacy Survey were asked the following question: "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?" It is left to the individual to interpret what basic reading, writing and arithmetic might be. In order to examine the degree to which adults in various occupational areas participated in basic skills instruction and where they received such instruction, data were combined into four large occupational areas: managerial, professional, and technical; sales, clerical, and service; craft occupations; and laborer, farm, etc., and machine and transportation operator. Each individual could respond never enrolled or indicate if training had been received from an employer or union, a publicly sponsored program, tutoring, or other. Since some individuals could have received training from more than one source, it is only possible to determine the percentage of individuals receiving basic skills instruction by examining responses to the choice of *never enrolled* and subtracting that percent from 100. Across all major occupation areas, 92 percent of workers say they have never enrolled in basic skills classes. Reversed, this means that 8

percent of employees have enrolled for such instruction. Some have enrolled for instruction at more than one location.

Locations where instruction was received differed somewhat among occupation groups. The following percentages were reported (see table B5.6 for more detail).

OCCUPATION	PERCENTAGE FOR TYPE OF INSTRUCTION			
	Employer/ Union	Public	Tutoring/ Others	Never Enrolled
Managerial, professional, technical	5	2	3	92
Sales, clerical, service	3	3	3	92
Craft occupations	4	2	3	92
Laborer, farm, etc., machine and transportation operator	2	3	3	92

Employers and unions are providing a substantial amount (about half) of the basic skills instruction received by adults in the more highly skilled occupations (i.e., manager, professional, technical, and craft). The remainder of employees receiving basic skills instruction in these occupations and others is about equally divided between public supported instruction and tutoring or other sorts of instruction (i.e., home study, church, clubs, etc.).

When results for those receiving basic skills instruction are examined by sex, race/ethnicity, and education levels (no matter where they choose to receive basic skills instruction), the following patterns emerge (table 5.7). Eight percent of males and 7 percent of females have enrolled in basic skills instruction. Six percent of White adults, 13 percent of Black adults, and 9 percent of Hispanic adults reported receiving basic skills instruction. At all education levels, the percentages of adults having received instruction are about 7 percent, although clear proficiency differences appear by education level. Adults with less than 12 years of education demonstrate average prose proficiencies in Level 1; those with high school diploma or GED demonstrate proficiencies in Level 2; and those with some postsecondary education in Level 3. (See also tables B5.7D and Q.)

It is important for educators and policy makers to make note of the fact that basic skills instruction has been sought about equally by employees in all occupational areas and at all education levels. A viewpoint sometimes voiced by

TABLE 5.7

Percentages and Average Prose Proficiencies of Adults Reporting Enrollment in Training Programs, by Sex, Race/Ethnicity, and Education

SEX, RACE/ETHNICITY, AND EDUCATION			TRAINING COURSES				
			Never enrolled	Employer/ Union	Public	Tutoring/ Other	Total enrolled
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Sex							
Male	10,657	89,736	92 (0.4)	4 (0.2)	2 (0.2)	4 (0.2)	8 (0.4)
			273 (0.9)	285 (3.6)	239 (7.0)	260 (4.3)	265 (3.1)
Female	13,922	96,591	93 (0.3)	2 (0.2)	3 (0.2)	2 (0.2)	7 (0.3)
			275 (0.9)	277 (4.6)	250 (4.4)	260 (4.9)	261 (3.1)
Race/Ethnicity							
White	16,637	142,077	94 (0.3)	3 (0.2)	2 (0.1)	2 (0.2)	6 (0.3)
			287 (0.7)	294 (3.8)!	269 (5.3)!	279 (4.0)!	282 (2.7)
Black	4,464	20,524	87 (0.7)	4 (0.3)	6 (0.6)	5 (0.4)	13 (0.7)
			236 (1.6)	251 (4.5)	225 (4.7)	242 (6.1)	237 (3.4)
Hispanic	2,870	17,739	91 (0.8)	2 (0.4)	3 (0.4)	4 (0.6)	9 (0.8)
			213 (2.2)	252 (12.4)!	226 (7.4)!	225 (8.3)!	231 (5.6)!
Other	646	6,252	87 (2.2)	5 (1.9)	6 (1.3)	4 (1.3)	13 (2.2)
			249 (4.2)	*** (****)	*** (****)	*** (****)	209 (15.5)!
Education							
Still in high school	954	8,084	94 (1.4)	0† (0.1)	3 (0.7)	4 (0.9)	6 (1.4)
			272 (2.1)	*** (****)	*** (****)	*** (****)	259 (8.5)!
0 to 12 years	4,940	42,433	92 (0.6)	2 (0.3)	4 (0.3)	3 (0.4)	8 (0.6)
			208 (1.7)	219 (7.9)!	209 (6.1)!	203 (6.5)!	209 (3.8)
GED/High school graduate	6,762	57,253	93 (0.5)	3 (0.3)	3 (0.3)	2 (0.2)	7 (0.5)
			271 (1.0)	266 (5.1)	248 (8.0)	263 (4.5)	259 (4.2)
Some postsecondary	11,961	78,822	93 (0.4)	4 (0.2)	2 (0.1)	3 (0.2)	7 (0.4)
			311 (0.8)	306 (3.2)	283 (4.4)!	297 (3.7)	298 (2.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

employers and adult educators is that workplace literacy programs are mainly for those adults who have very low skill levels (i.e., being virtually illiterate) or who dropped out of school before graduation. These data show that high school dropouts are not more likely to enroll in basic skills programs than are adults with postsecondary schooling. Thus, those enrolled are distributed equally across all educational levels.

Training Participants' Proficiencies Compared with Other Workers

A few patterns emerge from the enrollment data (table 5.7), but one must be careful in interpreting the meaning of these patterns. In some cases, adults enrolled in employer or union classes outperform adults who have never enrolled in basic skills instruction. This difference may indicate that low scoring adults do not choose to enter employer/union programs and/or that the programs are working. Adults enrolled in public instruction or tutoring demonstrate lower proficiencies than those who never enrolled. Again, the meaning of these data is open to discussion. One cannot tell to what extent lower scores are the result of employees possibly having lower scores to begin with. Because of small sample sizes in most of the race/ethnicity categories and at some education levels, statistical comparison must be done with caution. It is possible to make statistical comparisons, however, in the categories of males and females, GED/high school graduate, and some postsecondary education.

Males who never enrolled in basic skills instruction demonstrate significantly lower prose proficiency than those who enrolled in employer/union programs, but demonstrate statistically higher proficiency than males enrolled in public instruction or tutoring. It may be that males who received their basic skills training in public or tutoring programs were less skilled than others when they enrolled or did not have access to employer and union programs. It is also possible that employer/union programs were more effective than public programs and raised the proficiency levels of enrolled males beyond those of non-enrolled males. Survey data do not make it possible to answer these questions. Females who never enrolled for basic skills instruction perform comparably to those in employer/union basic skills programs on the prose scale and outperform females who were enrolled in public and tutoring programs. Again, it is not possible to determine why from the survey data.

Comparisons by educational subgroups reveal mixed patterns. Among adults who have a GED or high school diploma, those who never enrolled demonstrate higher prose proficiency than those in public training programs but are comparable to those in all other programs. At the postsecondary level,

adults who never enrolled demonstrate higher prose proficiency than those who enrolled in tutoring programs but are comparable to those in employer/union programs.

This information tends to reinforce the point made earlier. About 7 to 8 percent of adults from nearly all education levels and skill levels reported having enrolled in basic skills programs. There is a slight tendency for those who have enrolled in public or tutoring programs to perform less well than nonenrollees, but this is somewhat counterbalanced by the fact that nonenrolling males are outperformed by males in employer/union programs. It is not possible to determine from the data the extent to which comparable performances of enrollees and nonenrollees is due to the effectiveness of programs. One might argue that basic skills instruction has worked and that it has brought the proficiency levels of those enrolling to the levels of peers who did not enroll. One might equally argue, however, that if 7 to 8 percent of workers at all education levels are choosing to enter basic skills instruction, a small percentage of highly motivated workers with differing ideas about what constitutes basic skills are seeking help in programs.

Where Adults Learn Their Skills

Participants in the National Adult Literacy Survey were asked where they primarily learned to read a variety of materials (i.e., newspapers, magazines, or books; and graphs, diagrams, or maps) and where they learned to write letters or notes and fill out forms. The choices were in school, in home or community, or at work. Those who designed the background questionnaire speculated that differences in where adults learned literacy skills might suggest interventions and curriculum guidelines for educators. For the most part, however, there are few differences (for example, by education level) in where adults primarily learned literacy skills.

As one would expect, most people (about 60 percent at all educational levels) reported learning to read prose primarily at school (table 5.8). About 40 percent reported learning at home or in the community, and very few people (1 or 2 percent across all educational levels) reported learning to read prose at work.

Learning to read graphs, diagrams, and maps (see table 5.9) occurred primarily at school for the majority at all education levels — i.e., 71 percent of adults with 0 to 12 years; 83 percent of GED/high school graduates; 88 percent

TABLE 5.8

Percentages and Average Proficiencies on Each Literacy Scale of Adults at Each Education Level, by Where Learned to Read Prose

EDUCATION LEVEL / LITERACY SCALE			WHERE LEARNED TO READ PROSE		
			Mostly in school	Mostly at home/community	Mostly at work
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
0 to 12 Years	4,724	41,352			
Prose			58 (0.9)	40 (0.9)	2 (0.3)
			215 (1.7)	206 (2.5)	195 (9.9)!
Document			58 (0.9)	40 (0.9)	2 (0.3)
			210 (1.7)	199 (2.8)	185 (7.5)!
Quantitative			58 (0.9)	40 (0.9)	2 (0.3)
			211 (2.0)	201 (2.9)	199 (9.2)!
GED/High School Graduate	6,805	58,026			
Prose			64 (0.8)	35 (0.7)	1 (0.2)
			270 (1.3)	271 (1.2)	244 (8.1)!
Document			64 (0.8)	35 (0.7)	1 (0.2)
			265 (1.2)	263 (1.6)	244 (9.3)!
Quantitative			64 (0.8)	35 (0.7)	1 (0.2)
			271 (1.2)	270 (1.5)	252 (10.2)!
Postsecondary	12,109	80,195			
Prose			60 (0.7)	39 (0.7)	1 (0.1)
			310 (0.9)	310 (1.1)	289 (5.3)!
Document			60 (0.7)	39 (0.7)	1 (0.1)
			304 (0.8)	303 (1.0)	283 (5.3)!
Quantitative			60 (0.7)	39 (0.7)	1 (0.1)
			311 (1.0)	310 (1.3)	295 (5.2)!

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE 5.9

Percentages and Average Proficiencies on Each Literacy Scale of Adults at Each Education Level, by Where Learned to Read Documents

EDUCATION LEVEL / LITERACY SCALE			WHERE LEARNED TO READ DOCUMENTS		
			Mostly in school	Mostly at home/community	Mostly at work
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
0 to 12 Years	3,984	35,054			
Prose			71 (0.8)	19 (0.8)	10 (0.6)
			222 (1.9)	207 (3.3)	217 (4.3)
Document			71 (0.8)	19 (0.8)	10 (0.6)
			216 (2.1)	199 (3.1)	213 (4.6)
Quantitative			71 (0.8)	19 (0.8)	10 (0.6)
			216 (2.3)	203 (3.5)	223 (4.6)
GED/High School Graduate	6,613	56,444			
Prose			83 (0.6)	10 (0.5)	8 (0.5)
			273 (1.0)	260 (3.8)	272 (2.7)
Document			83 (0.6)	10 (0.5)	8 (0.5)
			267 (0.9)	252 (3.3)	266 (2.6)
Quantitative			83 (0.6)	10 (0.5)	8 (0.5)
			272 (1.0)	260 (3.4)	278 (3.2)
Postsecondary	12,025	79,650			
Prose			88 (0.4)	8 (0.3)	5 (0.2)
			312 (0.9)	297 (2.7)	300 (3.0)
Document			88 (0.4)	8 (0.3)	5 (0.2)
			306 (0.8)	290 (2.1)	294 (2.9)
Quantitative			88 (0.4)	8 (0.3)	5 (0.2)
			312 (0.9)	299 (2.8)	302 (3.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

of postsecondary. Learning at work played a larger role for graph, diagram, and map reading than it did for prose reading. Furthermore, the lower the level of education, the greater the percentage learning to read documents at work. Ten percent of those with 0 to 12 years of education reported learning these graph, diagram, and map skills primarily at work compared with 8 percent of GED/high school graduates and 5 percent of the postsecondary group. Adults with less than a college education who reported learning these skills at home or in the community generally demonstrate the lowest proficiencies, while there are no significant differences in proficiencies between those who learned skills at school and at work. At the postsecondary level, those who learned these skills at school demonstrate higher proficiencies than those who learned at home or at work.

About one-half of adults with 0 to 12 years of education and about two-thirds of adults at the two higher education levels learned to fill out forms in school; about 20 percent learned to fill out forms primarily at work, regardless of education; and close to 30 percent of those with 0 to 12 years of education and close to 20 percent of the two higher levels learned at home or in the community (table 5.10). With the exception of adults with some postsecondary education, those who learned to fill out forms at home or in the community generally demonstrate significantly lower proficiency scores than those who learned at school or work.

There does appear to be a pattern related to learning to write letters, notes, memos or reports primarily at work (See table 5.11). Writing was learned mostly at work for 7 percent of those with 0 to 12 years of education, for 9 percent of those with a GED/high school diploma, and 14 percent of those with postsecondary education. For all education levels, employees with the highest proficiency scores generally reported learning writing at work. This suggests a need for researchers and school-based educators to examine the sorts of formal and informal writing instruction occurring in the workplace.

TABLE 5.10

Percentages and Average Proficiencies on Each Literacy Scale of Adults at Each Education Level, by Where Learned to Fill Out Forms

EDUCATION LEVEL / LITERACY SCALE			WHERE LEARNED TO FILL OUT FORMS		
			Mostly in school	Mostly at home/community	Mostly at work
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
0 to 12 Years	4,346	38,058			
Prose			52 (1.0)	29 (0.8)	20 (0.6)
			220 (1.8)	210 (2.6)	218 (3.2)
Document			52 (1.0)	29 (0.8)	20 (0.6)
			215 (2.1)	201 (2.6)	213 (3.0)
Quantitative			52 (1.0)	29 (0.8)	20 (0.6)
			215 (2.2)	202 (3.1)	221 (3.5)
GED/High School Graduate	6,745	57,443			
Prose			65 (1.0)	17 (0.7)	18 (0.6)
			271 (1.2)	264 (2.6)	275 (2.1)
Document			65 (1.0)	17 (0.7)	18 (0.6)
			265 (1.2)	257 (3.0)	269 (2.0)
Quantitative			65 (1.0)	17 (0.7)	18 (0.6)
			269 (1.3)	264 (2.4)	280 (2.2)
Postsecondary	12,029	79,632			
Prose			64 (0.5)	18 (0.5)	18 (0.5)
			310 (0.9)	309 (1.5)	311 (1.7)
Document			64 (0.5)	18 (0.5)	18 (0.5)
			304 (0.9)	302 (1.6)	305 (1.3)
Quantitative			64 (0.5)	18 (0.5)	18 (0.5)
			310 (1.0)	308 (1.6)	315 (1.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE 5.11

Percentages and Average Proficiencies on Each Literacy Scale of Adults at Each Education Level, by Where Learned to Write

EDUCATION LEVEL / LITERACY SCALE			WHERE LEARNED TO WRITE		
			Mostly in school	Mostly at home/community	Mostly at work
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
0 to 12 Years	4,556	39,876			
Prose			65 (1.0)	28 (0.9)	7 (0.7)
			219 (1.9)	197 (2.7)	228 (4.0)
Document			65 (1.0)	28 (0.9)	7 (0.7)
			214 (2.0)	188 (2.4)	224 (4.3)
Quantitative			65 (1.0)	28 (0.9)	7 (0.7)
			214 (2.2)	188 (3.0)	237 (4.9)
GED/High School Graduate	6,765	57,768			
Prose			78 (0.8)	13 (0.7)	9 (0.4)
			270 (1.0)	263 (2.7)	281 (2.3)
Document			78 (0.8)	13 (0.7)	9 (0.4)
			265 (1.0)	255 (2.9)	273 (2.4)
Quantitative			78 (0.8)	13 (0.7)	9 (0.4)
			270 (0.9)	262 (2.4)	285 (2.9)
Postsecondary	12,087	80,108			
Prose			74 (0.6)	12 (0.4)	14 (0.5)
			310 (0.9)	303 (1.8)	318 (1.6)
Document			74 (0.6)	12 (0.4)	14 (0.5)
			303 (0.9)	296 (2.2)	311 (1.7)
Quantitative			74 (0.6)	12 (0.4)	14 (0.5)
			309 (1.0)	302 (2.1)	322 (1.8)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Impact of Non-English Language, Learning Disabilities, and Race/Ethnicity on Literacy Proficiency in Various Occupations

The mix of employees in America's workplaces is becoming more diverse. Adult education classes within workplaces are also becoming complex and varied. This diversity includes growing minority and English-as-second-language populations. In addition, many learning disabled adults are finding themselves faced with increased training and basic skills demands in the workplace. Since testing and assessment are often impossible in workplace settings, educators find themselves without important information about the relative proficiencies of members of these diverse populations. This inhibits the planning of educational programs.

Several background questions gathered information about primary language spoken, race and ethnicity, and a variety of disabilities. With the data from these questions, it is possible to determine the relative performance of various subgroups. A good deal of caution must be used when considering this information, however. Knowing the relative performance levels of subpopulations (i.e., ESL, learning disabled, etc.) can be of some use in helping educators plan large program initiatives. It is dangerous, however, to over generalize about the abilities of specific individuals or even portions of a subpopulation in a particular workplace. When possible, it is always more desirable to gather information about the individuals for whom a local program is being planned.

Table 5.12 presents proficiency scores of workers who reported the language they currently speak most often as English, Spanish, or other. Occupational groups are aggregated in the following four categories: manager, professional, and technical; sales, clerical, and service; craft; and laborer, farmer, and machine and transportation operators.

Language Predominantly Spoken

The percentage of workers who speak predominantly English ranges from 99 percent of the manager/professional/technical category to 89 percent of the laborer category. Predominantly Spanish speakers comprise 1 percent of the manager category, 3 percent of the sales, clerical, and service category, 4 percent of the craft category, and 9 percent of the laborer category. Adults speaking other languages comprise, at most, 2 percent of any one occupational category.

TABLE 5.12

Percentages and Average Proficiencies on Each Literacy Scale of Workers in Collapsed Occupational Categories, by Current Language

OCCUPATION / LITERACY SCALE			CURRENT LANGUAGE		
			English	Spanish	Other
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Manager, Professional, & Technical	5,060	35,301			
Prose			99 (0.3)	1 (0.2)	1 (0.2)
			324 (1.0)	232 (12.5)!	*** (****)
Document			99 (0.3)	1 (0.2)	1 (0.2)
			317 (1.0)	229 (13.2)!	*** (****)
Quantitative			99 (0.3)	1 (0.2)	1 (0.2)
			323 (1.0)	242 (13.3)!	*** (****)
Sales, Clerical, Service	9,831	68,146			
Prose			96 (0.3)	3 (0.2)	1 (0.1)
			285 (0.9)	164 (5.6)!	186 (7.8)!
Document			96 (0.3)	3 (0.2)	1 (0.1)
			280 (0.9)	168 (4.9)!	190 (10.4)!
Quantitative			96 (0.3)	3 (0.2)	1 (0.1)
			283 (0.9)	167 (5.3)!	199 (8.8)!
Craft	1,989	15,429			
Prose			95 (0.6)	4 (0.5)	1 (0.4)
			273 (2.0)	146 (7.9)!	*** (****)
Document			95 (0.6)	4 (0.5)	1 (0.4)
			272 (2.0)	156 (8.4)!	*** (****)
Quantitative			95 (0.6)	4 (0.5)	1 (0.4)
			280 (2.3)	155 (7.5)!	*** (****)
Laborer, Farmer, & Machine/Transportation Operative	3,738	27,826			
Prose			89 (0.8)	9 (0.7)	2 (0.5)
			262 (1.7)	146 (5.2)!	149 (14.6)!
Document			89 (0.8)	9 (0.7)	2 (0.5)
			259 (1.4)	146 (5.2)!	169 (14.3)!
Quantitative			89 (0.8)	9 (0.7)	2 (0.5)
			265 (1.7)	148 (5.2)!	169 (20.8)!
Total	20,618	146,702			
Prose			95 (0.2)	4 (0.2)	1 (0.1)
			290 (0.7)	157 (4.3)	182 (7.6)!
Document			95 (0.2)	4 (0.2)	1 (0.1)
			285 (0.7)	160 (4.2)	194 (7.2)!
Quantitative			95 (0.2)	4 (0.2)	1 (0.1)
			289 (0.6)	160 (4.5)	200 (8.9)!

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

When employees across all occupation categories are aggregated, non-English speakers demonstrate proficiencies more than 100 points, or two levels, below English speakers (i.e., Level 1 vs. Level 3). Comparing data by various occupations is not statistically advisable because of the small sample size of non-English speakers in many occupation areas; therefore, the comparisons must be viewed with much caution.

Race/Ethnicity

Proficiencies of workers who described themselves as White, Black, or Hispanic were also examined by the major occupational groups (table 5.13). The representation of White workers in occupations ranges from about 90 percent of the managerial and professional occupations to about 70 percent of the laborer, service, and machine operative occupations. Black workers account for about 15 percent each of the laborer, service, and machine and transportation operatives categories, while about 15 percent of laborers, farmers, and machine operators are of Hispanic origin. Prose proficiency scores for various occupational groups can be found on table 5.13 below and document and quantitative scores in tables B5.8D and Q.

For the total working population, on the prose scale White adults outperform Black adults, who, in turn, outperform Hispanic adults. For the one occupational category where the data can be interpreted, that is, service, this pattern is evident as well. For some occupations, however, this may not be the case; that is, Black and Hispanic workers may demonstrate about the same proficiencies, although most of the data need to be interpreted with caution.

Learning Disabilities

Research performed in adult basic education classes by Keefe and Meyer indicates that the majority (78 percent) of very low literate adults (i.e., third grade level and below) in an ABE program had tested learning disabilities.[15] Workplace educators without facilities for testing learning disabilities occasionally have workers inform them that they have a learning disability. For this reason, it is important for educators to have a profile of what self-reported learning disability means in terms of proficiency levels. Is it almost always an indication of extremely low levels of ability or are self-reported learning disabilities spread across all literacy levels?

[15] D. Keefe and V. Meyer. (1988). "Profiles of and Instructional Strategies for Adult Disabled Readers," *Journal of Reading*, *31* (7), 614-619.

TABLE 5.13

Percentages and Average Prose Proficiencies of Workers in Major Occupational Categories, by Race/Ethnicity

OCCUPATION			RACE/ETHNICITY		
			White	Black	Hispanic
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Managerial	1,598	11,597	90 (0.9) 323 (2.2)	6 (0.6) 285 (5.4)!	4 (0.6) 294 (10.8)!
Professional	2,600	17,750	89 (0.9) 335 (1.5)	6 (0.6) 287 (4.0)!	4 (0.5) 287 (6.1)!
Technical	693	4,641	84 (1.7) 316 (2.7)	9 (1.3) 282 (5.2)!	7 (1.0) 272 (8.6)!
Sales	2,301	16,974	82 (1.1) 300 (2.1)	9 (0.6) 261 (3.0)!	9 (0.8) 246 (6.3)!
Clerical	3,466	22,782	78 (0.9) 303 (1.5)	12 (0.6) 271 (2.8)	10 (0.7) 266 (3.8)!
Laborer	1,025	7,293	69 (1.9) 268 (4.2)	16 (1.3) 225 (6.4)!	15 (1.5) 188 (8.0)!
Service	3,802	25,832	70 (0.8) 282 (1.6)	17 (0.7) 231 (2.2)	13 (0.7) 211 (5.8)
Farming, forestry, fishing	565	4,814	81 (2.9) 268 (3.5)	4 (1.3) 195 (12.4)!	15 (2.6) 154 (8.3)!
Craft	1,955	15,239	83 (0.9) 278 (2.2)	7 (0.7) 223 (6.7)!	9 (0.7) 208 (4.8)!
Machine operative	1,320	9,454	69 (1.8) 268 (2.9)	15 (1.6) 233 (3.6)!	16 (1.3) 178 (6.6)!
Transportation operative	747	5,280	74 (2.0) 273 (3.2)	15 (1.6) 221 (6.8)!	11 (1.5) 219 (9.6)!
Total	20,072	141,656	79 (0.2) 297 (0.8)	11 (0.1) 247 (1.5)	10 (0.2) 224 (2.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

Survey respondents were asked to report whether they had physical, mental, or other health conditions. Adults who reported having a learning disability comprised only 3 percent of the total population (table 5.14). Since the term "learning disabilities" has attained popular currency only during the last few decades, it is likely that the percentage of older adults reporting learning disabilities is underreported. These adults are unlikely to have been diagnosed as learning disabled while in school.

Because the sample size is so small, it is not possible to interpret proficiency data for learning disabled adults by occupational category; thus, the data in table 5.15 are just by disability. According to distributions across the five literacy levels, 58 percent of adults who reported learning disabilities perform in Level 1 on the prose scale, with another 22 percent performing in Level 2. About one-fifth of adults who reported being learning disabled perform in the three higher levels, with 1 percent of those reporting learning disabilities performing at the highest level. This suggests that the vast majority of adults reporting learning disabilities may need basic skills support. The fact that nearly one-fifth of adults with self-reported learning disabilities demonstrate reading and computing skills in Level 3 or above suggests caution on the part of educators, however. The Keefe and Meyer study cited previously found that more than two-thirds of very low literate adults in ABE programs had vision problems (many of which were uncorrectable). About 7 percent of adults in

TABLE 5.14

Percentages of Adults Who Reported Having a Physical, Mental, or Other Health Condition

TYPE OF CONDITION	TOTAL POPULATION PCT	(SE)
Physical, mental, or other health condition	12	(0.3)
Visual difficulty	7	(0.2)
Hearing difficulty	7	(0.3)
Learning disability	3	(0.1)
Mental or emotional condition	2	(0.1)
Mental retardation	0 *	(0.0)
Speech disability	1	(0.1)
Physical disability	9	(0.3)
Long-term illness	8	(0.2)
Other health impairment	6	(0.3)

*Percentages less than 0.5 are rounded to zero.

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

TABLE 5.15

Percentages at Each Level and Average Prose Proficiencies of Adults Reporting Type of Physical, Mental, or Health Condition

TYPE OF CONDITION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Physical, mental, health condition	2,806	22,205	46 (1.1)	30 (1.6)	18 (1.5)	5 (0.9)	1 (0.2)	227 (1.6)
Visual difficulty	1,801	14,296	54 (1.6)	26 (1.4)	15 (1.6)	5 (1.3)	0† (0.2)	217 (2.4)
Hearing difficulty	1,611	14,202	37 (1.9)	30 (2.0)	24 (1.9)	9 (1.4)	1 (0.4)	242 (2.6)
Learning disability	875	5,820	58 (2.4)	22 (2.4)	14 (1.6)	4 (1.1)	1 (0.6)	206 (3.8)
Mental or emotional condition	597	3,631	49 (3.2)	24 (2.8)	18 (2.3)	8 (1.8)	2 (0.9)	224 (4.8)
Mental retardation	63	370	87 (6.0)	3 (4.4)	5 (4.1)	3 (3.2)	1 (1.7)	143 (13.7)
Speech disability	383	2,767	53 (4.0)	26 (3.8)	13 (2.7)	7 (2.4)	0† (0.4)	216 (6.6)
Physical disability	2,129	17,144	44 (1.3)	30 (1.5)	19 (1.6)	6 (1.0)	1 (0.2)	231 (1.8)
Long-term illness	1,880	14,627	41 (1.5)	29 (1.3)	21 (1.4)	7 (1.1)	1 (0.4)	236 (2.4)
Any other health impairment	1,509	12,058	40 (2.1)	30 (2.7)	23 (2.2)	7 (1.2)	1 (0.3)	237 (2.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

this survey reported vision problems, and the proficiency scores of these adults are comparable to those of adults reporting learning disabilities. Since over three-fourths of adults with learning or visual difficulties perform in the two lowest proficiency levels, it is advisable that workplace educators be instructionally prepared to deal with these difficulties through special instructional approaches and collaborative efforts with specialists. (Also see tables B5.9D and Q.)

Summary

This chapter addressed the following areas: what is known about occupational literacy demands; the literacy proficiencies of adults in various occupations; the literacy practices of adults in various occupational areas; the characteristics of adults who had participated in basic skills training programs; where adults reported learning various literacy skills; and the literacy proficiencies of various subgroups of particular concern to educators.

Literacy Demands and Proficiencies. During the past 15 years, researchers have documented literacy and basic skills demands for job performance and job training across hundreds of workplaces. Many of the tasks and demands reported by researchers parallel the tasks in this survey. For example, a frequently reported workplace task is skimming a report or job-order for relevant details. This is comparable to being able to locate the name of a country in a short newspaper article, which falls at 149 or in Level 1 on the prose scale. Other Level 1 tasks are also comparable to the more basic job skills consistently reported by researchers. Being able to locate the expiration date on a driver's license, a Level 1 task, is very similar to search strategies for receipt dates and delivery dates on work orders. Being able to total a fairly simple bank deposit entry accurately (another Level 1 task) parallels widespread job tasks involving simple calculations. Other form-filling, map reading, and calculation tasks reported in many workplaces parallel such Level 2 tasks as interpreting appliance instructions, locating intersections on maps, entering information on forms, and calculating costs of materials. Even higher literacy demands are reported by researchers who examine high performance workplaces where work has been reorganized to require team planning and problem solving, goal setting, and heavy worker participation in training. Though such workplaces are currently in the minority, they call for literacy proficiencies that are comparable to high school reading levels and to tasks in Level 3 and higher.

Average prose, document, and quantitative proficiencies of adults in major occupational categories range from around 245 (mid-Level 2) for the machine operative and the farming/forestry/fishing occupations to proficiencies of around 320 (high Level 3) for the professional and managerial categories, with other occupational categories falling between. When looked at by specific occupational categories, there are sizable percentages of workers in most non-professional and non-managerial occupations whose proficiency scores fall in Level 1 or 2. Thus, sizable numbers of workers (especially in labor, maintenance, food service, child care, and other comparable occupations) are unlikely to succeed *consistently and independently* with literacy tasks of even moderate difficulty. Many of the problem-solving and training tasks called for in workplaces attempting to restructure are likely to present problems for workers who perform at lower proficiency levels. In such workplaces, it is likely that a significant number of workers will need to increase their skills if consistent, independent success with new workplace literacy tasks is required.

Literacy Practices. Self-reported information from the survey provides evidence of a literacy-rich workplace. In all occupational areas, a majority of workers reported reading or writing at least on a weekly basis a variety of materials, including memos, reports, manuals, instructions, and diagrams. This ranges from 98 percent of managers to 56 percent of farming, forestry, and fishing workers. Occupations which tend to require higher levels of education have higher percentages of members who report frequent reading of memos, reports, and manuals. Although a majority of workers reported frequent diagram reading in only the craft occupations, a significant *fraction* of workers in many occupations reported reading diagrams frequently. This is important information for educators, since there is only very limited transfer from prose reading to diagram reading. Surprisingly high percentages of workers reported that they frequently write on the job. Substantial percentages (over 30 percent) of workers in most occupational areas reported regularly writing reports, filling out forms, and writing memos. For educators, this suggests the vast majority of students are likely to do some writing when they enter the workplace.

National Adult Literacy Survey data on workplace and home literacy practices indicate that the vast majority of American employees do some reading and computation regularly. Only a small percentage of adults reported never reading, writing, or computing. Those who engage in literacy activities the least demonstrate the lowest proficiencies. Learning-loss research suggests that those practicing the least are likely to be losing the meager proficiencies they have.

Basic Skills Instruction. Only 8 percent of the employed population reported enrolling in basic skills instruction. Employers and unions are

providing a substantial amount (about half) of the basic skills instruction received by adults in the more highly skilled occupations (i.e., manager, professional, technical, and craft), about one-third of instruction in sales, clerical, and service occupations, and about 20 percent in occupations such as laborer and machine operative. The remainder of employees receiving basic skills instruction is about equally divided between publicly supported instruction and tutoring or other sorts of instruction (i.e., home study, church, clubs, etc.). Eight percent of males and 7 percent of females have enrolled in basic skills instruction. Six percent of White adults, 13 percent of Black adults, and 9 percent of Hispanic adults reported receiving basic skills instruction. At all education levels, the percentages of adults having received instruction is about 7 percent, although adults with different levels of education have different proficiencies. Thus, basic skills instruction has been sought about equally by employees in all occupational areas and at all educational levels, not just by adults who have very low skill levels or who have dropped out of school before graduation. High school dropouts are no more likely to enroll in basic skills programs than are adults with postsecondary schooling.

Where Adults Reported Learning Literacy Skills. Very few people across all education levels reported learning prose reading (i.e., newspapers, magazines, or books) primarily at work. About 60 percent of adults reported learning to read prose mainly at school and about 40 percent mainly at home or in the community. Learning to read graphs, diagrams, and maps occurred primarily at school for the majority at all education levels — i.e., 71 percent of adults with 0 to 12 years; 83 percent of GED/high school graduates; 88 percent of those with postsecondary education. Learning at work played a larger role in graph, diagram, and map reading than it did for prose reading — especially for those with less formal education. Ten percent of adults with 0 to 12 years of education reported learning to read graphs, diagrams, and maps primarily at work, compared with 8 percent of GED/high school graduates and 5 percent of postsecondary group. Those learning these skills at home or in the community consistently demonstrate the lowest proficiency skills.

An opposite pattern in proficiencies occurred for learning to write letters, notes, memos or reports. Writing was learned mostly at work for 7 percent of those with 0 to 12 years of education, for 9 percent of those with a GED/high school diploma, and 14 percent of those with postsecondary education. For all education levels, employees who reported learning to write at work demonstrate the highest proficiencies. This suggests a need for educators to examine the sorts of formal and informal writing instruction occurring in the workplace.

Literacy Proficiencies of Minorities, Non-English Speakers, and Learning Disabled Adults. The percentage of workers who speak predominantly English ranges from 99 percent of the manager/professional/technical category to 89 percent of the laborer category. Predominantly Spanish speakers comprise 1 percent of the manager category, 3 percent of the sales, clerical, service category, 4 percent of the craft category, and 9 percent of the laborer category. When employees across all occupational categories are aggregated, non-English speakers demonstrate proficiencies about 100 points or two levels below English speakers (i.e., Level 1 vs. Level 3). Comparing data by various occupations is not statistically feasible because of the small sample size of non-English speakers in many occupation areas.

Survey data indicate that the percentages of White workers in occupations range from about 90 percent of the managerial and professional occupations to about 70 percent of the laborer, service, and machine operative occupations. Black workers account for about 15 percent each of the laborer, service, and machine and transportation operatives categories, while about 15 percent of laborers, farmers, and machine operators are of Hispanic origin. Across all occupations, White workers demonstrate higher proficiencies than Black workers, who, in turn, demonstrate higher proficiencies than Hispanic workers.

Adults who reported having a learning disability comprised only 3 percent of the total National Adult Literacy Survey population. Since the term *learning disabilities* has attained popular currency only during the last few decades, however, it is likely that the percentage of older adults reporting learning disabilities is underreported. Distributions across the literacy levels indicate that about 60 percent of adults who reported learning disabilities perform Level 1 on the prose, document, and quantitative scales, with about 22 percent performing in Level 2. Although the vast majority of adults reporting learning disabilities may need basic skills support, the fact that nearly one-fifth of adults with self-reported learning disabilities demonstrate reading and computing skills in Level 3 or above suggests caution on the part of educators.

The Keefe and Meyer study cited earlier found that more than two-thirds of very low literate adults in adult basic education programs had vision problems (many of which were uncorrectable). About 7 percent of adults in this survey reported vision problems and the proficiency scores of these adults are comparable to those of adults reporting learning disabilities. Since large percentages of adults with learning and visual difficulties perform in the lower two proficiency levels, it is advisable that workplace educators be instructionally prepared to deal with these difficulties through special instructional approaches and collaborative efforts with specialists.

EPILOGUE

The National Adult Literacy Assessment (NALS) provides a rich picture of the nation's literacy skills. As many people emphasized at the time the initial report was released, NALS revealed some troubling overall findings. Across the population of the United States as a whole, a large percentage of adults perform at Level 1 or 2, displaying relatively limited literacy skills. Conversely, few adults perform at Level 4 or 5, where individuals must consistently demonstrate their ability to find information, make inferences, and engage in multiple-step thought processes. Furthermore, those performing in the lower levels, though diverse in their social characteristics, are disproportionately minority and poor, raising disquieting questions in such a diverse nation as ours.

Nonetheless, NALS also provides some reasons for hope. First and foremost, the assessment demonstrates a consistent and strong correlation between formal education and adult literacy skills. Although a snapshot survey cannot establish a causal relationship, the association of years of schooling with literacy abilities is so strong for all groups that it should have a compelling grip on our attention as we go about the business of improving opportunity and the quality of education for all groups. Second, at any given level of adult literacy proficiency, there are exceptions to the overall correlations of literacy with race/ethnicity, parents' education, and other factors. No one who makes or implements policies for literacy education, whether in elementary and secondary schools, collegiate institutions, or adult education programs, should lose sight of the potential for individuals to overcome the tendency of some groups to perform less well than others on literacy tasks.

With regard to the relationship between formal education and adult literacy, then, this report has emphasized that literacy skills increase quite regularly as formal education increases. The NALS data show that both education and literacy proficiencies are related to race/ethnicity, income, and parents' education as well as to the subjects' educational attainment, although

quite a bit of variation exists around those average tendencies. Both educational attainment and the literacy skills of adults increase by age cohorts, from those in their 20's to those in their 30's, and again to those in their 40's. The educational attainment for people who are 50 and older tapers off, and older Americans also display lower literacy skills. These lower literacy skills may be the result of their lower initial levels of schooling in their youth, the cessation of continued formal education in adulthood, differential educational opportunities, and obstacles to high literacy proficiency that may apply increasingly to those over age 60.

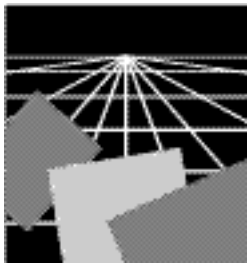
The NALS data yield a portrait of those who do not complete high school, an acknowledged problem in a society as devoted to education as ours. Since literacy increases with increasing formal education, it is no surprise that dropouts have very low literacy skills. This is particularly problematic for groups such as Hispanic Americans, who have very high rates of high school noncompletion. Quite a bit of diversity exists, however, among the noncompleters. Some, typically those with higher literacy skills, are pursuing diplomas or are engaged in work that requires frequent engagement in literacy tasks. Literacy skills of drop-outs also vary depending upon the reason they cite for not continuing in school. Those citing financial problems tend to have lower literacy abilities, for example, than those citing pregnancy or behavior problems. Given this diversity, a characterization of noncompleters as having low literacy skills is not totally accurate.

Individuals in the lowest two literacy levels are also diverse. The findings for those in Levels 1 and 2, however, must be treated with caution. Many of these respondents were placed in those levels by procedures for imputing scores for individuals who did not complete the assessment, and those procedures are open to varying interpretations. Still, as in all the NALS data, education is the key correlate of literacy skills. Those in Levels 1 and 2 have very low education levels, whereas most individuals who graduated from high school are in Level 3 or above. Further research is needed to understand the lowest literacy levels and those who perform at those levels — research about the quality of schooling, about how the nature of schooling differs for different groups, about opportunity structures, and about individuals' attitudes toward displaying their literacy skills in assessments or in work situations. The findings from cross-sectional studies such as NALS can be combined with insights from longitudinal and qualitative studies as we seek to understand the relationships between education and literacy skills.

As in the rest of our analysis, diversity is also a theme in the NALS findings with regard to adult literacy skills and type of occupation. For example, some highly literate individuals hold non-professional or non-

managerial jobs. Conversely, 18 percent of managers and 9 percent of professionals performed at Level 1 or 2 on the literacy scales. Despite this diversity, one-third of laborers and machine operatives performed in Level 1 and another third in Level 2. When such results are viewed along with research into the nature of the high performance workplace, in which most workers need to have the kinds of literacy skills characterized by Level 3 or above, it is apparent that many workers do not have the kinds of literacy skills they will need to succeed in such a workplace.

In sum, the National Adult Literacy Survey has displayed a robust and important correlation between adult literacy and formal education. Analysis of the data has also delineated the constraints of race/ethnicity, income, age, and parental education that have shaped educational opportunity and the distribution of literacy skills in our society. On the other hand, the NALS data also remind us of the resilience of many individuals, enabling them to overcome those constraints. This should give us both the optimism to persist in our efforts to improve adults' literacy skills and the knowledge to identify factors that will impede or enhance those efforts.



APPENDIX A

*Interpreting the Literacy Scales**

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

*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, DC: U.S. Department of Education.

a literacy task, and therefore its placement on a particular literacy scale, is determined by three factors: the structure or 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 1.1 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

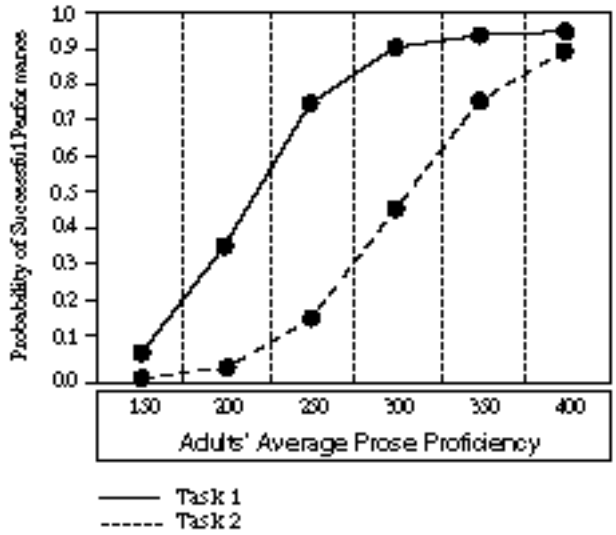
probability of success is not as high. In other words, the more difficult the task relative to their proficiency, the lower their likelihood of responding correctly.

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.

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.

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.

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.[1] 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.

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

[1] 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.

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
- 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 208 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 Tuesday.

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 swimmer 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.

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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.

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

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

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 280 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.[2] 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.

[2] 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.

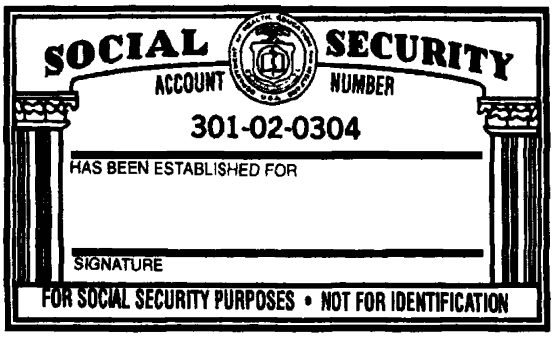
Document Level 1 Scale range: 0 to 225

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 (193).

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 187 and 180, respectively. The necessary information was referred to only once in the document.

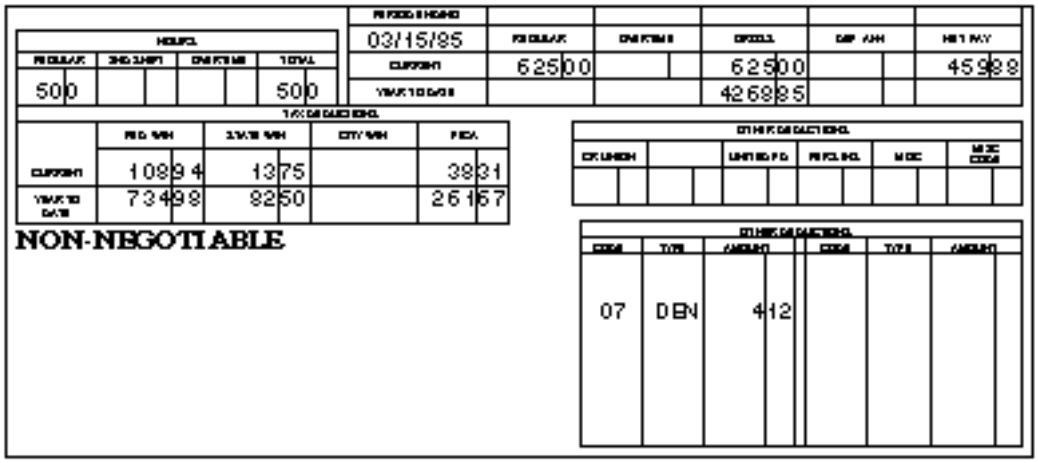
Document Level 2 Scale range: 226 to 275

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 275 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?



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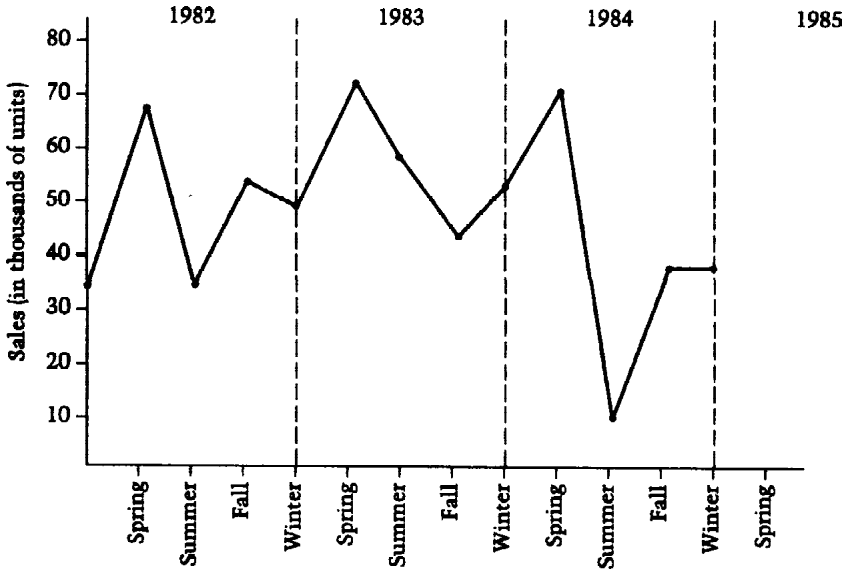
A second question based on this document — What is the current net pay? — was also expected to require readers to make a two-feature match. Accordingly, the difficulty values of the two items were expected to be similar. The task anchored at about the 224 point on the scale, however, and an analysis 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 260 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 303. 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;
■ Wear approved safety goggles when sanding.
■ Use particle/dust mask or other means to prevent inhalation of sanding dust.
■ When using power tools, follow manufacturer's recommended procedures and safety instructions.

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At the same level of difficulty (307), 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 bus at a point-to-point stop in the city bus system
	Leave Downtown Terminal	Leave Hancock and Buena Ventura	Leave Citadel	Leave Rustic Hills	Leave North Carolina and Oro Blanco	Arrive Flintridge and Academy	Leave Flintridge and Academy	Leave North Carolina 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	5:12	5:17	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							

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.[3]

[3] I.S. Kirsch and A. Jungeblut. (1986). *Literacy: Profiles of America's Young Adults, Final Report*. Princeton, NJ: Educational Testing Service. I.S. Kirsch, 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.

The NALS quantitative literacy scale contains some 43 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 246 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%

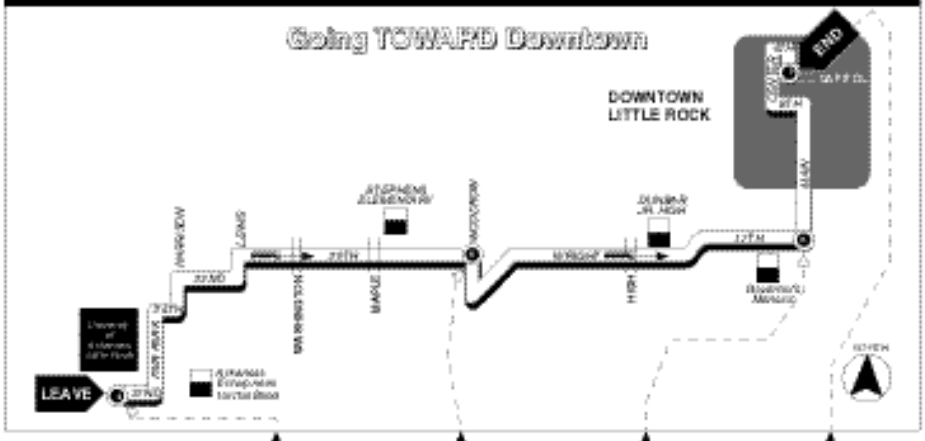
In general, tasks within the range for Level 3 ask the reader to perform a single operation of addition, subtraction, multiplication, or division. However, the operation is not stated explicitly in the directive or made clear by the format of the document. Instead, it must be inferred from the terms 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 279 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

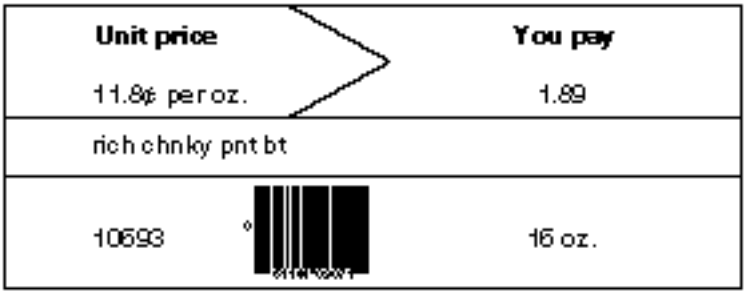
These tasks tend to require readers to perform two or more sequential operations or a single operation in which the quantities are found in different types of displays, or the operations must be inferred from semantic information given or drawn from prior knowledge.

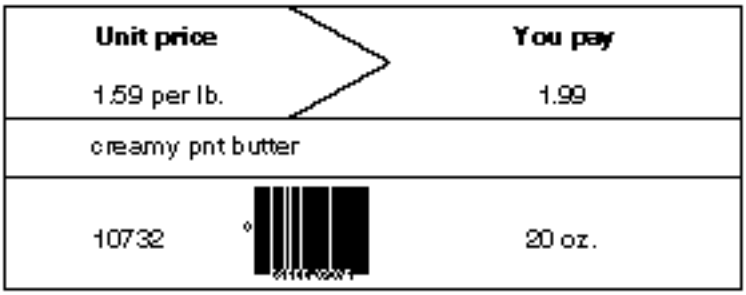
Average difficulty value of tasks in this level: 349
Percentage of adults performing in this level: 17%

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.





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

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Successful Task Performance across the Literacy Levels

The main purpose of the literacy scales is to summarize how well adults can perform on the full array of tasks in the assessment. The difficulty of the assessment tasks increases proportionally with the progression of information-processing demands across the scales. The literacy levels provide a way not only to explore this progression, but also 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. For example, a person whose prose proficiency is 150 has less than a 50 percent chance of giving a correct response to an average prose task in Level 1, where the average task difficulty is 198. Individuals whose scores were at the 200 point, on the other hand, have an almost 80 percent probability of responding correctly to these tasks.

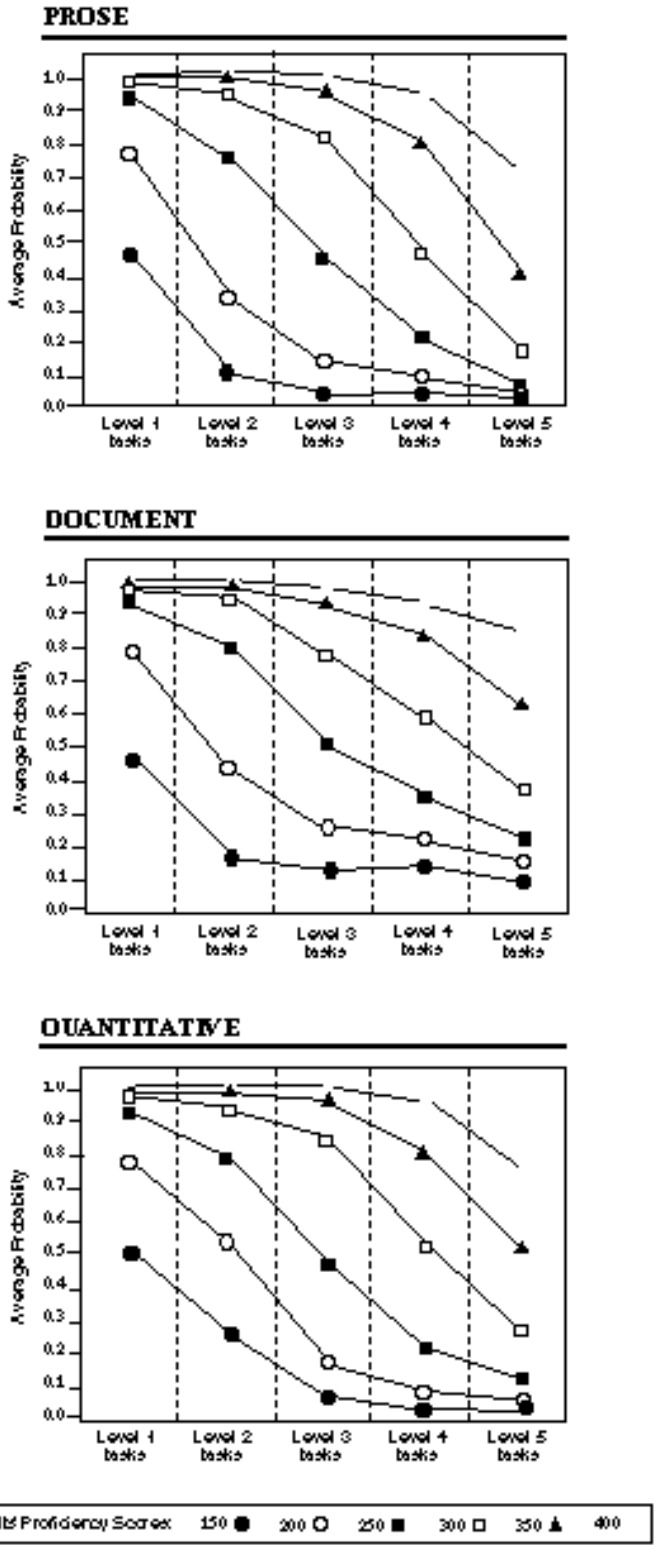
In terms of task demands, adults performing at the 200 point on the prose scale are likely to be able to locate a single piece of information in a brief piece of text where there is no distracting information, or when any distracting information is located apart from the desired information. They are 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, where the average task difficulty value is 259, 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 more than an 80 percent probability of success on tasks in Levels 1 and 2, and have close to an 80 percent likelihood of success on tasks in Level 3, where the average task difficulty value is 298. This means that they demonstrate consistent success identifying information in fairly dense text without organizational aids. They can also consistently integrate, compare, and contrast information that is easily identified in the text. On the other hand, they are likely not to have mastered tasks that require them to make higher level inferences, to take conditional information into account, and to use specialized knowledge. The probabilities of their successfully performing these Level 4 tasks, where the average task difficulty value is 352, are just under 50 percent, and on the Level 5 tasks their likelihood of responding correctly falls to less than 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 document scale is estimated to have less than a 50 percent chance of responding correctly to tasks in Level 1, where the average task difficulty value is 195, and less than a 30 percent chance of responding

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.

correctly to tasks in each of the higher levels. On the quantitative literacy scale, adults with a proficiency of 150 are estimated to have only a 50 percent chance of responding correctly to an average document task in Level 1, where the average task difficulty is 206, and less than a 30 percent chance of responding correctly to tasks in the other levels. Such individuals demonstrate little or no proficiency in performing the range of quantitative tasks found in this assessment. In contrast, adults with a quantitative score of 300 exceed the 80 percent criterion for the average tasks in Levels 1 and 2 and meet the 80 percent criterion for many of the tasks in Level 3. They can be expected to encounter more difficulty with quantitative tasks in Levels 4 and 5.

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.[3] 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.[4] The interviewers were trained to record accurately their reasons for stopping. The reasons were subsequently

[3]For a full discussion of the procedures used in scoring, scaling, weighting, and handling nonresponse problems, see the forthcoming *Technical Report and Data File User's Manual for the National Adult Literacy Survey,* NCES 1999-469.

[4]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.

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, 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.

It is likely that there were some errors in classifying nonrespondents' 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

Table A.1: Percentages and average proficiencies of adults on each scale, by assessment completion status

		Literacy scale		
		Prose	Document	Quantitative
Assessment completion status	CPCT	PROF (se)	PROF (se)	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)
Did 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.

skills 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	
Completion status	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					
	Prose		Document		Quantitative	
Completion status	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.
---- indicates that the cell size is too small to provide reliable proficiency estimates.

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.

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.

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.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.

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.

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 was 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

Tables

TABLE B2.1

Percentages at Each Level and Average Proficiencies on Each Literacy Scale of Adults, by Education Level

LITERACY SCALE / EDUCATION LEVEL			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Prose								
Still in high school	973	8,268	16 (1.8)	36 (2.2)	37 (2.6)	11 (1.9)	0 (0.5)	271 (2.0)
0 to 8 years	2,167	18,356	75 (1.7)	21 (1.3)	4 (0.9)	0 (0.3)	0 (0.0)	176 (2.7)
9 to 12 years	3,311	24,982	42 (1.4)	39 (1.1)	17 (1.0)	2 (0.4)	0 (0.1)	231 (1.5)
GED	1,062	7,224	14 (1.6)	40 (2.5)	39 (2.8)	7 (1.2)	0 (0.6)	268 (1.8)
High school	6,107	51,290	16 (0.8)	36 (1.3)	37 (1.7)	10 (0.9)	1 (0.2)	270 (1.1)
Some college (no degree)	6,587	39,634	8 (0.5)	23 (0.8)	45 (0.9)	22 (0.8)	3 (0.3)	294 (1.0)
2 year college degree	1,033	6,831	4 (1.1)	19 (2.3)	41 (2.9)	32 (2.5)	4 (0.9)	308 (2.4)
4 year college degree	2,534	17,804	4 (0.7)	11 (1.2)	35 (2.0)	40 (1.5)	10 (1.3)	322 (1.6)
Graduate studies/degree	2,253	16,306	2 (0.4)	7 (1.0)	28 (1.4)	47 (1.8)	16 (1.1)	336 (1.4)
Document								
Still in high school	973	8,268	15 (1.5)	35 (2.3)	38 (2.6)	12 (1.5)	1 (0.6)	274 (1.9)
0 to 8 years	2,167	18,356	79 (1.7)	18 (1.6)	3 (0.8)	0† (0.1)	0† (0.0)	169 (2.4)
9 to 12 years	3,311	24,982	46 (1.6)	37 (1.6)	15 (1.3)	2 (0.4)	0† (0.1)	227 (1.6)
GED	1,062	7,224	17 (2.0)	42 (2.7)	34 (2.3)	7 (1.1)	0† (0.5)	264 (2.2)
High school	6,107	51,290	20 (0.8)	38 (1.0)	33 (1.1)	9 (0.6)	1 (0.2)	264 (1.1)
Some college (no degree)	6,587	39,634	9 (0.5)	27 (0.8)	42 (1.0)	20 (0.8)	2 (0.4)	290 (0.9)
2 year college degree	1,033	6,831	6 (1.4)	23 (2.0)	43 (2.6)	25 (2.7)	3 (0.9)	299 (2.6)
4 year college degree	2,534	17,804	4 (0.5)	15 (1.3)	37 (1.5)	36 (1.2)	8 (1.2)	314 (1.4)
Graduate studies/degree	2,253	16,306	3 (0.6)	10 (0.9)	34 (1.8)	41 (1.9)	12 (1.1)	326 (1.8)
Quantitative								
Still in high school	973	8,268	19 (1.7)	35 (3.0)	32 (2.3)	12 (2.0)	1 (0.9)	269 (2.3)
0 to 8 years	2,167	18,356	76 (2.1)	18 (1.8)	5 (1.1)	1 (0.2)	0† (0.2)	169 (3.2)
9 to 12 years	3,311	24,982	45 (1.6)	34 (1.6)	17 (1.3)	3 (0.6)	0† (0.1)	227 (1.7)
GED	1,062	7,224	16 (2.0)	38 (2.5)	35 (2.5)	10 (1.4)	1 (0.5)	268 (2.7)
High school	6,107	51,290	18 (0.8)	33 (1.1)	37 (1.1)	12 (0.5)	1 (0.2)	270 (1.1)
Some college (no degree)	6,587	39,634	8 (0.6)	23 (1.2)	42 (1.4)	23 (1.3)	4 (0.4)	295 (1.4)
2 year college degree	1,033	6,831	4 (0.8)	19 (2.0)	43 (2.0)	29 (2.7)	5 (1.3)	307 (2.8)
4 year college degree	2,534	17,804	4 (0.5)	12 (1.0)	35 (1.4)	38 (1.4)	12 (1.1)	322 (1.2)
Graduate studies/degree	2,253	16,306	2 (0.5)	9 (0.8)	30 (1.4)	42 (1.7)	17 (1.4)	334 (1.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B2.2P

Percentages at Each Level and Average Prose Proficiencies of Adults, by Race/Ethnicity and Education Level

EDUCATION LEVEL BY RACE/ETHNICITY			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
White								
Still in high school	566	5,515	10 (1.9)	32 (3.0)	44 (3.7)	14 (2.4)	1 (0.7)	283 (2.2)
0 to 8 years	849	10,450	64 (2.3)	29 (2.0)	6 (1.4)	0† (0.5)	0† (0.0)	201 (3.2)
9 to 12 years	1,590	16,556	34 (1.5)	41 (1.3)	22 (1.4)	3 (0.7)	0† (0.1)	243 (1.6)
GED/High school diploma	4,934	46,008	11 (0.8)	35 (1.3)	41 (1.7)	12 (1.0)	1 (0.2)	278 (1.1)
Some postsecondary	4,624	31,109	4 (0.6)	21 (0.9)	47 (1.0)	25 (0.9)	3 (0.4)	301 (1.2)
College degree	4,718	35,152	2 (0.4)	8 (0.8)	32 (1.2)	45 (1.1)	13 (0.9)	331 (1.2)
Total White	17,281	144,791	14 (0.4)	26 (0.6)	36 (0.8)	21 (0.5)	4 (0.3)	286 (0.7)
Black								
Still in high school	222	1,315	27 (5.4)	51 (6.4)	21 (4.2)	1 (1.6)	0† (0.0)	247 (4.0)
0 to 8 years	462	2,438	88 (2.5)	11 (2.6)	1 (0.6)	0† (0.0)	0† (0.0)	158 (3.9)
9 to 12 years	1,075	4,482	57 (2.8)	36 (3.3)	7 (2.2)	0† (0.1)	0† (0.0)	213 (2.3)
GED/High school diploma	1,427	6,520	32 (2.1)	47 (1.9)	19 (1.5)	2 (0.8)	0† (0.0)	242 (1.6)
Some postsecondary	1,167	4,004	17 (1.6)	38 (2.5)	37 (2.7)	7 (1.3)	0† (0.5)	267 (1.8)
College degree	600	2,391	8 (2.0)	29 (3.4)	44 (3.1)	16 (2.7)	2 (0.8)	289 (2.7)
Total Black	4,953	21,150	38 (1.1)	37 (1.3)	21 (1.0)	4 (0.5)	0† (0.1)	237 (1.4)
Hispanic								
Still in high school	154	1,057	34 (5.9)	38 (6.8)	23 (6.0)	5 (3.7)	0† (0.0)	245 (7.0)
0 to 8 years	789	4,672	92 (2.0)	6 (1.5)	1 (1.3)	0† (0.2)	0† (0.1)	135 (3.6)
9 to 12 years	582	3,231	62 (3.7)	30 (3.4)	7 (1.7)	1 (0.9)	0† (0.0)	200 (4.8)
GED/High school diploma	677	4,421	32 (2.9)	39 (3.1)	26 (3.2)	4 (1.2)	0† (0.2)	241 (3.8)
Some postsecondary	614	3,173	21 (2.6)	30 (3.0)	36 (3.7)	12 (2.3)	1 (0.8)	265 (3.5)
College degree	277	1,681	9 (2.8)	25 (4.5)	37 (6.6)	25 (6.2)	4 (2.8)	294 (5.3)
Total Hispanic	3,093	18,236	49 (1.4)	26 (1.4)	19 (1.4)	6 (0.8)	1 (0.3)	216 (2.2)
Other								
Still in high school	31	381	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	67	796	82 (6.4)	17 (6.3)	1 (1.0)	0† (0.0)	0† (0.0)	155 (10.9)
9 to 12 years	64	712	55 (9.0)!	32 (8.7)!	12 (5.3)!	1 (3.8)!	0† (0.0)	212 (11.0)!
GED/High school diploma	131	1,565	37 (6.9)	34 (8.2)	24 (8.9)	5 (3.1)	1 (1.5)	233 (10.5)
Some postsecondary	182	1,348	21 (4.5)	30 (5.8)	31 (5.6)	16 (4.8)	2 (1.5)	269 (6.6)
College degree	225	1,716	13 (4.1)	26 (4.4)	38 (6.2)	20 (4.5)	3 (1.8)	286 (5.6)
Total Other	700	6,518	34 (3.6)	29 (4.0)	25 (4.2)	10 (1.5)	2 (0.7)	244 (4.1)
Total Population								
Total population	26,027	190,695	20 (0.4)	27 (0.6)	32 (0.7)	17 (0.4)	3 (0.2)	273 (0.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B2.2D

Percentages at Each Level and Average Document Proficiencies of Adults, by Race/Ethnicity and Education Level

EDUCATION LEVEL BY RACE/ETHNICITY			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
White								
Still in high school	566	5,515	8 (1.7)	31 (3.4)	44 (3.6)	15 (2.1)	1 (0.9)	286 (2.3)
0 to 8 years	849	10,450	71 (2.5)	24 (2.4)	4 (1.2)	0† (0.2)	0† (0.0)	191 (3.2)
9 to 12 years	1,590	16,556	38 (2.1)	40 (2.0)	20 (1.8)	3 (0.5)	0† (0.2)	238 (1.9)
GED/High school diploma	4,934	46,008	15 (0.9)	37 (1.1)	37 (1.3)	10 (0.6)	1 (0.2)	271 (1.1)
Some postsecondary	4,624	31,109	5 (0.5)	24 (1.0)	44 (1.2)	23 (1.0)	3 (0.4)	297 (1.0)
College degree	4,718	35,152	3 (0.4)	12 (0.8)	36 (0.9)	40 (1.4)	10 (0.8)	322 (1.0)
Total White	17,281	144,791	16 (0.5)	27 (0.6)	34 (0.7)	19 (0.5)	3 (0.2)	280 (0.8)
Black								
Still in high school	222	1,315	28 (4.8)	48 (5.0)	21 (3.3)	3 (1.6)	0† (0.0)	248 (3.9)
0 to 8 years	462	2,438	91 (2.0)	9 (2.0)	1 (0.4)	0† (0.0)	0† (0.0)	150 (3.1)
9 to 12 years	1,075	4,482	61 (2.7)	33 (2.6)	6 (1.2)	0† (0.3)	0† (0.0)	207 (2.2)
GED/High school diploma	1,427	6,520	39 (2.0)	44 (2.2)	16 (1.5)	1 (0.5)	0† (0.1)	235 (1.6)
Some postsecondary	1,167	4,004	20 (1.6)	41 (2.9)	31 (2.2)	6 (1.3)	0† (0.4)	261 (2.2)
College degree	600	2,391	12 (1.9)	36 (3.3)	38 (2.9)	13 (1.7)	1 (0.6)	277 (2.6)
Total Black	4,953	21,150	42 (1.0)	36 (1.2)	18 (0.9)	3 (0.4)	0† (0.1)	230 (1.1)
Hispanic								
Still in high school	154	1,057	31 (5.3)	40 (5.4)	25 (5.4)	4 (4.3)	0† (0.2)	246 (6.6)
0 to 8 years	789	4,672	92 (1.8)	7 (1.8)	1 (0.6)	0† (0.0)	0† (0.1)	130 (3.7)
9 to 12 years	582	3,231	64 (4.1)	28 (3.3)	7 (1.5)	1 (0.8)	0† (0.0)	197 (5.0)
GED/High school diploma	677	4,421	33 (3.1)	38 (3.4)	25 (4.2)	4 (2.3)	0† (0.2)	240 (4.3)
Some postsecondary	614	3,173	21 (1.9)	33 (2.7)	35 (3.0)	12 (2.3)	0† (0.4)	263 (3.4)
College degree	277	1,681	10 (2.2)	24 (4.5)	40 (4.3)	21 (4.9)	5 (2.6)	293 (5.2)
Total Hispanic	3,093	18,236	49 (1.7)	26 (1.6)	19 (1.4)	5 (0.8)	1 (0.3)	214 (2.6)
Other								
Still in high school	31	381	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	67	796	79 (8.5)	18 (9.2)	3 (6.1)	0† (0.1)	0† (0.0)	171 (11.7)
9 to 12 years	64	712	53 (8.2)!	34 (6.6)!	13 (6.7)!	0† (0.1)!	0† (0.0)	212 (10.3)!
GED/High school diploma	131	1,565	36 (7.1)	36 (8.0)	21 (7.2)	6 (2.8)	0† (0.2)	234 (9.0)
Some postsecondary	182	1,348	22 (3.9)	29 (5.3)	35 (4.8)	14 (4.5)	1 (2.0)	286 (7.2)
College degree	225	1,716	12 (3.2)	24 (4.4)	41 (5.8)	19 (5.3)	3 (1.8)	287 (5.6)
Total Other	700	6,518	33 (2.6)	29 (2.9)	27 (2.7)	10 (2.0)	1 (0.6)	246 (3.5)
Total Population								
Total population	26,027	190,695	23 (0.4)	28 (0.5)	31 (0.5)	15 (0.4)	3 (0.2)	267 (0.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B2.2Q

Percentages at Each Level and Average Quantitative Proficiencies of Adults, by Race/Ethnicity and Education Level

EDUCATION LEVEL BY RACE/ETHNICITY			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
White								
Still in high school	586	5,515	11 (2.0)	34 (3.9)	38 (3.0)	16 (2.5)	2 (1.3)	283 (2.4)
0 to 8 years	849	10,450	65 (3.2)	28 (2.8)	8 (1.7)	1 (0.5)	0† (0.3)	195 (3.8)
9 to 12 years	1,590	16,556	35 (2.2)	38 (2.1)	23 (1.6)	5 (0.8)	0† (0.2)	242 (2.1)
GED/High school diploma	4,934	46,008	12 (0.8)	32 (1.3)	41 (1.1)	14 (0.7)	1 (0.2)	279 (1.1)
Some postsecondary	4,624	31,109	4 (0.6)	20 (1.2)	44 (1.4)	27 (1.5)	5 (0.5)	304 (1.5)
College degree	4,718	35,152	2 (0.3)	9 (0.8)	33 (0.9)	41 (1.0)	14 (0.8)	330 (1.1)
Total White	17,281	144,791	14 (0.5)	24 (0.6)	35 (0.7)	21 (0.4)	5 (0.2)	287 (0.8)
Black								
Still in high school	222	1,315	40 (4.7)	44 (4.9)	14 (4.1)	2 (2.1)	0† (0.0)	234 (4.7)
0 to 8 years	462	2,438	92 (2.0)	7 (1.9)	1 (0.6)	0† (0.0)	0† (0.0)	140 (4.0)
9 to 12 years	1,075	4,482	69 (2.5)	25 (2.5)	5 (1.4)	0† (0.3)	0† (0.1)	197 (2.9)
GED/High school diploma	1,427	6,520	41 (1.7)	43 (1.3)	14 (1.7)	1 (0.5)	0† (0.1)	233 (1.9)
Some postsecondary	1,167	4,004	22 (1.6)	41 (2.2)	30 (2.5)	6 (1.7)	0† (0.5)	258 (2.2)
College degree	600	2,391	11 (1.8)	36 (3.4)	41 (3.8)	12 (1.9)	1 (0.7)	279 (2.5)
Total Black	4,953	21,150	46 (1.0)	34 (1.1)	17 (1.0)	3 (0.4)	0† (0.1)	224 (1.4)
Hispanic								
Still in high school	154	1,057	38 (5.0)	34 (5.4)	23 (5.8)	5 (4.2)	0† (0.0)	241 (6.5)
0 to 8 years	789	4,672	91 (2.0)	8 (1.7)	1 (0.8)	0† (0.1)	0† (0.1)	128 (3.7)
9 to 12 years	582	3,231	65 (3.0)	28 (3.0)	9 (2.3)	0† (1.0)	0† (0.0)	196 (5.4)
GED/High school diploma	677	4,421	33 (2.4)	39 (2.9)	24 (3.8)	4 (1.8)	0† (0.3)	240 (4.2)
Some postsecondary	614	3,173	20 (2.2)	30 (3.2)	38 (3.4)	11 (2.7)	1 (0.6)	265 (3.5)
College degree	277	1,681	9 (2.6)	22 (4.0)	42 (5.2)	22 (5.7)	4 (1.9)	295 (6.3)
Total Hispanic	3,093	18,236	49 (1.3)	25 (1.4)	20 (1.3)	5 (1.1)	1 (0.2)	213 (2.4)
Other								
Still in high school	31	381	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)	*** (****)
0 to 8 years	67	796	77 (8.6)	14 (6.1)	5 (5.9)	2 (3.1)	2 (3.1)	170 (17.9)
9 to 12 years	64	712	53 (8.0)!	33 (7.8)!	13 (5.1)!	0† (0.6)!	0† (0.1)!	211 (9.6)!
GED/High school diploma	131	1,565	34 (5.7)	31 (6.5)	27 (4.8)	7 (4.3)	1 (1.2)	242 (7.5)
Some postsecondary	182	1,348	22 (5.7)	25 (9.0)	34 (6.6)	17 (3.4)	3 (2.2)	271 (6.2)
College degree	225	1,716	11 (3.6)	20 (5.3)	38 (5.3)	24 (4.1)	6 (3.4)	297 (6.4)
Total Other	700	6,518	32 (3.0)	25 (3.2)	27 (2.0)	13 (1.9)	3 (1.2)	252 (3.8)
Total Population								
Total population	26,027	190,695	22 (0.5)	25 (0.6)	31 (0.6)	17 (0.3)	4 (0.2)	272 (0.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B2.3

Results of Multiple Regression Analysis of Prose Proficiency, by Race/Ethnicity and Subject's Education

VARIABLE (CONTRAST GROUP)	Average Difference in Proficiency by Category (Uncontrolled)	Unstandardized Regression Coefficient	T-statistic
Race/Ethnicity (Black Adults)			
Mexican	-31	-11.2	-4.7*
Puerto Rican	-19	-11.0	-2.3*
Cuban	-26	-12.1	-2.0*
Central/South American	-30	-23.4	-5.4*
Other Hispanic	23	17.6	3.9*
Asian/Pacific Island	5	-14.4	-3.6*
Native American/Alaskan Indian	17	16.7	3.1*
White	49	35.0	22.9*
Other/Missing	-24	-17.7	-2.3*
Subject's Education (0 to 8 years)			
9 to 12 years	31	48.0	24.1*
High school/GED graduate	50	81.9	43.0*
Some postsecondary	66	106.0	48.7*
College graduate	78	134.3	66.9*

*Suggests significant regression coefficient.

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

TABLE B2.4

Results of Multiple Regression Analysis of Prose Proficiency Scores

VARIABLE	Zero-order (Uncontrolled) Relationship	REGRESSION 1 Unstandardized Regression Coefficient	REGRESSION 1 T-statistic	REGRESSION 2 (controls for subject's education) Unstandardized Regression Coefficient	REGRESSION 2 T-statistic
Race/Ethnicity					
(Contrast group is Black adults.)					
Mexican	-31	-25.0	-10.2*	-17.0	-7.9*
Puerto Rican	-19	-6.4	-1.5	-6.7	-1.7
Cuban	-26	-21.0	-3.2*	-14.6	-2.5*
Central/South American	-30	-30.3	-7.4*	-26.1	-7.3*
Other Hispanic	23	10.4	2.5*	11.1	3.0*
Asian/Pacific Island	5	-16.8	-4.9*	-23.1	-7.8*
Native American/Alaskan Indian	17	17.5	3.6*	16.7	3.9*
White	50	37.4	25.2*	33.1	25.5*
Other/Missing	N/A	-23.3	-3.1*	-17.7	-2.7*
Region					
(Contrast groups is Northeast.)					
Midwest	9	10.6	7.8*	8.9	7.5*
South	-3	4.8	3.8*	4.2	3.8*
West	6	12.3	8.5*	9.2	7.3*
Gender					
(Contrast group is Male.)					
Female	2	8.7	9.6*	7.3	9.2*
Parents Education Level (5 levels)[2]	N/A	7.6	33.2*	3.2	15.4*
Household Income (7 levels)	N/A	10.2	41.2*	4.7	20.3*
Subject's Age (6 levels)	N/A	-7.1	-20.0*	-5.7	-18.5*
Subject's Education Level (5 levels)+	34+			24.5	63.6*

*Suggests significant regression coefficient.
+Bivariate regression, Ed Level on Prose Proficiency (gives a weighted average increase per level) not calculated for the previous three variables.

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

[1] The regression coefficients state the difference between each group and Black adults, while controlling for the effect of the other variables listed.
[2] Regression states average difference in prose score associated with each higher level in this variable, controlling for the other variables.
[3] Subjects still in high school deleted.

TABLE B3.1

Percentages of Adults Speaking Non-English Language Before School: Participation in ESL Course, by Education Level

PARTICIPATION IN COURSE			EDUCATION LEVEL			
			Dropout	GED	High school graduate	Any postsecondary education
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)
ESL course	1,329	9,217	38 (1.7)	3 (0.7)	19 (1.6)	40 (1.5)
No ESL course	2,315	16,514	45 (1.4)	3 (0.4)	20 (1.3)	32 (1.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainly).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B3.2

Percentages and Average Proficiencies on Each Literacy Scale of Adults Reporting Frequency of Personal Literacy Practices, by Education Level

LITERACY SCALE/ FREQUENCY OF PERSONAL LITERACY PRACTICES			EDUCATION LEVEL			
			Dropout	GED	High school graduate	Any postsecondary education
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Prose						
Rarely	4,041	32,775	54 (0.7) 177 (2.3)	3 (0.4) 240 (6.5)!	27 (0.7) 244 (2.9)	16 (0.7) 273 (2.8)
Weekly	10,114	77,953	22 (0.5) 226 (2.2)	4 (0.2) 268 (3.6)!	32 (0.6) 271 (1.3)	42 (0.5) 306 (1.2)
Often	9,749	70,886	11 (0.4) 239 (2.5)	4 (0.3) 277 (2.9)!	24 (0.6) 283 (1.6)	60 (0.6) 317 (0.9)
Document						
Rarely	4,041	32,775	54 (0.7) 171 (2.4)	3 (0.4) 235 (6.5)!	27 (0.7) 239 (2.8)	16 (0.7) 266 (2.9)
Weekly	10,114	77,953	22 (0.5) 220 (2.2)	4 (0.2) 263 (3.4)!	32 (0.6) 264 (1.3)	42 (0.5) 300 (1.1)
Often	9,749	70,886	11 (0.4) 234 (2.9)	4 (0.3) 274 (2.7)!	24 (0.6) 277 (1.4)	60 (0.6) 311 (0.8)
Quantitative						
Rarely	4,041	32,775	54 (0.7) 166 (2.8)	3 (0.4) 233 (6.9)!	27 (0.7) 242 (2.4)	16 (0.7) 268 (3.1)
Weekly	10,114	77,953	22 (0.5) 224 (2.1)	4 (0.2) 270 (4.1)!	32 (0.6) 271 (1.5)	42 (0.5) 307 (1.0)
Often	9,749	70,886	11 (0.4) 238 (3.1)	4 (0.3) 279 (3.6)!	24 (0.6) 284 (1.8)	60 (0.6) 318 (1.1)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B3.3

Percentages of Dropouts Reporting Reason for Dropping Out, by Frequllency of Personal Literacy Practices

MAIN REASON FOR DROPPING OUT			FREQUENCY OF PERSONAL LITERACY PRACTICES		
			Rarely	Weekly	Often
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Financial problems	756	6,837	49 (2.4)	35 (2.3)	16 (1.7)
Work or military	1,010	10,104	44 (2.4)	38 (1.9)	19 (1.9)
Pregnancy	467	2,510	21 (2.3)	52 (3.4)	27 (2.8)
Lost interest or behavior	688	5,781	37 (2.2)	45 (2.0)	18 (2.5)
Academic problems	131	1,132	40 (5.1)	40 (5.7)	20 (4.4)
Family or personal problems	978	8,182	41 (2.2)	40 (2.0)	19 (1.4)
Other reasons	820	7,672	42 (2.4)	41 (2.2)	17 (1.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B3.4

Percentages of Dropouts Reporting Reason for Dropping Out of School, by Whether Studied for GED

MAIN REASON FOR DROPPING OUT			STUDY FOR A GED?	
			Yes	No
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)
Financial problems	796	6,804	7 (1.3)	93 (1.3)
Went to work or the military	1,107	10,100	16 (1.3)	84 (1.3)
Pregnancy	474	2,484	36 (2.8)	64 (2.8)
Lost interest or behaivor problems in school	841	5,800	28 (1.9)	72 (1.9)
Academic problems at school	144	1,131	23 (4.3)	77 (4.3)
Family or personal problems	1,036	8,153	18 (1.8)	82 (1.8)
Other reasons	919	7,566	14 (1.7)	86 (1.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B3.5

Percentages and Average Proficiencies on Each Literacy Scale of GED Holders Reporting Reason for Dropping Out of School

GED HOLDERS/ LITERACY SCALE			MAIN REASON FOR DROPPING OUT						
			Financial problems	Work or military	Pregnancy	Lost interest or behavior	Academic problems	Family or personal problems	Other reasons
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Prose	1,029	6,874	9 (1.5) 264 (7.5)!	23 (1.7) 267 (4.7)!	10 (1.8) 272 (5.3)!	20 (1.4) 271 (5.4)!	3 (0.8) *** (****)	14 (1.3) 269 (5.6)!	21 (1.5) 261 (4.8)!
Document	1,029	6,874	9 (1.5) 251 (5.9)!	23 (1.7) 262 (4.7)!	10 (1.8) 274 (5.4)!	20 (1.4) 269 (5.2)!	3 (0.8) *** (****)	14 (1.3) 267 (5.6)!	21 (1.5) 254 (4.9)!
Quantitative	1,029	6,874	9 (1.5) 257 (9.0)!	23 (1.7) 275 (6.4)!	10 (1.8) 265 (4.5)!	20 (1.4) 271 (5.4)!	3 (0.8) *** (****)	14 (1.3) 269 (6.2)!	21 (1.5) 261 (4.9)!

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B3.6

Percentages and Average Proficiencies on Each Literacy Scale of Dropouts Reporting Whether They Studied for GED, by Race/Ethnicity

RACE/ETHNICITY/ LITERACY SCALE			STUDIED FOR GED	
			Studied	Did not study
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Total Population	5,387	42,581		
Prose			18 (0.6)	82 (0.6)
			241 (2.1)	201 (1.9)
Document			18 (0.6)	82 (0.6)
			239 (2.4)	195 (1.9)
Quantitative			18 (0.6)	82 (0.6)
			236 (2.6)	196 (2.1)
Black	1,518	6,837		
Prose			23 (1.4)	77 (1.4)
			221 (3.6)	186 (3.0)
Document			23 (1.4)	77 (1.4)
			215 (3.1)	179 (2.6)
Quantitative			23 (1.4)	77 (1.4)
			204 (4.0)	168 (3.3)
White	2,408	26,617		
Prose			18 (0.8)	82 (0.8)
			254 (2.5)	221 (2.0)
Document			18 (0.8)	82 (0.8)
			252 (3.0)	213 (2.2)
Quantitative			18 (0.8)	82 (0.8)
			253 (3.2)	218 (2.4)
Hispanic	1,332	7,652		
Prose			12 (1.1)	88 (1.1)
			215 (5.6)!	154 (3.2)
Document			12 (1.1)	88 (1.1)
			212 (6.1)!	151 (3.6)
Quantitative			12 (1.1)	88 (1.1)
			203 (5.8)!	149 (3.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B3.7D

Percentages and Average Document Proficiencies of Dropouts: Sex, Race/Ethnicity, and Age, by Number of Weeks Worked

SEX, RACE/ETHNICITY, AND AGE			NUMBER OF WEEKS WORKED		
			Zero weeks worked	1 to 39 weeks worked	40 or more weeks worked
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Total Population					
Total	4,936	42,961	53 (1.1) 190 (2.1)	16 (0.6) 217 (3.3)	31 (1.1) 215 (2.5)
Sex					
Male	1,998	19,926	42 (1.5) 187 (3.7)	18 (1.0) 210 (3.8)	40 (1.4) 211 (2.9)
Female	2,931	22,980	62 (1.3) 193 (2.5)	14 (1.0) 226 (4.5)	24 (1.1) 221 (4.0)
Race/Ethnicity					
Black	1,284	6,734	54 (2.3) 176 (2.5)	15 (0.9) 203 (5.4)!	30 (2.2) 196 (3.6)
White	2,292	26,906	55 (1.8) 203 (2.5)	15 (0.9) 238 (4.1)	30 (1.6) 242 (3.0)
Hispanic	1,245	7,823	44 (2.3) 153 (4.7)	17 (1.1) 165 (5.8)	39 (2.1) 161 (4.9)
Age					
16 to 24	737	5,007	29 (2.2) 223 (6.1)	42 (2.4) 239 (4.7)	29 (2.9) 237 (6.0)
25 to 54	2,366	17,791	32 (1.4) 197 (3.5)	19 (0.9) 210 (4.5)	48 (1.6) 215 (2.8)
55 or older	1,833	20,163	76 (1.3) 185 (2.6)	6 (0.7) 201 (7.4)!	17 (1.2) 207 (4.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B3.7Q

Percentages and Average Quantitative Proficiencies of Dropouts: Sex, Race/Ethnicity, and Age, by Number of Weeks Worked

SEX, RACE/ETHNICITY, AND AGE			NUMBER OF WEEKS WORKED		
			Zero weeks worked	1 to 39 weeks worked	40 or more weeks worked
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Total Population					
Total	4,936	42,961	53 (1.1) 189 (2.8)	16 (0.6) 217 (3.5)	31 (1.1) 219 (2.6)
Sex					
Male	1,998	19,926	42 (1.5) 190 (4.5)	18 (1.0) 213 (4.2)	40 (1.4) 216 (3.0)
Female	2,931	22,980	62 (1.3) 188 (2.9)	14 (1.0) 222 (4.6)	24 (1.1) 222 (4.0)
Race/Ethnicity					
Black	1,284	6,734	54 (2.3) 162 (3.9)	15 (0.9) 193 (6.3)!	30 (2.2) 191 (4.1)
White	2,292	26,906	55 (1.8) 206 (3.1)	15 (0.9) 241 (3.8)	30 (1.6) 249 (3.2)
Hispanic	1,245	7,823	44 (2.3) 147 (5.0)	17 (1.1) 159 (5.4)	39 (2.1) 163 (4.6)
Age					
16 to 24	737	5,007	29 (2.2) 213 (6.0)	42 (2.4) 231 (4.9)	29 (2.9) 235 (6.7)
25 to 54	2,366	17,791	32 (1.4) 192 (3.5)	19 (0.9) 207 (4.8)	48 (1.6) 217 (2.7)
55 or older	1,833	20,163	76 (1.3) 185 (3.6)	6 (0.7) 221 (8.8)!	17 (1.2) 216 (5.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B4.1

Percentages at Each Level and Average Prose Proficiencies of Adults Reporting Education Level by Place of Birth

EDUCATION LEVEL BY PLACE OF BIRTH			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Born in USA or Territories								
Total	23,376	172,162	17 (0.4)	27 (0.6)	34 (0.8)	18 (0.5)	3 (0.2)	279 (0.7)
Still in high school	891	7,637	14 (1.8)	36 (2.3)	38 (2.7)	11 (1.9)	0† (0.5)	274 (2.0)
Less than high school	1,477	13,444	69 (2.2)	26 (1.9)	5 (1.2)	0† (0.4)	0† (0.0)	193 (3.3)
Some high school	2,988	22,729	39 (1.4)	40 (1.2)	18 (1.1)	2 (0.5)	0† (0.1)	236 (1.3)
GED or high school diploma	6,680	54,500	13 (0.8)	37 (1.2)	39 (1.4)	10 (0.8)	1 (0.2)	273 (1.0)
Some college (no degree)	6,059	36,554	5 (0.4)	23 (0.8)	46 (0.9)	23 (0.9)	3 (0.3)	298 (1.0)
College degree (2 or more years)	5,264	37,129	2 (0.4)	9 (0.8)	33 (1.3)	43 (1.2)	12 (0.8)	329 (1.1)
Born Outside USA								
Total	2,702	19,062	53 (1.4)	22 (1.1)	17 (1.3)	7 (0.7)	1 (0.4)	212 (2.4)
Still in high school	82	631	38 (6.8)	38 (7.0)	17 (8.3)	6 (4.4)	0† (1.5)	241 (7.3)
Less than high school	689	4,910	93 (2.0)	6 (2.0)	1 (1.4)	0† (0.2)	0† (0.0)	135 (3.6)
Some high school	322	2,252	71 (3.9)	22 (3.4)	6 (1.9)	1 (0.6)	0† (0.0)	182 (5.6)
GED or high school diploma	486	4,011	46 (3.1)	31 (3.2)	19 (3.4)	3 (1.9)	0† (0.6)	222 (4.8)
Some college (no degree)	525	3,052	32 (3.1)	32 (3.0)	27 (3.1)	9 (1.8)	1 (0.7)	247 (3.6)
College degree (2 or more years)	555	3,805	12 (2.7)	25 (2.9)	36 (3.6)	22 (3.2)	5 (1.7)	290 (3.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE B4.2

Percentages at Each Level and Average Document Proficiencies of Adults Reporting Language in Home, Current Language and Age

DEMOGRAPHIC SUBPOPULATIONS	LEVELS AND AVERAGE PROFICIENCY							
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Language Spoken in Home								
English only	21,242	156,620	18 (0.6)	29 (0.5)	33 (0.6)	17 (0.4)	3 (0.2)	276 (0.8)
Spanish only	1,888	10,979	70 (2.0)	21 (1.5)	9 (1.3)	1 (0.5)	0† (0.2)	177 (3.4)
Other	849	8,274	46 (2.3)	27 (2.3)	20 (2.2)	7 (1.4)	1 (0.5)	225 (3.4)
English and Spanish	789	4,406	25 (2.5)	37 (3.0)	28 (3.0)	10 (1.9)	1 (0.7)	259 (3.0)
English and other	1,308	10,722	25 (2.6)	29 (2.1)	30 (2.0)	14 (1.7)	2 (0.7)	268 (3.5)
Current Language								
English	24,513	180,996	20 (0.5)	29 (0.5)	32 (0.5)	16 (0.4)	3 (0.2)	273 (0.7)
Spanish	1,311	7,634	82 (2.1)	14 (1.8)	4 (1.0)	0† (0.3)	0† (0.1)	152 (3.8)
Other	227	2,393	67 (4.0)	22 (4.6)	9 (3.1)	2 (1.1)	0† (0.1)	187 (5.9)
Age								
16 to 18 years old	1,237	10,424	15 (1.4)	34 (2.2)	38 (2.6)	12 (1.9)	1 (0.5)	274 (1.8)
19 to 24 years old	3,344	24,515	14 (1.0)	29 (1.4)	37 (1.6)	18 (1.1)	2 (0.4)	280 (1.3)
25 to 39 years old	10,050	63,278	16 (0.6)	25 (0.7)	35 (0.8)	21 (0.8)	4 (0.4)	282 (1.0)
40 to 54 years old	6,310	43,794	17 (0.8)	27 (0.9)	33 (1.0)	19 (1.0)	3 (0.5)	278 (1.3)
55 to 64 years old	2,924	19,503	30 (1.4)	34 (1.4)	26 (1.3)	8 (0.8)	1 (0.3)	249 (1.9)
65 years old anor older	2,214	29,735	53 (1.5)	32 (1.2)	13 (1.0)	2 (0.5)	0† (0.1)	217 (2.1)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE B4.3D

Percentages at Each Level and Average Document Proficiencies of Respondents and Non-Respondents, by Race/Ethnicity

RACE/ETHNICITY/ COMPLETION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Total Population								
Complete	22,504	162,701	62 (0.4)	93 (0.4)	98 (0.5)	98 (0.5)	98 (0.4)	280 (0.6)
Literacy related incomplete	1,469	9,944	24 (0.2)	0† (0.1)	0† (0.0)	0† (0.0)	0† (0.0)	116 (1.5)
Non-literacy related incomplete	1,408	11,996	14 (2.1)	7 (1.7)	4 (1.2)	2 (0.8)	2 (0.5)	228 (2.9)
Black								
Complete	4,232	17,757	68 (1.2)	95 (1.1)	97 (1.3)	98 (1.1)	*** (****)	244 (1.0)
Literacy related incomplete	341	1,677	19 (0.3)	0† (0.1)	0† (0.0)	0† (0.0)	*** (****)	118 (2.6)
Non-literacy related incomplete	390	1,759	14 (3.3)	5 (3.1)	3 (1.6)	2 (1.1)	*** (****)	196 (4.3)
White								
Complete	16,144	132,337	69 (0.6)	93 (0.5)	98 (0.6)	98 (0.6)	99 (0.3)	287 (0.7)
Literacy related incomplete	283	3,284	14 (0.3)	0† (0.2)	0† (0.0)	0† (0.0)	0† (0.0)	126 (2.8)
Non-literacy related incomplete	865	9,347	18 (2.4)	7 (1.9)	4 (1.5)	2 (1.0)	1 (0.6)	234 (3.4)
Hispanic								
Complete	2,128	12,608	40 (1.5)	95 (1.6)	98 (1.6)	98 (1.1)	*** (****)	254 (1.8)
Literacy related incomplete	845	4,984	54 (0.6)	0† (0.3)	0† (0.0)	0† (0.0)	*** (****)	109 (2.1)
Non-literacy related incomplete	153	890	6 (4.2)	4 (4.0)	4 (2.5)	2 (1.8)	*** (****)	221 (7.7)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE B4.3Q

Percentages at Each Level and Average Quantitative Proficiencies of Respondents and Non-Respondents, by Race/Ethnicity

RACE/ETHNICITY/ COMPLETION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (1,000)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	CPCT (SE)	PROF (SE)
Total Population								
Complete	22,504	162,701	62 (0.5)	93 (0.4)	98 (0.5)	97 (0.4)	97 (0.6)	285 (0.6)
Literacy related incomplete	1,469	9,944	25 (0.5)	0† (0.3)	0† (0.3)	0† (0.0)	0† (0.1)	114 (1.8)
Non-literacy related incomplete	1,408	11,996	14 (1.9)	7 (1.6)	4 (1.6)	3 (1.0)	3 (0.7)	232 (3.6)
Black								
Complete	4,232	17,757	70 (1.0)	95 (1.2)	96 (1.9)	98 (1.1)	*** (****)	239 (1.1)
Literacy related incomplete	341	1,677	17 (0.3)	0† (0.2)	0† (0.0)	0† (0.0)	*** (****)	108 (4.3)
Non-literacy related incomplete	390	1,759	13 (3.2)	5 (2.8)	4 (2.6)	2 (1.1)	*** (****)	191 (6.2)
White								
Complete	16,144	132,337	66 (0.8)	93 (0.5)	96 (0.6)	97 (0.5)	97 (0.7)	294 (0.7)
Literacy related incomplete	283	3,284	15 (1.0)	0† (0.5)	0† (0.8)	0† (0.0)	0† (0.1)	127 (3.2)
Non-literacy related incomplete	865	9,347	18 (2.1)	7 (2.0)	4 (1.9)	3 (1.2)	3 (0.8)	240 (4.2)
Hispanic								
Complete	2,128	12,608	41 (1.3)	94 (1.7)	97 (1.4)	97 (1.2)	*** (****)	253 (2.0)
Literacy related incomplete	845	4,984	54 (0.7)	1 (0.5)	0† (0.3)	0† (0.0)	*** (****)	107 (2.4)
Non-literacy related incomplete	153	890	5 (3.9)	6 (4.4)	3 (2.2)	3 (2.0)	*** (****)	218 (9.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); CPCT = column percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE B5.1D

Percentages at Each Level and Average Document Proficiencies of Adults in Occupational Subcategories

OCCUPATION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Administrators and managers	1,638	11,904	5 (0.9)	16 (1.4)	38 (2.0)	33 (2.1)	7 (1.4)	311 (1.5)
Professional	507	3,592	1 (0.8)	9 (2.9)	30 (3.5)	43 (2.9)	17 (2.4)	334 (3.1)
Health support	1,337	8,159	16 (1.6)	26 (1.5)	34 (2.1)	20 (2.0)	4 (0.8)	282 (2.9)
Teachers	887	6,057	3 (1.0)	13 (2.0)	37 (2.1)	39 (2.7)	9 (1.5)	320 (2.0)
Sales	2,385	17,901	11 (1.1)	30 (1.7)	39 (2.0)	18 (1.4)	2 (0.6)	285 (1.6)
Secretaries, steno, typist	657	4,118	6 (1.4)	30 (3.6)	45 (4.0)	18 (2.9)	1 (0.6)	290 (3.2)
Clerks	1,506	10,430	8 (1.2)	28 (2.4)	42 (2.4)	20 (1.8)	3 (0.6)	291 (2.0)
Food preparation	1,442	10,556	20 (1.4)	34 (2.4)	33 (2.2)	11 (1.3)	1 (0.6)	265 (2.0)
Cleaning and maintenance	592	3,952	43 (3.2)	33 (3.2)	20 (2.5)	4 (1.7)	1 (0.6)	230 (4.0)
Child care workers	253	1,844	17 (3.8)	40 (4.3)	33 (4.8)	9 (2.5)	1 (0.6)	266 (5.2)
Non-supervisory farming, nursery	478	4,071	35 (4.0)	31 (2.6)	26 (3.4)	8 (1.5)	1 (0.6)	238 (6.6)
Non-supervisory construction	623	4,799	24 (3.2)	33 (4.3)	32 (3.1)	11 (2.2)	1 (0.5)	260 (3.6)
Non-supervisory motor vehicle operator	552	4,019	25 (2.6)	32 (3.6)	31 (3.6)	10 (2.3)	1 (0.8)	262 (2.8)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE B5.1Q

Percentages at Each Level and Average Quantitative Proficiencies of Adults in Occupational Subcategories

OCCUPATION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Administrators and managers	1,638	11,904	4 (0.8)	13 (1.5)	34 (2.2)	38 (1.6)	12 (1.5)	322 (1.6)
Professional	507	3,592	1 (0.9)	5 (1.3)	23 (3.2)	42 (4.1)	29 (3.7)	350 (3.7)
Health support	1,337	8,159	18 (1.7)	24 (2.2)	35 (2.2)	19 (1.6)	4 (1.1)	281 (2.9)
Teachers	887	6,057	1 (0.5)	13 (1.8)	34 (1.9)	40 (2.6)	12 (1.6)	325 (2.0)
Sales	2,385	17,901	10 (1.0)	26 (1.8)	39 (2.4)	21 (2.0)	4 (0.5)	291 (1.8)
Secretaries, steno, typist	657	4,118	6 (1.4)	24 (2.5)	48 (3.9)	19 (3.7)	2 (1.0)	294 (3.4)
Clerks	1,506	10,430	6 (1.0)	25 (1.6)	41 (1.7)	22 (1.7)	3 (1.0)	294 (1.6)
Food preparation	1,442	10,556	24 (1.5)	33 (2.3)	31 (1.9)	10 (1.5)	1 (0.4)	261 (2.4)
Cleaning and maintenance	592	3,952	45 (2.9)	30 (3.8)	20 (2.5)	5 (1.5)	1 (0.6)	229 (4.0)
Child care workers	253	1,844	18 (2.8)	37 (5.6)	34 (7.1)	10 (4.3)	1 (1.2)	266 (4.6)
Non-supervisory farming, nursery	478	4,071	32 (4.6)	26 (4.1)	29 (4.9)	11 (2.6)	2 (0.8)	245 (8.2)
Non-supervisory construction	623	4,799	21 (2.5)	27 (3.2)	34 (3.9)	16 (2.5)	1 (0.7)	270 (3.4)
Non-supervisory motor vehicle operator	552	4,019	21 (2.9)	30 (4.1)	35 (3.3)	12 (3.4)	2 (1.1)	267 (2.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE B5.2

Percentages at Each Level and Average Proficiencies on Each Literacy Scale of Adults in Major Occupational Categories

OCCUPATION BY LITERACY SCALE			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Prose								
Managerial	1,639	11,906	4 (0.9)	14 (1.8)	35 (2.7)	37 (2.0)	10 (1.2)	319 (2.1)
Professional	2,705	18,510	2 (0.5)	10 (1.3)	31 (1.2)	43 (1.4)	13 (1.2)	329 (1.4)
Technical	721	4,918	3 (1.1)	21 (3.1)	40 (3.5)	30 (3.8)	6 (1.6)	308 (2.5)
Sales	2,385	17,901	9 (0.9)	27 (1.9)	40 (2.2)	21 (1.7)	3 (0.7)	290 (2.0)
Clerical	3,550	23,394	6 (0.6)	24 (1.1)	45 (1.5)	22 (1.3)	3 (0.5)	296 (1.3)
Laborer	1,054	7,595	30 (2.7)	33 (2.4)	29 (2.4)	7 (1.5)	0† (0.4)	248 (3.8)
Service	3,908	26,916	23 (1.0)	33 (1.2)	32 (1.5)	12 (0.9)	1 (0.3)	262 (1.4)
Farming, forestry, fishing	576	4,990	33 (3.1)	28 (2.9)	29 (3.0)	10 (1.4)	1 (0.6)	245 (4.8)
Craft	1,992	15,460	20 (1.7)	32 (1.8)	35 (1.6)	12 (1.2)	1 (0.5)	267 (2.1)
Machine operative	1,355	9,878	30 (1.5)	34 (2.5)	28 (1.9)	8 (1.8)	0† (0.2)	247 (2.2)
Transportation operative	758	5,387	24 (1.9)	36 (2.7)	31 (2.6)	8 (1.5)	1 (0.5)	258 (2.5)
Document								
Managerial	1,639	11,906	5 (0.9)	16 (1.4)	38 (2.0)	33 (2.1)	7 (1.4)	311 (1.5)
Professional	2,705	18,510	3 (0.6)	13 (1.1)	36 (1.3)	38 (1.6)	10 (1.0)	321 (1.4)
Technical	721	4,918	5 (1.4)	21 (2.4)	37 (3.0)	30 (2.5)	7 (2.1)	308 (2.9)
Sales	2,385	17,901	11 (1.1)	30 (1.7)	39 (2.0)	18 (1.4)	2 (0.6)	285 (1.6)
Clerical	3,550	23,394	8 (0.8)	29 (1.2)	42 (1.9)	19 (1.2)	2 (0.4)	290 (1.4)
Laborer	1,054	7,595	31 (2.3)	35 (2.8)	27 (2.7)	7 (1.9)	1 (0.3)	247 (3.2)
Service	3,908	26,916	25 (0.9)	33 (1.3)	30 (1.4)	10 (0.7)	1 (0.2)	259 (1.5)
Farming, forestry, fishing	576	4,990	32 (3.3)	30 (2.4)	27 (2.7)	9 (1.1)	1 (0.7)	245 (5.3)
Craft	1,992	15,460	20 (1.6)	32 (1.8)	34 (2.2)	13 (1.5)	1 (0.5)	267 (2.0)
Machine operative	1,355	9,878	32 (1.9)	35 (2.6)	26 (2.0)	7 (1.2)	0† (0.3)	242 (2.3)
Transportation operative	758	5,387	25 (2.3)	32 (2.7)	32 (3.4)	10 (1.8)	1 (0.6)	260 (2.4)
Quantitative								
Managerial	1,639	11,906	4 (0.8)	13 (1.5)	34 (2.2)	36 (1.6)	12 (1.5)	322 (1.6)
Professional	2,705	18,510	3 (0.5)	12 (0.9)	33 (1.3)	38 (1.5)	14 (1.0)	326 (1.3)
Technical	721	4,918	6 (1.4)	20 (2.8)	38 (3.2)	27 (3.6)	9 (2.6)	308 (2.7)
Sales	2,385	17,901	10 (1.0)	26 (1.8)	39 (2.4)	21 (2.0)	4 (0.5)	291 (1.8)
Clerical	3,550	23,394	8 (0.6)	25 (1.1)	43 (1.4)	21 (1.4)	3 (0.5)	293 (1.4)
Laborer	1,054	7,595	32 (3.3)	30 (3.2)	28 (2.1)	9 (1.6)	1 (0.3)	249 (3.5)
Service	3,908	26,916	27 (1.1)	32 (1.7)	30 (1.3)	11 (0.8)	1 (0.3)	258 (1.7)
Farming, forestry, fishing	576	4,990	29 (3.9)	25 (3.6)	30 (4.4)	13 (3.0)	3 (1.2)	253 (6.6)
Craft	1,992	15,460	19 (1.5)	27 (1.5)	36 (2.1)	17 (1.4)	2 (0.6)	274 (2.3)
Machine operative	1,355	9,878	30 (1.7)	33 (2.3)	28 (2.4)	9 (1.5)	1 (0.4)	248 (2.3)
Transportation operative	758	5,387	22 (2.5)	30 (3.5)	34 (3.1)	13 (3.1)	1 (0.9)	266 (2.6)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE B5.3D

Percentages and Average Document Proficiencies of Workers in Major Occupational Categories, by Frequency of Job Literacy Practices

OCCUPATION			FREQUENCY OF JOB LITERACY PRACTICES		
			Often	Weekly	Rarely
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Managerial	1,612	11,890	89 (0.9) 314 (1.7)	9 (0.7) 289 (8.9)!	2 (0.5) *** (****)
Professional	2,698	18,506	73 (1.1) 325 (1.6)	19 (1.0) 314 (2.4)	8 (0.7) 298 (4.5)!
Technical	714	4,914	71 (2.1) 311 (3.6)	24 (2.3) 304 (6.1)!	5 (0.9) *** (****)
Sales	2,344	17,877	58 (1.3) 294 (1.9)	31 (1.6) 276 (2.4)	11 (0.9) 257 (4.8)!
Clerical	3,524	23,379	69 (1.3) 293 (1.6)	22 (1.2) 290 (2.4)	9 (0.6) 267 (4.3)!
Laborer	935	7,514	26 (2.3) 267 (4.5)	31 (2.3) 257 (4.6)	43 (2.6) 227 (4.5)
Service	3,764	26,821	30 (1.3) 273 (2.2)	30 (1.1) 270 (2.3)	40 (1.1) 240 (2.7)
Farming, forestry, fishing	533	4,961	29 (2.8) 265 (5.8)!	27 (2.7) 264 (7.1)!	44 (2.8) 221 (8.4)
Craft	1,850	15,366	54 (1.6) 280 (2.4)	30 (1.6) 262 (3.7)	16 (1.4) 229 (5.9)
Machine operative	1,300	9,842	33 (1.6) 270 (3.7)	32 (1.8) 245 (4.4)	35 (2.0) 214 (4.8)
Transportation operative	711	5,353	45 (2.4) 270 (3.0)	32 (2.0) 269 (4.5)	23 (2.1) 228 (6.5)!
Total	19,985	146,423	54 (0.6) 296 (0.8)	26 (0.5) 275 (1.3)	20 (0.4) 239 (1.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.3Q

Percentages and Average Quantitative Proficiencies of Workers in Major Occupational Categories, by Frequency of Job Literacy Practices

OCCUPATION	n	WGT N (/1,000)	FREQUENCY OF JOB LITERACY PRACTICES: Often RPCT (SE) PROF (SE)	Weekly RPCT (SE) PROF (SE)	Rarely RPCT (SE) PROF (SE)
Managerial	1,612	11,890	89 (0.9) 325 (1.7)	9 (0.7) 298 (6.8)!	2 (0.5) *** (****)
Professional	2,698	18,506	73 (1.1) 331 (1.5)	19 (1.0) 318 (2.4)	8 (0.7) 298 (4.7)!
Technical	714	4,914	71 (2.1) 311 (3.9)	24 (2.3) 305 (6.4)!	5 (0.9) *** (****)
Sales	2,344	17,877	58 (1.3) 303 (1.9)	31 (1.6) 281 (2.8)	11 (0.9) 256 (5.3)!
Clerical	3,524	23,379	69 (1.3) 297 (1.5)	22 (1.2) 294 (2.9)	9 (0.6) 268 (3.7)!
Laborer	935	7,514	26 (2.3) 273 (4.3)	31 (2.3) 260 (4.2)	43 (2.6) 227 (5.9)
Service	3,764	26,821	30 (1.3) 275 (2.2)	30 (1.1) 269 (2.5)	40 (1.1) 237 (2.9)
Farming, forestry, fishing	533	4,961	29 (2.8) 284 (6.2)!	27 (2.7) 275 (7.3)!	44 (2.8) 220 (10.8)
Craft	1,850	15,366	54 (1.6) 289 (2.8)	30 (1.6) 270 (3.4)	16 (1.4) 232 (5.7)
Machine operative	1,300	9,842	33 (1.6) 280 (3.8)	32 (1.8) 252 (3.5)	35 (2.0) 215 (5.1)
Transportation operative	711	5,353	45 (2.4) 278 (3.1)	32 (2.0) 271 (5.0)	23 (2.1) 234 (7.1)!
Total	19,985	146,423	54 (0.6) 303 (0.7)	26 (0.5) 279 (1.3)	20 (0.4) 239 (1.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.4

Percentages of Service, Farm, and Labor Workers Reporting Never Reading on the Job, by Region of the Country

OCCUPATION			CENSUS REGION			
			Northeast	Midwest	South	West
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)
Service	981	6,250	25 (1.6)	21 (2.3)	36 (2.4)	19 (1.9)
Farm	205	1,479	9 (3.4)	21 (3.8)	33 (5.8)	37 (6.4)
Labor	398	2,342	23 (3.0)	12 (2.6)	46 (3.9)	19 (3.1)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

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

TABLE B5.5D

Percentages and Average Document Proficiencies of Workers in Major Occupational Categories, by Frequency of Combined Literacy Practices

OCCUPATION			FREQUENCY OF COMBINED LITERACY PRACTICES		
			Often	Weekly	Rarely
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Managerial	1,612	11,906	84 (1.1) 315 (1.7)	15 (1.1) 294 (5.8)	1 (0.2) *** (****)
Professional	2,698	18,510	73 (1.1) 325 (1.6)	23 (1.1) 311 (2.6)	4 (0.5) 288 (6.5)!
Technical	714	4,918	71 (2.3) 312 (3.6)	26 (2.5) 301 (5.8)!	3 (0.6) *** (****)
Sales	2,344	17,901	60 (1.2) 295 (1.8)	33 (1.3) 275 (2.2)	6 (0.7) 231 (7.9)!
Clerical	3,524	23,394	66 (1.2) 294 (1.5)	29 (1.2) 287 (2.1)	5 (0.4) 256 (5.4)!
Laborer	935	7,595	27 (2.4) 273 (5.3)	42 (2.3) 253 (3.6)	29 (2.0) 215 (5.1)
Service	3,764	26,916	32 (1.1) 276 (2.0)	43 (1.3) 266 (1.7)	25 (0.9) 224 (4.0)
Farming, forestry, fishing	533	4,990	30 (3.3) 270 (5.3)!	39 (3.2) 261 (6.3)	30 (2.8) 200 (10.4)!
Craft	1,850	15,460	49 (1.7) 282 (2.3)	39 (1.5) 263 (2.9)	11 (1.2) 215 (7.6)!
Machine operative	1,300	9,878	32 (2.0) 273 (3.2)	42 (2.2) 246 (4.0)	26 (1.9) 198 (5.7)!
Transportation operative	711	5,387	41 (2.7) 272 (3.6)	41 (2.6) 262 (4.5)	17 (1.8) 225 (7.3)!

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.5Q

Percentages and Average Quantitative Proficiencies of Workers in Major Occupational Categories, by Frequency of Combined Literacy Practices

OCCUPATION			FREQUENCY OF COMBINED LITERACY PRACTICES		
			Often	Weekly	Rarely
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Managerial	1,612	11,906	84 (1.1) 327 (1.7)	15 (1.1) 301 (4.3)	1 (0.2) *** (****)
Professional	2,698	18,510	73 (1.1) 332 (1.5)	23 (1.1) 315 (2.5)	4 (0.5) 287 (7.5)!
Technical	714	4,918	71 (2.3) 313 (3.4)	26 (2.5) 299 (6.2)!	3 (0.6) *** (****)
Sales	2,344	17,901	60 (1.2) 304 (1.8)	33 (1.3) 280 (2.5)	6 (0.7) 229 (8.7)!
Clerical	3,524	23,394	66 (1.2) 298 (1.4)	29 (1.2) 290 (2.5)	5 (0.4) 257 (5.0)!
Laborer	935	7,595	27 (2.4) 278 (3.8)	42 (2.3) 256 (4.5)	29 (2.0) 214 (6.4)
Service	3,764	26,916	32 (1.1) 278 (2.2)	43 (1.3) 266 (1.9)	25 (0.9) 221 (3.9)
Farming, forestry, fishing	533	4,990	30 (3.3) 288 (6.1)!	39 (3.2) 270 (7.2)	30 (2.8) 197 (14.2)!
Craft	1,850	15,460	49 (1.7) 290 (2.5)	39 (1.5) 271 (3.4)	11 (1.2) 217 (7.4)!
Machine operative	1,300	9,878	32 (2.0) 282 (3.6)	42 (2.2) 253 (3.3)	26 (1.9) 197 (5.7)!
Transportation operative	711	5,387	41 (2.7) 280 (3.5)	41 (2.6) 267 (4.9)	17 (1.8) 229 (7.7)!

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.6

Percentages and Average Proficiencies on Each Literacy Scale of Workers in Collapsed Occupational Categories, by Participation in Training Programs

OCCUPATION			TRAINING COURSES				
			Never enrolled	Employer/ Union	Public	Tutoring/ Other	Total enrolled
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Manager, Professional, & Technical	4,946	34,650					
Prose			92 (0.4)	5 (0.4)	2 (0.3)	3 (0.2)	8 (0.4)
			324 (1.1)	319 (3.5)!	291 (5.0)!	311 (6.3)!	311 (3.2)
Document			92 (0.4)	5 (0.4)	2 (0.3)	3 (0.2)	8 (0.4)
			317 (1.0)	312 (4.1)!	283 (4.6)!	308 (6.9)!	305 (3.8)
Quantitative			92 (0.4)	5 (0.4)	2 (0.3)	3 (0.2)	8 (0.4)
			323 (1.2)	321 (4.0)!	288 (6.4)!	306 (5.9)!	310 (3.4)
Sales, Clerical, Service	9,464	66,632					
Prose			92 (0.5)	3 (0.3)	3 (0.3)	3 (0.2)	8 (0.5)
			283 (0.9)	279 (4.5)!	254 (4.5)!	258 (5.6)!	264 (3.5)
Document			92 (0.5)	3 (0.3)	3 (0.3)	3 (0.2)	8 (0.5)
			278 (0.9)	273 (4.6)!	250 (3.8)!	255 (6.0)!	259 (3.3)
Quantitative			92 (0.5)	3 (0.3)	3 (0.3)	3 (0.2)	8 (0.5)
			281 (1.0)	277 (4.9)!	247 (4.3)!	251 (5.8)!	258 (3.5)
Craft	1,841	15,164					
Prose			92 (0.8)	4 (0.6)	2 (0.4)	3 (0.6)	8 (0.8)
			268 (2.3)	266 (5.5)!	241 (7.1)!	271 (9.0)!	261 (4.6)!
Document			92 (0.8)	4 (0.6)	2 (0.4)	3 (0.6)	8 (0.8)
			267 (2.2)	265 (5.5)!	242 (7.7)!	269 (8.6)!	260 (4.2)!
Quantitative			92 (0.8)	4 (0.6)	2 (0.4)	3 (0.6)	8 (0.8)
			275 (2.5)	269 (5.5)!	247 (8.1)!	271 (6.5)!	264 (4.0)!
Laborer, Farmer, & Mach./Trans. Operative	3,465	27,241					
Prose			92 (0.6)	2 (0.3)	3 (0.4)	3 (0.5)	7 (0.6)
			251 (1.7)	245 (12.6)!	231 (6.8)!	233 (8.3)!	236 (5.8)!
Document			92 (0.6)	2 (0.3)	3 (0.4)	3 (0.5)	7 (0.6)
			249 (1.7)	245 (12.1)!	230 (7.5)!	235 (7.9)!	236 (5.3)!
Quantitative			92 (0.6)	2 (0.3)	3 (0.4)	3 (0.5)	7 (0.6)
			254 (2.1)	249 (13.1)!	228 (7.5)!	236 (7.9)!	237 (4.9)!

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.7D

Percentages and Average Document Proficiencies of Adults Reporting Enrollment in Training Programs, by Sex, Race/Ethnicity, and Education

SEX, RACE/ETHNICITY, AND EDUCATION			TRAINING COURSES				
			Never enrolled	Employer/ Union	Public	Tutoring/ Other	Total enrolled
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Sex							
Male	10,657	89,736	92 (0.4)	4 (0.2)	2 (0.2)	4 (0.2)	8 (0.4)
			269 (0.9)	281 (4.0)	238 (6.1)	258 (4.2)	263 (3.0)
Female	13,922	96,591	93 (0.3)	2 (0.2)	3 (0.2)	2 (0.2)	7 (0.3)
			266 (1.0)	269 (5.3)	245 (3.9)	255 (5.3)	255 (3.1)
Race/Ethnicity							
White	16,637	142,077	94 (0.3)	3 (0.2)	2 (0.1)	2 (0.2)	6 (0.3)
			280 (0.8)	288 (3.8)!	264 (4.2)!	274 (4.5)!	276 (2.7)
Black	4,464	20,524	87 (0.7)	4 (0.3)	6 (0.6)	5 (0.4)	13 (0.7)
			230 (1.3)	243 (4.5)	219 (3.9)	237 (6.1)	231 (3.1)
Hispanic	2,870	17,739	91 (0.8)	2 (0.4)	3 (0.4)	4 (0.6)	9 (0.8)
			211 (2.5)	249 (14.1)!	227 (7.9)!	228 (7.7)!	232 (5.5)!
Other	646	6,252	87 (2.2)	5 (1.9)	6 (1.3)	4 (1.3)	13 (2.2)
			251 (3.7)	*** (****)	*** (****)	*** (****)	215 (15.6)!
Education							
Still in high school	954	8,084	94 (1.4)	0† (0.1)	3 (0.7)	4 (0.9)	6 (1.4)
			275 (2.1)	*** (****)	*** (****)	*** (****)	258 (6.8)!
0 to 12 years	4,940	42,433	92 (0.6)	2 (0.3)	4 (0.3)	3 (0.4)	8 (0.6)
			202 (1.9)	217 (8.2)!	206 (5.9)!	201 (6.1)!	206 (3.8)
GED/High school graduate	6,762	57,253	93 (0.5)	3 (0.3)	3 (0.3)	2 (0.2)	7 (0.5)
			265 (1.0)	260 (5.2)	246 (6.8)	257 (5.3)	255 (3.9)
Some postsecondary	11,961	78,822	93 (0.4)	4 (0.2)	2 (0.1)	3 (0.2)	7 (0.4)
			304 (0.8)	300 (3.4)	276 (3.9)!	294 (4.0)	293 (2.3)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.7Q

Percentages and Average Quantitative Proficiencies of Adults Reporting Enrollment in Training Programs, by Sex, Race/Ethnicity, and Education

SEX, RACE/ETHNICITY, AND EDUCATION			TRAINING COURSES				
			Never enrolled	Employer/ Union	Public	Tutoring/ Other	Total enrolled
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Sex							
Male	10,657	89,736	92 (0.4)	4 (0.2)	2 (0.2)	4 (0.2)	8 (0.4)
			278 (0.9)	290 (4.2)	243 (6.2)	259 (4.9)	267 (3.1)
Female	13,922	96,591	93 (0.3)	2 (0.2)	3 (0.2)	2 (0.2)	7 (0.3)
			268 (1.0)	270 (5.1)	242 (3.8)	250 (5.5)	252 (3.2)
Race/Ethnicity							
White	16,637	142,077	94 (0.3)	3 (0.2)	2 (0.1)	2 (0.2)	6 (0.3)
			287 (0.8)	296 (3.8)!	269 (4.9)!	275 (4.6)!	281 (2.9)
Black	4,464	20,524	87 (0.7)	4 (0.3)	6 (0.6)	5 (0.4)	13 (0.7)
			224 (1.6)	239 (5.3)	212 (4.6)	229 (6.8)	224 (3.3)
Hispanic	2,870	17,739	91 (0.8)	2 (0.4)	3 (0.4)	4 (0.6)	9 (0.8)
			210 (2.4)	250 (14.9)!	223 (7.3)!	222 (7.4)!	229 (5.6)!
Other	646	6,252	87 (2.2)	5 (1.9)	6 (1.3)	4 (1.3)	13 (2.2)
			256 (4.3)	*** (****)	*** (****)	*** (****)	222 (14.3)!
Education							
Still in high school	954	8,084	94 (1.4)	0† (0.1)	3 (0.7)	4 (0.9)	6 (1.4)
			270 (2.4)	*** (****)	*** (****)	*** (****)	255 (8.3)!
0 to 12 years	4,940	42,433	92 (0.6)	2 (0.3)	4 (0.3)	3 (0.4)	8 (0.6)
			202 (2.0)	212 (9.8)!	205 (5.0)!	196 (7.8)!	203 (3.8)
GED/High school graduate	6,762	57,253	93 (0.5)	3 (0.3)	3 (0.3)	2 (0.2)	7 (0.5)
			271 (1.0)	265 (4.5)	245 (7.1)	258 (5.1)	256 (3.6)
Some postsecondary	11,961	78,822	93 (0.4)	4 (0.2)	2 (0.1)	3 (0.2)	7 (0.4)
			311 (1.0)	309 (3.6)	281 (5.5)!	293 (3.7)	298 (2.4)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.8D

Percentages and Average Document Proficiencies of Workers in Major Occupational Categories, by Race/Ethnicity

OCCUPATION			RACE/ETHNICITY		
			White	Black	Hispanic
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Managerial	1,598	11,597	90 (0.9) 315 (1.8)	6 (0.6) 273 (5.3)!	4 (0.6) 289 (9.1)!
Professional	2,600	17,750	89 (0.9) 326 (1.5)	6 (0.6) 277 (3.2)!	4 (0.5) 282 (6.2)!
Technical	693	4,641	84 (1.7) 315 (3.0)	9 (1.3) 278 (7.8)!	7 (1.0) 275 (9.7)!
Sales	2,301	16,974	82 (1.1) 293 (1.6)	9 (0.6) 257 (3.6)!	9 (0.8) 248 (5.1)!
Clerical	3,466	22,782	78 (0.9) 297 (1.7)	12 (0.6) 264 (2.8)	10 (0.7) 264 (3.7)!
Laborer	1,025	7,293	69 (1.9) 267 (3.9)	16 (1.3) 219 (5.8)!	15 (1.5) 190 (10.5)!
Service	3,802	25,832	70 (0.8) 278 (1.9)	17 (0.7) 225 (2.5)	13 (0.7) 210 (5.9)
Farming, forestry, fishing	565	4,814	81 (2.9) 267 (3.8)	4 (1.3) 189 (13.3)!	15 (2.6) 150 (9.2)!
Craft	1,955	15,239	83 (0.9) 277 (2.3)	7 (0.7) 220 (6.0)!	9 (0.7) 212 (5.6)!
Machine operative	1,320	9,454	69 (1.8) 263 (3.0)	15 (1.6) 226 (4.3)!	16 (1.3) 178 (7.3)!
Transportation operative	747	5,280	74 (2.0) 274 (2.9)	15 (1.6) 218 (6.4)!	11 (1.5) 228 (9.4)!
Total	20,072	141,656	79 (0.2) 293 (0.8)	11 (0.1) 240 (1.2)	10 (0.2) 224 (2.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution – the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.8Q

Percentages and Average Quantitative Proficiencies of Workers in Major Occupational Categories, by Race/Ethnicity

OCCUPATION			RACE/ETHNICITY		
			White	Black	Hispanic
	n	WGT N (/1,000)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)	RPCT (SE) PROF (SE)
Managerial	1,598	11,597	90 (0.9) 326 (1.7)	6 (0.6) 278 (5.5)!	4 (0.6) 296 (9.3)!
Professional	2,600	17,750	89 (0.9) 332 (1.4)	6 (0.6) 275 (3.6)!	4 (0.5) 289 (6.2)!
Technical	693	4,641	84 (1.7) 316 (2.8)	9 (1.3) 268 (7.5)!	7 (1.0) 273 (7.5)!
Sales	2,301	16,974	82 (1.1) 302 (2.0)	9 (0.6) 252 (3.3)!	9 (0.8) 248 (5.8)!
Clerical	3,466	22,782	78 (0.9) 302 (1.6)	12 (0.6) 261 (3.5)	10 (0.7) 265 (4.2)!
Laborer	1,025	7,293	69 (1.9) 271 (3.6)	16 (1.3) 217 (6.1)!	15 (1.5) 187 (10.7)!
Service	3,802	25,832	70 (0.8) 279 (1.9)	17 (0.7) 217 (2.8)	13 (0.7) 206 (6.4)
Farming, forestry, fishing	565	4,814	81 (2.9) 280 (3.8)	4 (1.3) 177 (14.1)!	15 (2.6) 148 (9.7)!
Craft	1,955	15,239	83 (0.9) 286 (2.5)	7 (0.7) 220 (6.4)!	9 (0.7) 214 (4.3)!
Machine operative	1,320	9,454	69 (1.8) 271 (2.9)	15 (1.6) 226 (5.1)!	16 (1.3) 180 (6.4)!
Transportation operative	747	5,280	74 (2.0) 282 (3.2)	15 (1.6) 217 (7.2)!	11 (1.5) 228 (10.1)!
Total	20,072	141,656	79 (0.2) 299 (0.8)	11 (0.1) 237 (1.5)	10 (0.2) 224 (2.9)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

*** Sample size is insufficient to permit a reliable estimate (fewer than 45 respondents).

! Interpret with caution -- the nature of the sample does not allow accurate determination of the variability of this statistic.

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

TABLE B5.9D

Percentages at Each Level and Average Document Proficiencies of Adults Reporting Type of Physical, Mental, or Other Health Condition

TYPE OF CONDITION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Physical, mental, health condition	2,806	22,205	51 (1.2)	30 (1.2)	15 (0.9)	4 (0.6)	1 (0.2)	218 (2.0)
Visual difficulty	1,801	14,296	56 (1.5)	26 (2.1)	13 (1.8)	4 (0.8)	1 (0.3)	211 (2.6)
Hearing difficulty	1,611	14,202	39 (2.1)	31 (1.9)	22 (1.6)	7 (1.1)	1 (0.4)	236 (2.8)
Learning disability	875	5,820	60 (2.6)	22 (3.0)	13 (1.3)	4 (1.0)	1 (0.9)	201 (4.0)
Mental or emotional condition	597	3,831	47 (3.2)	26 (2.8)	18 (2.1)	7 (1.9)	2 (0.7)	223 (4.6)
Mental retardation	63	370	87 (6.3)	5 (4.9)	5 (3.1)	3 (2.6)	0† (0.7)	146 (13.4)
Speech disability	383	2,767	55 (4.1)	28 (4.0)	12 (2.6)	5 (1.9)	0† (0.4)	212 (5.7)
Physical disability	2,129	17,144	48 (1.4)	29 (1.5)	17 (1.4)	5 (0.7)	0† (0.1)	222 (2.1)
Long-term illness	1,880	14,627	46 (1.7)	30 (2.2)	17 (1.6)	5 (0.8)	1 (0.3)	225 (2.3)
Any other health impairment	1,509	12,058	45 (2.0)	30 (2.2)	19 (1.8)	5 (1.1)	1 (0.2)	226 (2.5)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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

TABLE B5.9Q

Percentages at Each Level and Average Quantitative Proficiencies of Adults Reporting Type of Physical, Mental, or Other Health Condition

TYPE OF CONDITION			LEVELS AND AVERAGE PROFICIENCY					
			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
	n	WGT N (/1,000)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	RPCT (SE)	PROF (SE)
Physical, mental, health condition	2,806	22,205	48 (1.2)	26 (1.1)	19 (1.3)	6 (0.7)	1 (0.4)	220 (2.4)
Visual difficulty	1,801	14,296	55 (1.6)	24 (1.7)	16 (1.6)	5 (1.1)	1 (0.4)	210 (2.7)
Hearing difficulty	1,611	14,202	37 (2.3)	25 (1.9)	26 (2.0)	10 (1.6)	2 (0.6)	242 (3.6)
Learning disability	875	5,820	60 (2.9)	21 (2.5)	13 (1.4)	4 (1.3)	1 (0.6)	197 (4.2)
Mental or emotional condition	597	3,631	51 (3.2)	23 (2.7)	16 (2.5)	8 (1.9)	2 (1.3)	214 (5.7)
Mental retardation	63	370	90 (4.2)	3 (3.7)	6 (4.8)	1 (0.9)	0† (1.6)	115 (14.1)
Speech disability	383	2,767	55 (3.2)	22 (3.4)	16 (2.6)	6 (2.3)	1 (0.9)	208 (7.2)
Physical disability	2,129	17,144	47 (1.7)	26 (1.5)	20 (1.2)	7 (0.8)	1 (0.3)	223 (2.5)
Long-term illness	1,880	14,627	44 (1.5)	25 (1.4)	22 (1.7)	7 (0.8)	2 (0.4)	227 (2.7)
Any other health impairment	1,509	12,058	41 (1.8)	26 (1.8)	23 (1.9)	8 (1.1)	2 (0.7)	232 (3.2)

n = sample size; WGT N = population size estimate / 1,000 (the sample sizes for subpopulations may not add up to the total sample sizes, due to missing data); RPCT = row percentage estimate; PROF = average proficiency estimate; (SE) = standard error of the estimate (the true population value can be said to be within 2 standard errors of the sample estimate with 95% certainty).

† Percentages less than 0.5 are rounded to 0.

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 forthcoming technical report will provide more extensive information about procedures. In addition, more detailed information on the development of the background questionnaires and literacy tasks can be found in *Assessing Literacy.*[1]

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.

[1] A. Campbell, I. Kirsch, and A. Kolstad. (1992). *Assessing Literacy: The Framework for the National Adult Literacy Survey*. Washington, DC: 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-highminority 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 7 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 (16 and older for the national component, 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 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
- 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.

As a result of these changes, the questionnaire for the prison population addressed the following topics:

- general and language background
- educational background and experiences
- current offenses and criminal history
- prison work assignments and labor force participation
- literacy activities and collaboration
- demographic information

The information collected through these questions makes it possible, for the first time, to explore complex relationships between prisoners' literacy skills and their experiences and characteristics.

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
- 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, and 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 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, 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 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.

	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 (ASCS). 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 National Adult Literacy Survey are reported on three scales established by the NAEP 1985 Young Adult Literacy Survey: 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 survey, 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.[2] 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 National Adult Literacy Survey are reported on scales that were established in the 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 young adult survey. The composition of the item pool is presented in table C.1.

Table C.1: Composition of the 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.

[2] 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*. Hillsdale, NJ: Erlbaum.

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.

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 is as follows:

$$t = \frac{P_1 - P_2}{\sqrt{se_1^2 + se_2^2}}$$

where P_1 and P_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.

APPENDIX D

Definitions of All Subpopulations and Variables Reported

[In Order of Appearance]

Total Population

The total population includes adults aged 16 and older who participated in the national household survey, the state surveys, and the survey of prisoners.

Highest Level of Education Completed

Respondents were asked to indicate the highest level of education they completed in this country. The following options were given:

Still in high school (not applicable to the prison population)
Less than high school
Some high school
GED or high school equivalency
High school graduate
Vocational, trade, or business school after high school
College: less than 2 years
College: associate's degree (A.A.)
College: 2 or more years, no degree
College graduate (B.S. or B.A.)
Postgraduate, no degree
Postgraduate degree (M.S., M.A., Ph.D., M.D., etc.)

These options were collapsed several different ways. In chapter 2, still in high school, less than high school, and some high school were separate groups; GED and high school graduate were collapsed; and two categories of postsecondary education were created: some postsecondary education, but no degree; and college graduate, that is, any college degree. In other tables, GED and high school were separated with the other categories remaining the same. In a third instance, postsecondary education was grouped as follows: college with no degree, a two-year degree, a four-year degree, and graduate studies or degree. In chapter 2, as well as in chapter 4, education was also categorized as still in high school, less than high school, some high school, high school or

GED, some postsecondary education, and college degree. In chapter 5, the categories were as follows: still in high school, 0 to 12 years, GED or high school graduate, and some postsecondary. In chapter 3, four education levels were used: 0 to 12 years of education, GED, high school graduate, and any postsecondary education.

Sex

The interviewers recorded the sex of each respondent.

Age

Respondents were asked to report their date of birth, and this information was used to calculate their age. Ages were then grouped several ways:

16 to 19, 20 to 29, 30 to 39, 40 to 49, 50 to 59, 60 to 69, and 70 or older
16 to 18, 19 to 24, 25 to 39, 40 to 54, 55 to 64 , and 65 or older
16 to 54 and 55 or older
16 to 24, 35 to 54, and 55 or older

Race/Ethnicity

Respondents were asked two questions about their race and ethnicity. One question asked them to indicate which of the following best describes them:

White	Pacific Islander
Black (African American)	Asian
American Indian	Other
Alaskan Native	

(The interviewer recorded from observation the races of respondents who refused to answer the question.) The other question asked respondents to indicate whether they were of Spanish or Hispanic origin or descent. Then, 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

All those who indicated they were of Spanish or Hispanic origin were grouped together, regardless of their origin. Adults who indicated they were Pacific Islander, Asian, American Indian, and Alaskan Native were grouped together as other. All other racial/ethnic groups are reported separately. In some cases Asian and Pacific Islander were grouped together and reported along with White, Black, and Hispanic groups.

Average Years of Schooling

Responses to the question on the highest level of education completed were used to calculate the average number of years of schooling completed. For the household population, individuals who were still in high school were left out of this analysis. Adults who had not graduated from high school were asked to indicate exactly how many years of schooling they had completed (0 through 11). Individuals who did not provide this information were assigned a value equal to the average number of years of schooling completed by those who did provide this information. For adults in the category of 0 to 8 years of education, the average number of years of schooling was 6.10. For adults in the category of 9 to 12 years of education, the average number of years of schooling was 10.11. The remaining adults were assigned values representing the number of years of schooling completed, as follows:

GED, high school equivalency	12
high school graduate	12
vocational, trade, or business school	13
college: less than 2 years	13
college: associate's degree (A.A.)	14
college: 2 or more years, no degree	14.5
college graduate (B.S. or B.A.)	16
postgraduate, no degree	17
postgraduate degree	18

Using these values, the average number of years of schooling was calculated for race/ethnicity.

Level of Parental Education

Respondents were asked to indicate the highest level of education completed by their mother (or stepmother or female guardian) and by their father (or stepfather or male guardian). The analyses in this report are based on the highest level of education attained by either parent. The categories for

reporting data are less than high school, some high school, high school diploma, and four-year degree.

Household Income

Respondents were asked to give their total family income from all sources in 1991. The responses were then aggregated into the following categories:

$0 to 19,999	or	$0 to 9,999
$20,000 to 39,999		$10,000 to 19,999
$40,000 to 74,999		$20,000 to 29,999
$75,000 or more		$30,000 to 39,999
		$40,000 to 49,999
		$50,000 to 74,999
		$75,000 or more

Employment Status

Respondents were asked what they were doing the week before the survey:

1) working at a full-time job for pay or profit (35 hours or more)
2) working two or more part-time jobs for pay, totaling 35 or more hours
3) working for pay or profit part-time (1 to 34 hours)
4) unemployed, laid off, or looking for work
5) with a job but not at work because of temporary illness, vacation, or work stoppage
6) with a job but on family leave (maternity or paternity leave)
7) in school
8) keeping house
9) retired
10) doing volunteer work

Four categories were established: working full-time (or two or more part-time jobs); working part-time; unemployed, laid off, or looking for work; and out of the labor force. Adults in categories 1 and 2 above were considered as being employed full-time; those in category 3 were considered as being employed part-time; those in category 4 were counted as unemployed; categories 5 and 6 were considered as not being at work; those in categories 7 through 10 as being out of the labor force. In chapter 4, the category of retired was reported separately.

Childhood Language

Respondents were asked what language or languages were usually spoken in their homes while growing up. The categories derived from this question are English, Spanish, any other language, English and Spanish, and English and other.

Language Spoken Now

The variable of language spoken now was derived from several questions. Respondents who indicated that they learned to speak only English before starting school were categorized as speaking English now. Respondents who indicated that they learned to speak at least one language other than English before starting school were asked what language they usually speak now. Respondents who indicated English were grouped with those who learned to speak only English. Two other categories were also established, Spanish only and other.

Participation in English as Second Language Courses

Respondents who indicated that they spoke a language other than English before starting school were asked two questions about participation in courses for English as a second language: a course to learn how to read and write English and a course to learn how to speak English. Respondents who answered yes to either or both of the questions were grouped together as having taken a course; those who answered no to both questions were grouped together as not having taken a course.

Personal Practice Index

The personal practice index is an indicator of how often adults read, write, or use arithmetic for their personal use. Respondents were asked a series of questions about how often they read the following materials in English for their personal use:

- letters or memos
- reports, articles, magazines, or journals
- manuals or reference books, including catalogs or parts lists
- directions or instructions for medicines, recipes, or other products
- diagrams or schematics
- bills, invoices, spreadsheets, or budget tables

They were asked another series about how often they wrote or filled out letters or memos, forms, and reports or articles for their personal use, as well as one

question about how often they used arithmetic. The frequency categories for all these questions were every day, a few times a week, once a week, less than once a week, and never. To derive the personal practice index, the five frequency categories were coded 5 for every day down to 1 for never. The codes were added for the series of questions, and then the mean of the sum was calculated, with means rounded to the nearest whole number. Means of 4 and 5 (the equivalent of every day or a few times a week) were labeled often; a mean of 3 was labeled weekly; and means of 1 and 2 (the equivalent of less than once a week or never) were labeled rarely.

Reason for Dropping Out of School

Respondents who reported that they had less than high school, some high school, or a GED were asked to indicate the main reason for dropping out of school. They were asked to choose from the following reasons:

financial problems
went to work or into the military
pregnancy
lost interest or behavior problems in school
academic problems in school
family or personal problems
other

Studying for a GED

Respondents who indicated that they did not have a high school diploma or that they had a GED were asked if they had ever studied for a GED. The data were analyzed separately for those with no diploma and those with a GED.

Current Enrollment in School or College

Respondents were asked if they were currently enrolled in school or college, either full-time or part-time.

Enrollment in Basic Skills Programs

Respondents were asked, "Are you currently enrolled in or have you ever taken part in a program other than regular school in order to improve your *basic* skills, that is, basic reading, writing, and arithmetic skills?" Those who answered "yes" were then asked to indicate if the program was a training

program or courses given or sponsored by an employer or union; a publicly sponsored education and training program, such as JTPA or ABE; a tutoring program sponsored by a library, church, or community organization; or any other program, such as one offered by the military, prisons, or other institutions. Respondents were able to indicate one or more programs, as appropriate. The resulting data include the following categories: never enrolled in any program; enrolled or not enrolled in a employer or union sponsored program; enrolled or not enrolled in a publicly sponsored program; enrolled or not enrolled in a tutoring or other program.

Weeks Worked

All respondents, including those who were employed or out of the labor force the week before the survey, were asked to indicate how many weeks they worked for pay or profit during the past 12 months, including paid leave, such as vacation and sick leave. The responses were aggregated into the following categories: 0 weeks, 1 to 39 weeks, and 40 in more weeks.

Job Practice Index

The job practice index is an indicator of how often adults read, write, or use arithmetic on the job. Respondents were asked a series of questions about how often they read the following materials in English for their job:

- letters or memos
- reports, articles, magazines, or journals
- manuals or reference books, including catalogs or parts lists
- directions or instructions for medicines, recipes, or other products
- diagrams or schematics
- bills, invoices, spreadsheets, or budget tables

They were asked another series about how often they wrote or filled out letters or memos, forms, and reports or articles for their job, as well as one question about how often they used arithmetic. The frequency categories for all these questions were every day, a few times a week, once a week, less than once a week, and never. To derive the job practice index, the five frequency categories were coded 5 for every day down to 1 for never. The codes were added for the series of questions, and then the mean of the sum was calculated, with means rounded to the nearest whole number. Means of 4 and 5 (the equivalent of every day or a few times a week) were labeled often; a mean of 3 was labeled weekly; and means of 1 and 2 (the equivalent of less than once a week or never) were labeled rarely.

Country of Birth

All respondents were asked in what country they were born. Two categories were established: born in the United States or a territory and born outside of the United States.

Where Adults Learned Their Skills

All participants were asked where they primarily learned to read newspapers, magazines, or books; read graphs, diagrams, or maps; fill out forms; or write letters, notes, memos, or reports. The response choices were mostly in school, at home or in the community, at work, did not learn, or other.

Occupation

Respondents were asked two questions about their current or most recent job, whether full-time or part-time. The first question asked them to indicate their occupation or the name of their job — for example, electrical engineer, stock clerk, typist, or farmer. The second question asked them to describe the most important activities or duties of the job. Responses were coded according to the Bureau of Census occupation codes. These codes were then collapsed into 11 main categories: managerial, professional, technical, sales, clerical, laborer, service, farming/forestry/fishing, craft, machine operative, or transportation operative. These categories were further collapsed into four general categories: managerial, professional, and technical; sales, clerical, and service; craft; and laborer, farming, and machine and transportation operative. In addition, occupational subcategories were derived by grouping codes as follows:

Health support (nurses, therapists, hygienists, aids, etc.)	095-106, 203-208, 445-447
Teachers (elementary, secondary, postsecondary)	113-159
Sales occupations (cashiers, representatives, vendors)	243-285
Secretaries, steno, typists	313-315
Clerks	317-343, 356, 374, 365-66, 379
Food preparation (cook, kitchen worker, waitress, etc.)	433-444
Cleaning and maintenance	449-454
Child care workers	466-468
Non-supervisory farming, nursery, etc.	473-474, 479, 483-484, 486, 495-496
Non-supervisory construction	563-599
Non-supervisory motor vehicle operator	804-814

Frequent Reading and Writing on the Job

From the same series of questions that were used to derive the job practice index, the frequency of reading or writing specific materials was derived. Frequent reading or writing of each material includes every day or a few times a week.

General Practices Index

The general practices index is an indicator of how often adults read, write, or use arithmetic both on the job and for their personal use. To derive the general practice index, the five frequency categories were coded as described above for both series of questions on job and personal use. The codes were added and the mean of the sum was calculated, with means rounded to the nearest whole number. The same categories of often, weekly, and rarely were derived as described above.

Region

Census definitions of regions are used in the survey. The four regions are the Northeast, Midwest, South, and West. The states in each region are identified below.

Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania

Midwest: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas

West: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii

Presence and Type of Physical, Mental, or Other Health Condition

Respondents were asked a series of questions in which they were asked to identify whether they had any of the following:

a physical, mental, or other health condition that keeps them from participating fully in work, school, or other activities

difficulty seeing the words or letters in ordinary newspaper print even when wearing glasses or contact lenses, if they usually wear them

difficulty hearing what is said in a normal conversation with another person even when using a hearing aid, if they usually wear one
a learning disability
any mental or emotional condition
mental retardation
a speech disability
a physical disability
a long-term illness (6 months or more)
any other health impairment

Respondents were able to indicate each physical, mental, or health condition they had; thus, these categories are not mutually exclusive. Data are reported by each of the specific disabilities.

APPENDIX E

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