

Comparisons with OECD Nations

Heightened competition in a global economy has stimulated public interest in “world-class standards” for American students. Many policymakers and industrial leaders worry about our ability to maintain our scientific, technological, and economic edge in the world economy into the 21st century. They have pressed for the establishment of benchmarks against which the learning of U.S. students could be measured, the performance of our school systems monitored, and the nation’s stock of human capital measured over time.

An international average might be considered a useful benchmark. The IEA study, however, does not provide the basis for a particularly meaningful benchmark. The 32 nations are a self-selected group that are neither a representative sample of all nations nor of our principal trading partners (for example, Japan, the United Kingdom, and Mexico are not included).

For the purposes of stimulating further discussion of appropriate world standards, we have capitalized on the fact that 18 of the 32 nations participating in the study are also members of the Organization for Economic Cooperation and Development (OECD)* to construct an OECD average. Using the OECD average as a reference point, we can make comparisons of the performance of American students overall, and that of particular American subpopulations, against a meaningful benchmark.

*The Organization for Economic Cooperation and Development includes the following countries that participated in the IEA Reading Literacy Study: Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and the United States. The remaining, nonparticipating OECD member countries are Australia, Austria, Japan, Luxembourg, Mexico, Turkey, and the United Kingdom.

American Students and the OECD Average

Figures 8 and 9 show the distribution of reading comprehension scores for American 4th and 9th graders, respectively, in each of the three domains of reading. The U.S. mean is higher than the OECD mean in each instance, and the difference is statistically significant for all except 9th grade documents comprehension. These differences are reflected in the percentages of the U.S. student populations performing at or above the OECD mean—about 60 percent of 4th graders in the narrative and expository domains and 70 percent for documents. For 9th graders the parallel figures range between 52 and 55 percent.

Apparently, American 4th grade students learn basic reading skills better than do their peers in other OECD countries. However, American 9th grade students do not hold as large a comparative advantage relative to their peers in other OECD countries.

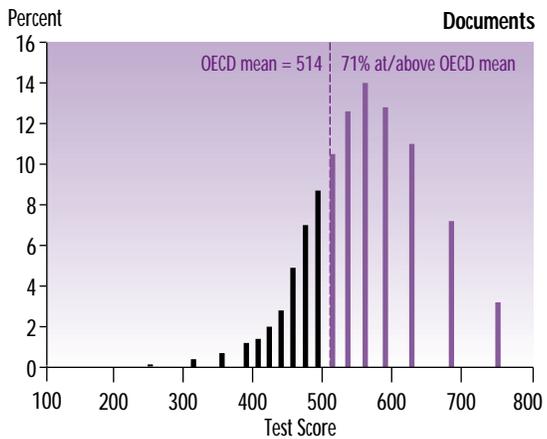
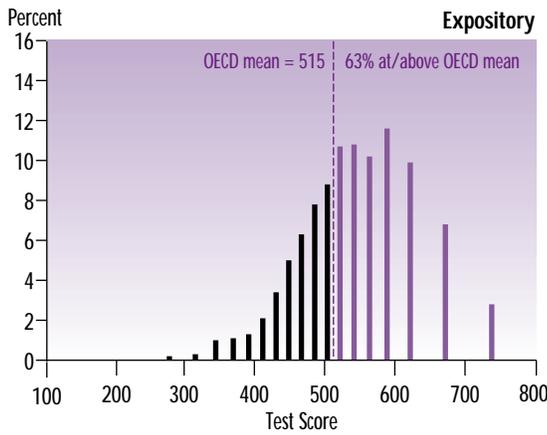
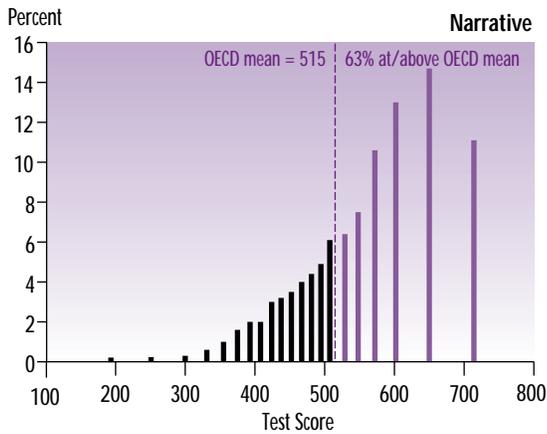
American Subpopulations and the OECD Average

Concerns about inequities in the American educational system have aroused interest in how various sectors of the student population fare in school. To examine that issue, Figures 10 through 19 illustrate the average levels of reading comprehension found in subpopulations defined by race/ethnicity, gender, parents' education, family wealth, and family structure. These displays allow comparisons between the subpopulation groups themselves and of each with the OECD mean.

Before proceeding to these findings, a note on how to read Figures 10 through 19 may be helpful. In each of the figures, we show two kinds of mean scores: a single mean for the OECD countries, represented by a broken horizontal line across the figure; and a mean score for each of the subpopulation groups examined. Each estimate of the group mean is shown as a white horizontal line within a vertical shaded band. The shaded area indicates the confidence interval of the mean—the range in which the true mean score of that subpopulation group is most likely to occur. When the shaded areas for different groups do not overlap, the two groups are significantly different. Generally, if the two shaded areas do overlap, the two groups are not significantly different. However, if the overlap is small, the groups may still be significantly different and a significance test can be done to determine significance.

Figure 8

Distribution of 4th Grade Reading Achievement Scores

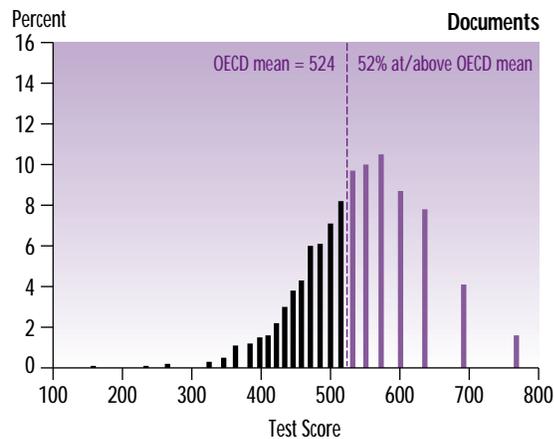
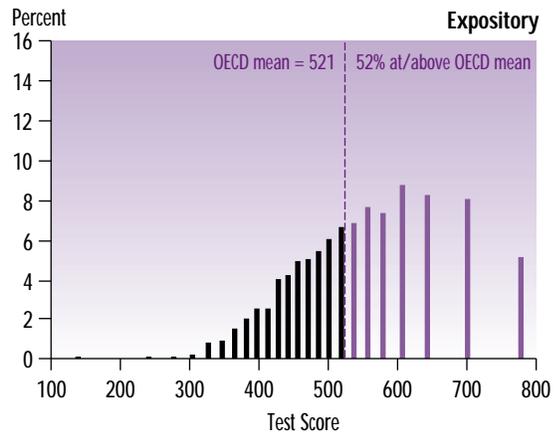
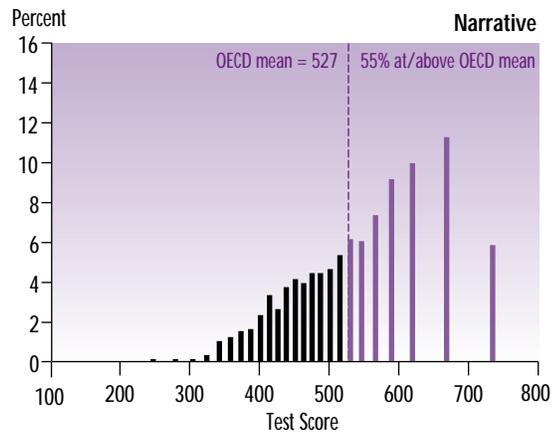


■ At or above OECD mean
 ■ Below the OECD mean

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 9

Distribution of 9th Grade Reading Achievement Scores



■ At or above OECD mean
 ■ Below the OECD mean

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Race/Ethnicity. Figures 10 and 11 display the mean performance levels of the three main racial/ethnic groups identified in the study—whites, blacks, and Hispanics.* These data make it clear that at both grade 4 and grade 9 the performance of the average white student significantly exceeds that of the average black student and the average Hispanic student in each domain of reading comprehension. Differences between the two minority groups themselves reach statistical significance in only two instances—among 4th graders, where Hispanic students do better than black students on narrative and documents comprehension. These findings confirm a pattern that emerges in most studies of school achievement in the United States, and one that is seen in the 1992 NAEP Reading Assessments.¹³

In both grades 4 and 9, the data also show that the average white student always does better than the average OECD student. In fact, about 70 percent of white 4th graders equal or exceed the OECD average in each domain of reading comprehension. White U.S. 9th graders do nearly as well; about 60 percent of them do as well or better than the average OECD student.**

The average black student, however, fares less well in these comparisons. The mean performance of black 4th and 9th graders is always below the OECD mean, and the differences are statistically significant, with one exception (4th grade narrative comprehension). Seen another way, these data point out that less than 40 percent of black 4th graders are the equal or better of the average OECD student in their comprehension of text. At 9th grade, the comparable figure is 30 percent or less.

For the most part the average Hispanic student reads at about the same level as the average OECD student. However, the data do show that for 4th grade narrative comprehension they do significantly better, and for 9th grade documents comprehension they do significantly worse. In fact, close to 50 percent of Hispanic 4th graders and somewhat less than 40 percent of Hispanic 9th graders read as well or better than the average OECD student.***

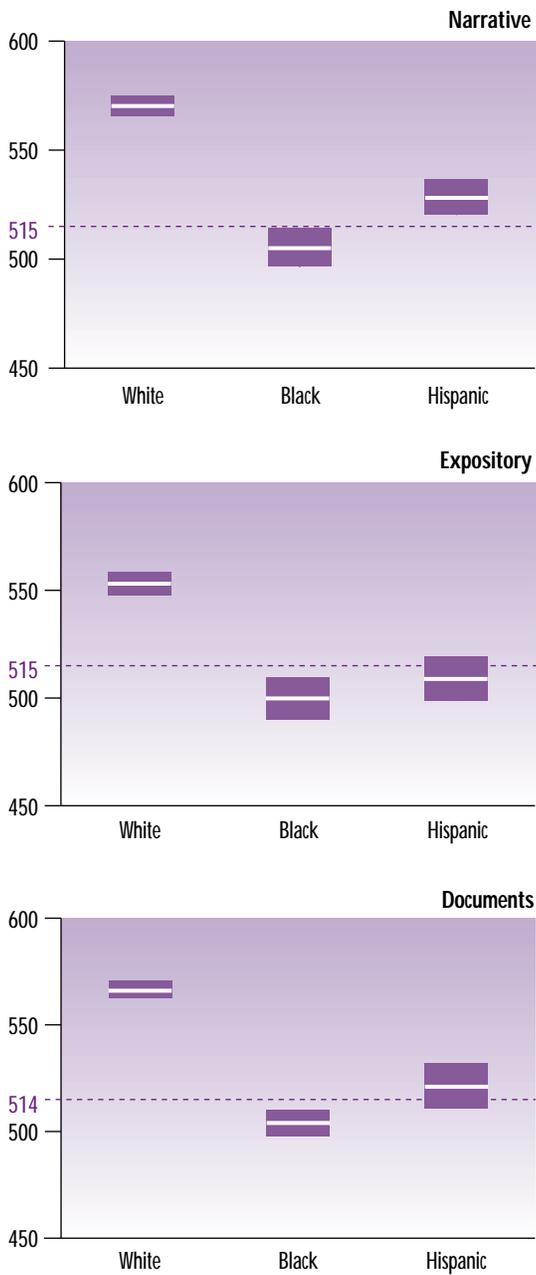
* While the groups Asian/Pacific Islanders and American Indian/Alaskan Natives were identified in the sample, their numbers were small and are omitted from consideration in this report: details on these groups are provided in *Reading Literacy in the United States: Technical Report*.

** In most instances the situation is similar on each of the three domains of reading comprehension. To simplify the discussion, we often describe all three domains with a single approximate statement such as this.

*** The significance tests used take into account that there are multiple comparisons being made. A more stringent criterion is applied under these circumstances. This may result in a group that appears in the figures to differ from the OECD mean not achieving statistical significance when the multiple comparisons are accommodated, as is the case here for 9th grade narrative for Hispanic students. This apparent anomaly appears in several places throughout this volume. In each case the conclusions in the text are based on the appropriate tests of statistical significance.

Figure 10

4th Grade Narrative, Expository, and Documents Scores by Race/Ethnicity



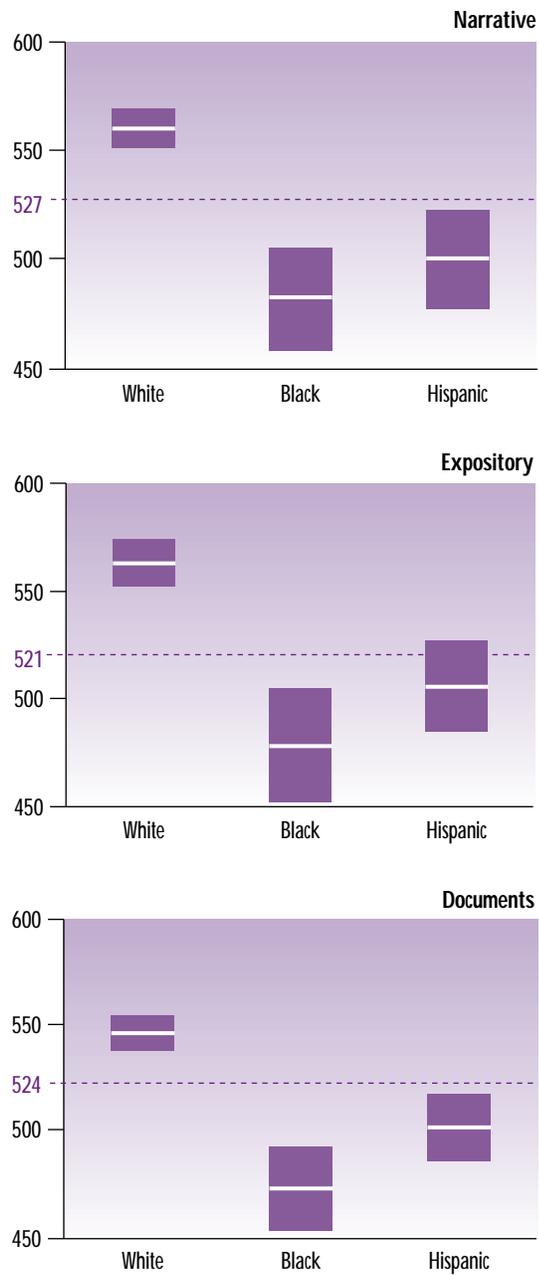
--- OECD Mean

NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 11

9th Grade Narrative, Expository, and Documents Scores by Race/Ethnicity



--- OECD Mean

NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Findings such as these highlight the persistent problem of racial/ethnic educational disadvantage within the United States. This disadvantage takes on additional meaning through comparisons with the OECD average. Our sense of fair play and our international competitiveness both suffer in the face of a situation where 60 to 70 percent of white students score at or above this OECD average, but only 25 to 40 percent of black students and 35 to 50 percent of Hispanic students achieve the same standard. The problem takes on even greater importance when we consider how quickly our minority population is growing.

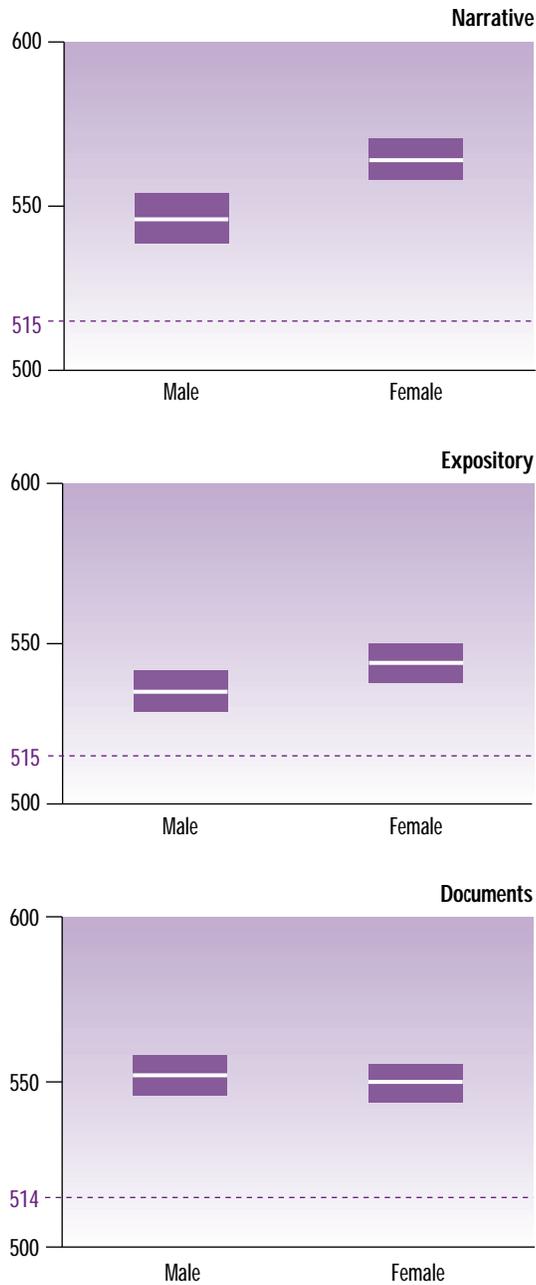
Gender. Figures 12 and 13 display the average reading performances of 4th and 9th grade boys and girls in each of the three domains. Historically, girls have outperformed boys when the task involved the reading of stories (narrative text), and the data tend to confirm this observation. Among 4th graders, girls do better than boys on narrative and expository but not documents comprehension. At 9th grade, females exceed males only in narrative comprehension.

Both 4th grade boys and 4th grade girls do consistently better, on average, than the average OECD student. Among 9th graders, girls better the OECD mean on narrative and expository comprehension. In comparison the average U.S. male 9th grader differs significantly from the average OECD student only with respect to expository comprehension.

From the perspective of how many U.S. students do as well or better than the average OECD student, the situation is as follows. In order of the three reading domains tested (narrative, expository, documents) the percentages of 4th grade girls at or above the OECD mean are 67, 65, and 60 percent. The comparable figures for 4th grade boys are about 60 percent. At the 9th grade, the pattern is similar but the advantage is smaller. The percentages of girls and boys at or exceeding the OECD mean in each domain are as follows: for girls, 61, 53, and 53 percent; for boys, about 50 percent in each case.

Figure 12

4th Grade Narrative, Expository, and Documents Scores by Gender



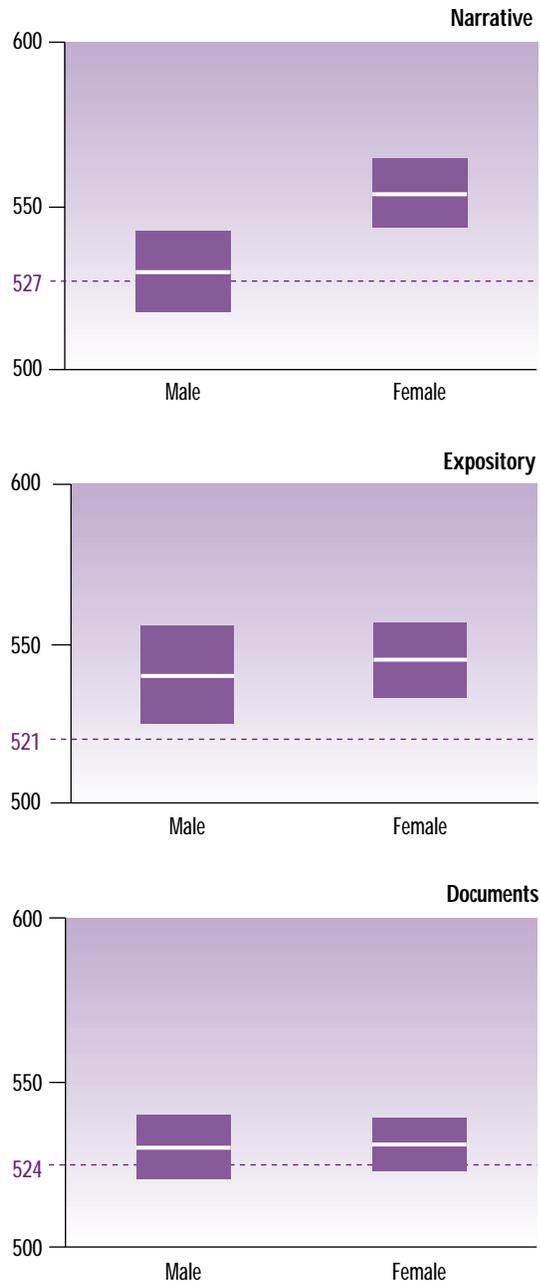
--- OECD Mean

NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 13

9th Grade Narrative, Expository, and Documents Scores by Gender



--- OECD Mean

NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Parents' Education and Family Wealth. The connection between school learning and parents' social and economic statuses is well established. Parental occupation and education figure prominently as indicators of social status, while income is often considered a common indicator of economic status. Given the widespread concern about the effects of educational, social, and economic disadvantage in American life, we examine the linkage of parental educational and economic attainments to reading comprehension.

Students' reports of their *parents' education* levels are the best measure of social status available to us. The mean reading scores for each of several steps on the ladder of educational attainment are presented separately for father's and mother's education in **Figures 14 and 15**.

Irrespective of whether we consider father's or mother's level of education, the relationship between the social status of the family—and hence of the student—and the student's ability to comprehend written text is straightforward. In general, as the education level of the student's parents increases, so does the student's own level of reading comprehension. For the purposes of the discussion that follows we focus on mother's education; however, essentially the same findings hold for father's education.

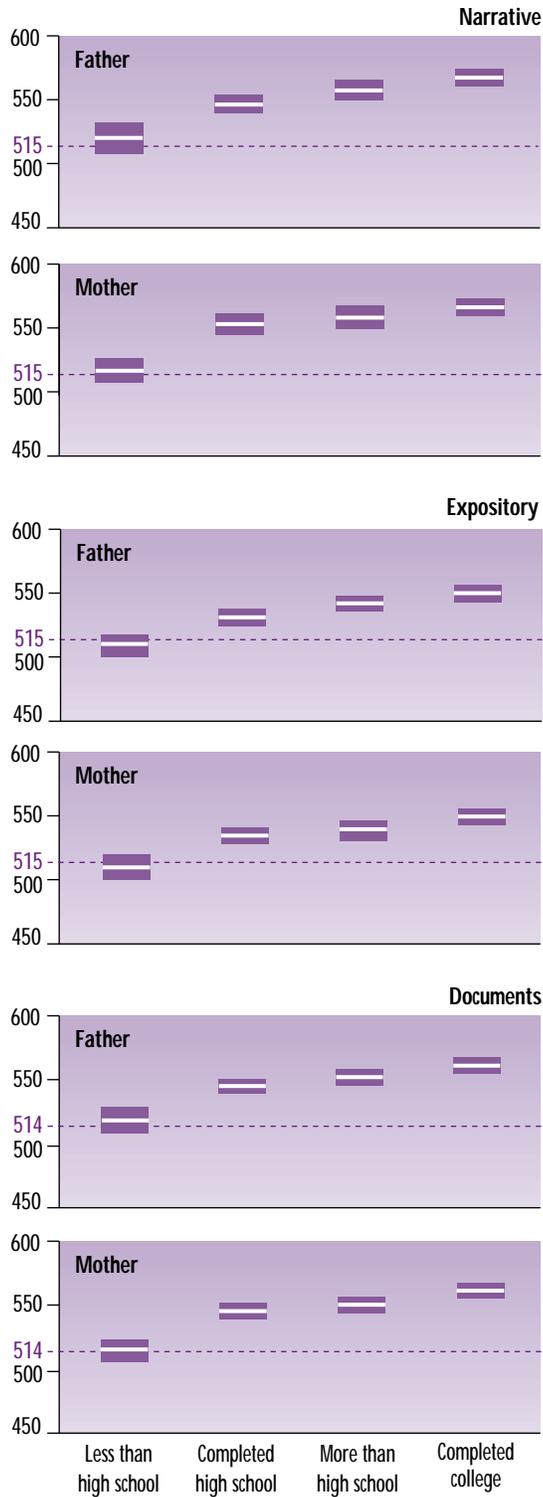
Fourth graders whose mothers have not completed high school are the only ones whose average level of reading comprehension does not exceed the OECD mean. Even so, the average student in this group reads at about the same level as the average OECD student.

Among 9th graders, however, this same group of students reads consistently less well than the typical OECD student. Ninth graders whose mothers have completed high school read at about the same level as the average OECD student and, for the two highest education groups, at a level on average above that of the typical OECD student (with one exception—documents comprehension for the lower of these two groups).

From the perspective of the proportions of students who do as well or better than the average OECD student, among 4th graders whose parents are college graduates, two in every three equal or exceed the OECD average. At the other end of the parent education range, some 40 to 50 percent equal or better the OECD mean. In the 9th grade, only about one in three of such students reads at or above the OECD average.

Figure 14

4th Grade Narrative, Expository, and Documents Scores by Parents' Education



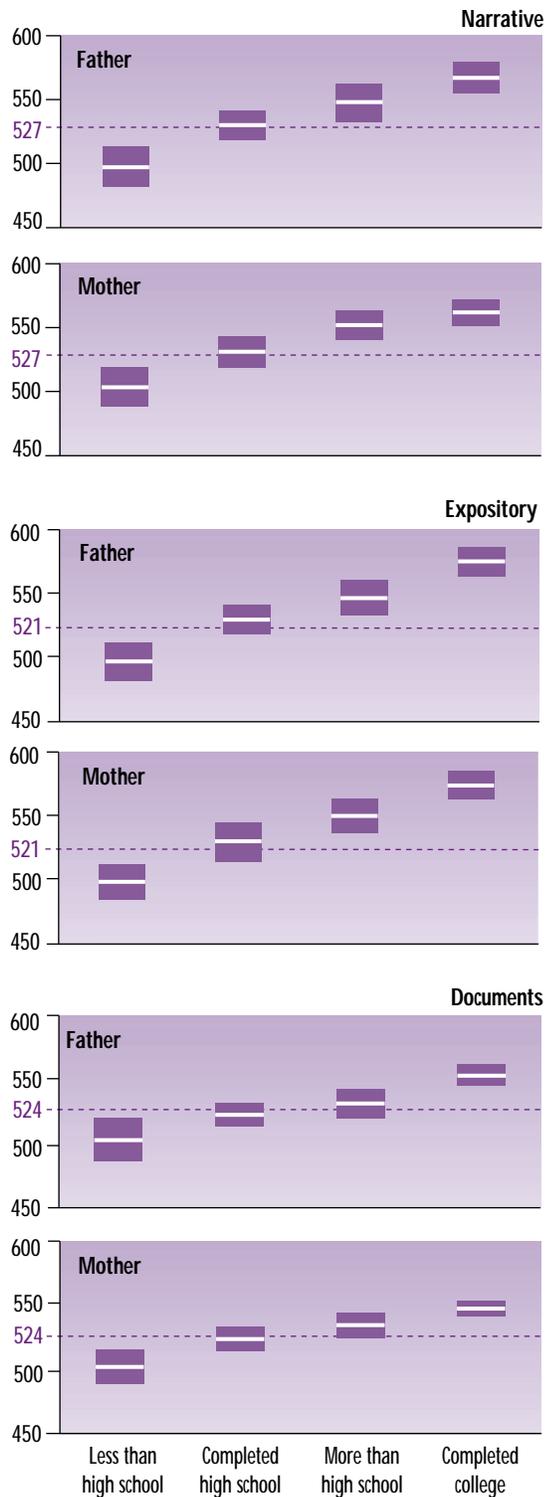
--- OECD Mean

NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 15

9th Grade Narrative, Expository, and Documents Scores by Parents' Education



--- OECD Mean

NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

A similar pattern emerges when we consider *family wealth*. Using an indirect measure of family wealth, we have defined four groups based on quartiles*—students in the lowest 25 percent we call poor; those in the highest 25 percent we call rich; those in the second and third quartiles are simply designated as quartiles 2 and 3. The mean performance levels of 4th and 9th graders in each of the three domains, by level of family wealth, are shown in **Figures 16 and 17**.

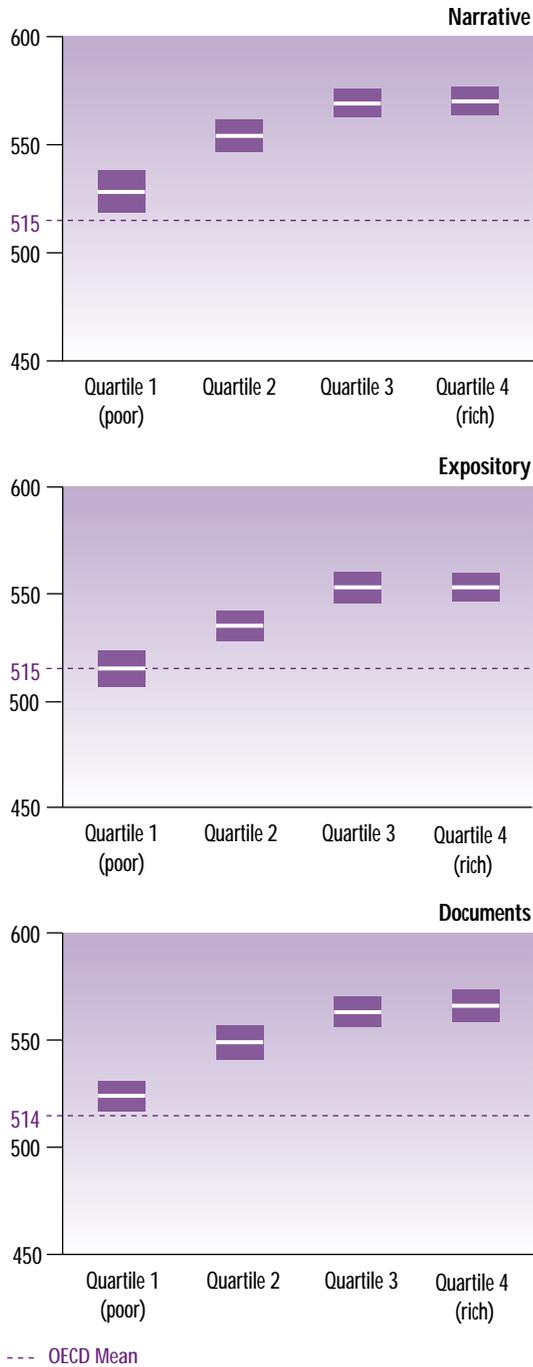
The relationship between family wealth and reading comprehension is clear: reading comprehension appears to increase as the level of family wealth increases. For 4th graders in every domain, the poor are outperformed by everyone else, quartile 2 outperforms the poor but is exceeded by quartile 3 and the rich. While those in quartile 3 and the rich outperform everyone else, there are no differences between them. For 9th graders the poor are always outperformed by the rich and are outperformed by those in the third quartile on narrative and documents, and they are also outperformed by those in quartile 2 in documents.

Despite the consistent degree of disadvantage associated with being poor relative to their wealthier peers within the United States, the average reading performance of this most economically disadvantaged group never falls significantly below the OECD average. Further, in all family wealth groups other than this one, for all three domains and both grade levels, the average student's performance always exceeds that of the average OECD student.

* An indirect measure of family wealth based on household possessions was used in this instance. The four groups shown were defined by quartiles on the distribution of this measure with poor being the lowest quartile and rich the highest.

Figure 16

4th Grade Narrative, Expository, and Documents Scores by Family Wealth

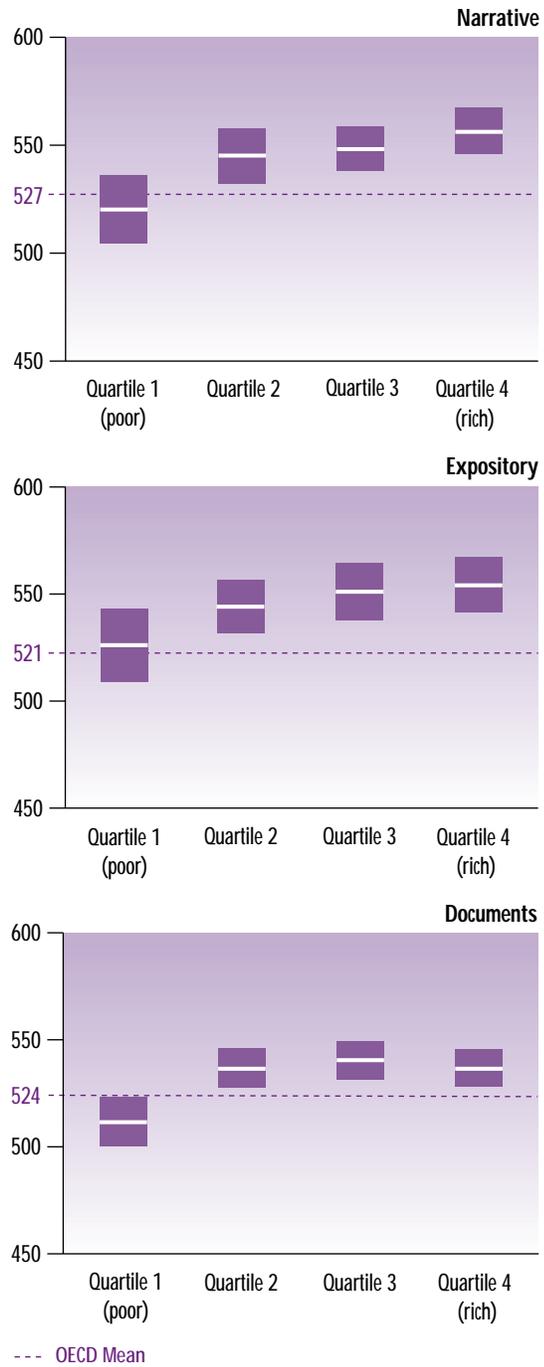


NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 17

9th Grade Narrative, Expository, and Documents Scores by Family Wealth



NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Family Structure. During the past few decades, the number of families that differ from the traditional two-parent, nuclear family has dramatically increased with presumed negative consequences for children’s learning. In the analyses below we examine this issue by looking at how the level of reading comprehension differs among children from different family structures.

Four family configurations were identified from the students’ reports of other people present in the same household and their relationships to the student. Thus, the distinction between biological parents and stepparents or guardians is one based on the students’ perceptions.

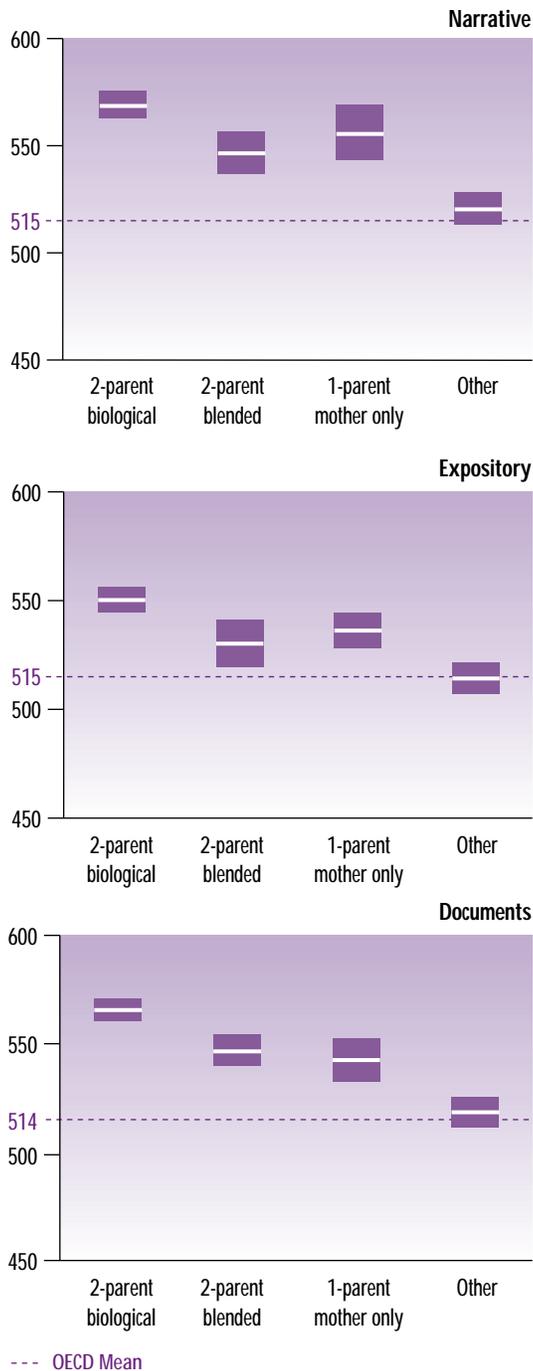
- *Two-parent biological families*—both biological parents are present.
- *Two-parent blended families*—one or both of the parents is a stepparent or guardian.
- *One-parent mother-only families*—single-parent families headed by mothers.
- *Other*—father-only families as well as other configurations not described above.

Figures 18 and 19 show the trends in average levels of reading achievement across the four different family configurations, and although the average level of reading comprehension has a tendency to decrease as one moves from the two-parent categories across to the “other” category, especially among 9th graders, there is considerable overlap between the four family types.

Among 4th graders, two-parent biological families have an apparent advantage over all other kinds of family structure. This difference is significant for all three domains, with the exception that students of two-parent biological families do not differ significantly from the one-parent mother-only group on the narrative scale. Coming from a two-parent blended family appears to offer no advantage relative to living in a one-parent mother-only family structure. The family structure that appears to have the lowest mean achievement is the one we have labeled as “other”—families that students say have other combinations of adults with varying degrees of relationship to the student. In all except one comparison, these students do not read as well as students from other family types.

Figure 18

4th Grade Narrative, Expository, and Documents Scores by Family Structure

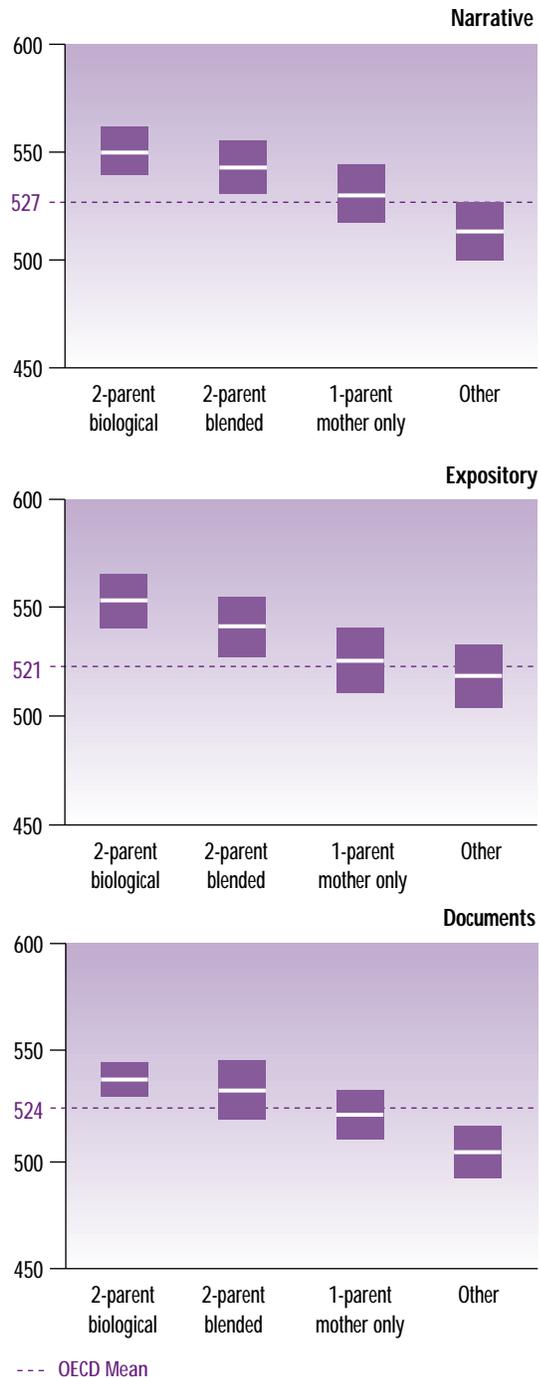


NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 19

9th Grade Narrative, Expository, and Documents Scores by Family Structure



NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Family structure appears to play a less important role for 9th graders. For the most part those 9th grade students who come from other families seem to be at a disadvantage as compared to their peers in two-parent biological and blended families. However, their level of reading achievement does not differ significantly from that of students in one-parent mother-only families. Ninth graders in one-parent mother-only families do not do as well in expository comprehension as those in two-parent biological families.

As compared to their peers in OECD countries, the average 4th and 9th grader from a two-parent biological family exceeds the OECD average, as do 4th graders from two-parent blended and one-parent mother-only families. Students from families designated “other” do not exceed the OECD average and even fall below it in one instance (documents comprehension at grade 9). Among 9th graders those from one-parent mother-only families on average do not read better or worse than the typical OECD student.

In terms of the numbers or proportions of students at or above the OECD mean, where less than 50 percent of 4th graders in the other group meet or exceed the OECD average, 55 to 70 percent of students from the remaining three family structures achieve this status. For 9th graders, the analogous percentages of students equaling or exceeding the OECD average in each domain are 5 to 20 percentage points lower than those for 4th graders.

The message emerging from these comparisons appears to be consistent with the belief that two-parent biological families offer children some advantages over other family structures, though the advantage is relatively minor for all groups except the configuration identified as “other”. The advantage is most apparent among 4th graders. We explore this matter further in analyses reported below.

American Reading Literacy Achievement in an International Perspective

It is indisputable. American 4th and 9th grade students read well compared to their counterparts in the countries taking part in the IEA International Reading Literacy Study. Although the IEA test may not have stretched this country’s students to their max-

imum, American students have, on the whole, turned in a creditable performance. We also know that compared to OECD countries, American 4th and 9th grade students frequently do better than simply holding their own. While 4th graders consistently exceed the OECD average, U.S. students at the 9th grade do not hold as large a comparative advantage—their achievement is not consistently superior to that of students in OECD nations. By this standard the only markedly disadvantaged groups in the United States are blacks and students whose parents have low levels of education.

By our own standards, however, we see educational disadvantage more broadly in the differences between American subpopulation groups. The typical white student has a higher level of reading comprehension than the typical black or Hispanic student. Females read and comprehend narrative text better than males. Students whose mothers or fathers have a college degree read better, for the most part, than students whose mothers or fathers have failed to complete high school. Students whose families are poor do not read as well as those whose families are better off.

These relatively simple demonstrations of differences among subpopulation groups suggest social, educational, and economic disadvantage at work. But this simple picture hides some complexities. For example, these separate aspects of disadvantage are often confounded with each other. Racial/ethnic disadvantage, for example, often contains a large component of socioeconomic disadvantage. Poor families are more likely to be those in which parents also have low levels of education. One-parent mother-only families are more likely to suffer economic disadvantage than two-parent families. And so on. In the following pages, we set forth another series of analyses designed to disentangle some of these multiple aspects of advantage and disadvantage. By so doing, we hope to come a step closer to identifying some of the reasons why American students vary in their capacity to read and understand written text.