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ABSTRACT
                      The Early Childhood Longitudinal Study, Kindergarten Class
of 1998-99 (ECLS-K) follows a nationally representative sample of children
from kindergarten through fifth grade. This study analyzed the first results
from the ECLS-K about kindergartners performance on a variety of reading and
mathematics tasks, and it gathered valuable contextual information on their
home reading experiences. These first results show a picture of inequality in
reading and mathematics readiness for school. The report provides indicators
of the types of children who may be educationally at-risk when they begin
school. It also considers disparities in children's home reading experiences.
Asian and white students were more likely than children in other racial and
ethnic groups to be proficient across all reading tasks. Overall, girls were
more likely than boys to be proficient in letter recognition and in
recognizing the beginning and ending sounds of words, although these
differences were not large. Socioeconomic status (SES) was related to
proficiency across all reading tasks, and nearly all racial/ethnic
differences disappeared when children were grouped into similar levels by
SES. A similar pattern was apparent for mathematics. Overall, almost half of
all parents reported reading to their children daily, with Asian and White
parents more likely to read to their children daily than Black parents or
Hispanic parents, although these differences were not large. Data show that
children come to kindergarten with a variety of preschool and home
experiences and with varying levels of school experiences. Policymakers
should be aware of the complexities of these data when planning for effective
kindergarten experiences. Supplemental tables and figures are presented in an
appendix. (Contains 36 figures and 9 tables.) (SLD)

ED 466 473

# An Uneven Start:

## Indicators of Inequality in School Readiness

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**ETS**
*Educational
Testing Service*

# CONTENTS

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The views expressed in this report are those of the author and do not necessarily reflect the views of the officers and trustees of Educational Testing Service.

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# PREFACE

As we begin 2002, the ETS Policy Information Center is releasing two important reports that focus on literacy in America. In *The Twin Challenges of Mediocrity and Inequality: Literacy in the U.S. from an International Perspective*, Andy Sum, Irwin Kirsch and Robert Taggart present a compelling perspective on adult literacy in the United States in comparison with other countries. Not only is our adult population somewhere in the middle of the pack of other developed countries, but we have a much wider distribution of skill levels than most other countries. That is, the United States has adults functioning at the highest literacy levels at the same time that we have many in the population functioning at the lowest levels. If we look at demographic trends, and the relative performance of our youngest adult cohorts, there is no sign that this state of affairs will improve. Indeed, without significant action, we are likely to find ourselves with lower levels of literacy overall, compounded with greater inequality within our society.

In *An Uneven Start: Indicators of Inequality in School Readiness*, Richard Coley presents an analysis that can help guide us to action in improving the future literacy of our citizenry. By examining data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99, Coley provides a sobering view, but one that we can address in concrete and effective ways. This report describes the vast inequities that are apparent even when children enter school. Largely but not only related to socioeconomic status, we see a distribution of skills among 5-year-olds and 6-year-olds that mirrors the distribution of skills in our adult population. And, as you read this report, remember that this analysis does not even include students who have limited English proficiency skills, an increasing segment of our population. Without intervention, the future is already being scripted, and it looks to be very consistent with the present.

But Coley goes beyond simply documenting differences in reading and mathematics literacy by looking at discrete skills and home practices associated with literacy development. The connections are obvious. We see significant differences in who reads how much and, not surprisingly, the patterns are consistent with literacy development levels. Of course, we know that outside reading is related to reading achievement in the later years. We clearly need to institute programs that will encourage reading by and to young children who do not currently have access to such opportunity.

From this cross-sectional analysis, we begin to discern a developmental picture of skill development. There are certain skills that most kindergartners possess, but there are many others, such as being able to add and subtract, for which there is wide variation in skill attainment, variation that is often associated with gender, class and race/ethnicity. These are the skills that we need to develop in all our young children. There are still other skills that only small segments of the kindergarten population possess. It will certainly be interesting to probe the relationship between early and advanced acquisition and later literacy skill as the ECLS continues.

This report makes clear that the current federal emphasis on early reading development is well placed. If we, as a country, are successful in designing and implementing effective programs, then we not only have the possibility of improving substantially the lot of significant segments of our society but of improving opportunity, capacity, and equality for our entire nation.

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Senior Vice President,
Statistics and Research

# ACKNOWLEDGMENTS

While "school readiness" has been a concern of educators and policymakers for more than four decades, little data have been available to assess that readiness across the national population of children. The Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K) is addressing this need by following a nationally representative sample of children from kindergarten through fifth grade. The study began in the Fall of 1998 with an assessment of the nation's kindergartners' readiness for school. Specifically, the study addressed kindergartners' performance on a variety of reading and mathematics tasks and gathered valuable contextual information on their home reading experiences.

The first results from ECLS-K revealed a picture of inequality in reading and mathematics readiness for school. This report builds on that work by providing indicators of the types of children who may be educationally at-risk when they begin school. It also considers disparities in children's home reading experiences. The focus is on race/ethnicity, gender, socioeconomic status (SES), and on the interaction of race/ethnicity and SES. Interactions among children's age, gender, and race/ethnicity are also examined.

These analyses revealed differences in the school readiness of the nation's beginning kindergartners which are briefly summarized below. All differences discussed are statistically significant.

## Reading

■ Asian and White children were more likely than children in other racial/ethnic groups to be proficient across all reading tasks. In some areas of reading, the differences among groups were substantial, exceeding one-half of a standard deviation.

■ Overall, girls were more likely than boys to be proficient in letter recognition and in recognizing the beginning and ending sounds of words, although these differences were not large. Gender differences were also evident among White

kindergartners, but not within the other racial/ethnic groups. There was no gender difference in recognizing words by sight and in recognizing words in context.

□ SES was related to proficiency across all reading tasks. Children in higher SES groups were more likely to be proficient than children in lower SES groups.

□ Nearly all racial/ethnic differences in reading disappeared when children were grouped into similar levels of SES.

□ Age was related to reading proficiency for all kindergartners. Older students were more likely to demonstrate various skills than younger students. Within the same age groups, Asian and White children continued to outperform other children in letter recognition and in understanding the beginning and ending sounds of words. Racial/ethnic differences disappeared in recognizing words by sight and in understanding words in context, however, when age was taken into account.

## Mathematics

▣ Asian and White children were more likely than children in other racial/ethnic groups to be proficient across most mathematics tasks. Most of these differences were small.

▣ Overall, females were more likely than males to be proficient in recognizing numbers and shapes, while males were more likely than females to be proficient in addition and subtraction and multiplication and division. All of these differences were small. Within specific racial/ethnic groups, however, there were no gender differences in performance on the mathematics tasks.

▣ SES was related to proficiency across all mathematics tasks. Children in higher SES groups were more

likely to be proficient than were children in lower SES groups.

■ Holding SES constant reduced the level of racial/ethnic differences in mathematics proficiency, although Asian and White children still held a few small advantages.

■ Age was related to mathematics proficiency among all kindergartners. Older students were more likely to be proficient than younger students. Within similar age groups, Asian and White children continued to outperform other children in recognizing numbers and shapes, relative size, and ordinal sequence. White children also were more likely to be proficient in addition and subtraction than were American Indian/Alaska Native, Black, and Hispanic children, across all age groups. Few kindergartners were proficient in multiplication/division.

## Children's Home Reading Experiences

■ Parents reported reading to their kindergartners frequently. Almost half read to them every day.

■ There were some racial/ethnic differences in kindergartners' reading experiences. Asian and White parents were more likely to read to their children daily than were Black parents. White parents were also more likely to read to their children daily than were Hispanic parents. These differences were not large, however.

■ Overall, parents read to girls more frequently than to boys. Among racial/ethnic groups, White parents were more likely to read to girls every day than to boys. Again, these differences were not large. There were no gender differences for the other racial/ethnic groups.

■ Parents in higher SES groups were more likely to read every day to their children than were parents in

the lower SES groups. The difference between the high- and low-SES groups was substantial, about one-half of a standard deviation.

■ Racial/ethnic differences in at-home reading disappeared when children were grouped by SES.

■ About one-half of kindergartners looked at picture books outside of school every day.

■ Females looked at picture books more frequently than males did. Among racial/ethnic groups, this was true only for White kindergartners. These gender differences were small.

■ There were no racial/ethnic differences in the percentage of children looking at picture books outside of school on a daily basis.

■ Kindergartners in high-SES groups were more likely to look at picture books outside of school every day than were kindergartners in low-SES groups, although the differences were small.

■ At the lowest SES level, White kindergartners were slightly more likely than Hispanic kindergartners to look at picture books every day.

## Conclusion

The data analyzed in this report clearly show that children come to kindergarten with a variety of preschool and home experiences, and accordingly, with varying levels of school readiness. In some areas of reading and mathematics, many kindergartners are proficient as they begin kindergarten, but significant differences in proficiency exist among different groups of children. In more advanced areas of reading and mathematics, few children from any demographic group have developed proficiency at the beginning of kindergarten. To reduce the inequalities in students' success in school, it will therefore be necessary to

address these differences that exist among children before they start school. Identifying children who may be at-risk of school failure and making available quality preschool experiences that provide these students with the needed skills are essential if all children are to enter kindergarten "ready to learn."

In identifying and proposing ways to assist at-risk students, policymakers need to be sensitive to the complexities inherent in these data. Specifically, it is important to take into account interactions among race/ethnicity, gender, socioeconomic status, and age. Policymakers also need to recognize that a given group of students may be at-risk in one subject or area within a subject, and not in another. Further research needs to be undertaken to explain these inequalities and to identify and disseminate interventions and programs that might be effective in helping all children be ready for school and helping all schools be ready for children.

Policymakers have focused their attention on preparing children for their first year in school, or what is usually referred to as "school readiness," for nearly four decades. In the 1960s, the Head Start program was conceived as part of the "war on poverty" to provide children from less affluent backgrounds with the kinds of experiences that other children were more likely to receive in the home. In the 1990s the National Education Goals included, as the first goal, that "all children will start school ready to learn." Further, the education program unveiled by the Bush administration in 2001 calls for a greater focus on school readiness, including increasing the academic content of early childhood programs such as Head Start.

The rationale for this interest in school readiness lies in the evidence from various studies that greater school readiness is associated with subsequent school success. Researchers, for instance, have found that students who enter kindergarten with certain basic reading skills are more likely to advance rapidly in their reading abilities. Early childhood education, particularly the first year of schooling, provides the venue where children acquire the knowledge and skills that will be integral to their future success in school and in life.[1] Some researchers do question the appropriateness of an academic focus prior to kindergarten, suggesting that parents and early childhood educators need to balance academic with psychological, social, and physical development. But few question that

school readiness, whatever its dimensions, is a critical first step toward academic success.[2]

Until recently, little data were available to assess the readiness of children entering kindergarten in this country. There were relatively few high-quality assessments of kindergartners' academic proficiency, and none that had been administered to a nationally representative sample of students. As part of the work on the National Education Goals, the Goals Panel called on the U.S. Department of Education to conduct a national longitudinal study of the academic, physical, and social development of America's children, beginning with their entry into kindergarten. This study, the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K), will follow approximately 20,000 children in 1,000 public and private schools from kindergarten through fifth grade. The first wave of the survey, administered in the Fall of 1998, assessed the preparation of kindergartners in the areas of physical well-being, social development, cognitive skills and knowledge, and how they approached learning.

Early findings from ECLS-K reveal substantial inequalities in children's school readiness.[3] Specifically, reports from the National Center for Education Statistics indicate that the cognitive and social skills of America's kindergartners vary by race/ethnicity, age, parents' education, and family structure. Because of

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[1] For a review of related literature, see Jerry West, Kristin Denton, and Lizabeth M. Reaney, *The Kindergarten Year: Findings from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99*, U.S. Department of Education, National Center for Education Statistics, 2000.

[2] See, for example, Catherine E. Snow, M. Susan Burns, and Peg Griffin (Eds.), *Preventing Reading Difficulties in Young Children*, National Research Council, Washington, DC: National Academy Press, 1998 and *Learning to Read and Write: Developmentally Appropriate Practices for Young Children*, a joint position statement of the International Reading Association (IRA) and the National Association for the Education of Young Children (NAEYC), adopted 1998.

[3] Several publications provide descriptions of ECLS-K and findings from the survey. See, for example, U.S. Department of Education. National Center for Education Statistics. *America's Kindergartners*, NCES 2000-070, by Kristin Denton, Elvira Geronimo-Hausken. Project Officer, Jerry West, Washington, DC: 2000 and U.S. Department of Education. National Center for Education Statistics. *Entering Kindergarten: A Portrait of American Children When They Begin School: Findings from the Condition of Education 2000*. Nicholas Zill and Jerry West, NCES 2001-035, Washington, DC: U.S. Government Printing Office, 2001. The web site for ECLS-K is http://nces.ed.gov/ecls/

the importance of school readiness for subsequent academic success, these reports suggest that being a minority student, a younger student, having parents with less education, and living in a single-parent household put a student at-risk of school failure.

The purpose of this report is to build on this previous work by presenting indicators of precisely which students are at-risk with respect to school readiness. The picture of who enters school ready and who does not is potentially complex. Inequalities may exist along lines of race/ethnicity, gender, socioeconomic status, and age. In addition, inequalities may vary within any demographic group. For instance, gender inequalities may differ from one racial/ethnic group to the next. Another layer of complexity comes from defining school readiness. Leaving non-cognitive aspects of school readiness aside, cognitive school readiness involves multiple subjects each comprised of multiple skills. A given inequality may exist between one population and another in mathematics, but not in reading; alternatively, it may not exist for the most basic skills in a subject, but be substantial for the more advanced skills.

This report will attempt to do justice to these complexities by identifying inequalities among various groups of children in reading and mathematics at various levels of skill. To identify inequalities, the report will draw on the 95 percent of the 20,000 children in the ECLS-K who entered kindergarten for the first time in the Fall of 1998. This analysis excludes children whose primary spoken language was not English (as determined by their teachers and schools) and who scored below a certain level on a screening

assessment of language skills (approximately 19 percent of Asian children and 29 percent of Hispanic children were excluded for this reason; racial/ethnic differences, as a consequence, should be interpreted within this context).[4]

Three measures of school readiness were used for this analysis: reading, mathematics, and home reading experiences. The reading measures are along a continuum from more basic to more advanced skills, ranging from the simple recognition of letters to understanding words in context. Likewise, the mathematics measures range from counting to multiplication and division. Finally, some home reading experiences were included to provide a sense of the inequalities in out-of-school learning opportunities, which may influence reading proficiency and other cognitive skills.

The school readiness measures are compared across students grouped according to:

  ☐ gender
  ☐ race/ethnicity
  ☐ race/ethnicity and gender
  ☐ socioeconomic status (SES)[5]
  ☐ SES and race/ethnicity
  ☐ age
  ☐ age and gender
  ☐ age and race/ethnicity

Thus, in addition to race/ethnicity and gender differences, this analysis will examine the interactions between gender and race/ethnicity, and between race/ethnicity and SES. Gender differences are

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[4] For a full description of the sample, see ECLS-K Base Year Public-Use Data Files and Electronic Code Book (http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001029).

[5] SES is measured from a scale that reflects the education, income, and occupations of kindergartners' parents or guardians. This scale is then divided into five quintiles for the purpose of making comparisons. Appendix Figure 1 shows the distribution of kindergartners by race/ethnicity and quintiles of SES. As the figure shows, kindergartners from several racial/ethnic groups are over-represented in the lower SES quintiles and under-represented in the higher SES groups. Since breaking each racial/ethnic group into five quintiles results in some cell sizes that are insufficient for reliable analyses for Native Hawaiian/Pacific Island and American Indian/Alaska Native children (less than 50), they are excluded from this part of the analysis. Different SES measures, of course, might produce different results.

compared across racial/ethnic groups, and racial/ethnic groups are compared while holding SES constant. The key question is, to what extent do any racial/ethnic differences disappear or diminish when kindergartners are compared to their peers with similar levels of SES?

Finally, age differences are examined. There is considerable variation in the age of students beginning kindergarten. The age of beginning kindergarteners in ECLS-K examined in this report ranged from 54 months (4 1/2 years) to 79 months (just over 6 1/2 years). Among the more typical distribution (between the 95th and 5th percentiles), the range was 62 to 75 months, a difference of almost a year. Kindergartners at the 25th percentile (65 months) were six months younger than kindergartners at the 75th percentile (71 months).

Furthermore, these age differences were found to be related to race/ethnicity and gender (p <.0001). Kindergarten boys tend to be older than girls, on average. When racial/ethnic groups were broken down into quartiles of age, White and American Indian/Alaska Native kindergartners were more likely than other kindergartners to fall into the older age quartile. They were also less likely than other groups to be in the youngest quartile. Conversely, Asian, Black, and Hispanic children were more likely to be in the youngest quartile. The age distributions by race/ethnicity are shown in Appendix Figure 2.[6]

Because these age differences by gender and race/ethnicity are likely to have an impact on reading and mathematics proficiency, results for each area of proficiency are also shown for all kindergartners by age, by gender and age, and by race/ethnicity and age.

All differences discussed in this report are statistically significant at the .05 level as determined by the False Discovery Rate procedure for multiple comparisons. In addition, to understand of the size of the statistically significant differences between groups of children, the differences are related to the standard deviation of the distribution.[7] A difference of 20 to 50 percent of a standard deviation is usually considered small; differences of between 50 and 79 percent are usually considered medium; and differences of 80 percent of a standard deviation or higher are usually considered large.[8]

Results for the reading assessment are presented first, followed by the mathematics results. The third section provides data on children's home reading experiences. The appendices provide weighted and non-weighted sample sizes, and standard errors and standard deviations for the data reported. All data are from the ECLS-K Base Year Public-Use Child File.

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[6] Because of insufficient cell sizes (less than 50) for Native Hawaiian/Pacific Island children, they are excluded from the age analyses.

[7] The standard deviation is a statistic that indicates how tightly all the values in the distribution are clustered around the mean. One standard deviation away from the mean accounts for approximately 68 percent of the distribution. Two standard deviations account for roughly 96 percent of the people.

[8] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, 1988.

The ECLS-K assessed numerous aspects of kindergartners' reading proficiency:

(1) identifying uppercase and lowercase letters of the alphabet by name;

(2) associating letters with the sounds at the beginning of words;

(3) associating letters with sounds at the end of words;

(4) recognizing common words by sight; and

(5) reading words in context.

These five levels reflect a progression of skills and knowledge: if a child had mastered one of the higher levels, he or she most likely passed the items that comprised the earlier levels as well.[9] It should be noted that the five reading skills were intended to stretch across kindergarten and first grade. Thus, it was intended that only a small proportion of kindergartners would be proficient in the more advanced skills.

Many of the children entering kindergarten for the first time in the Fall of 1998 were well on their way to developing basic reading skills. Overall:

☐ 65 percent could recognize the letters of the alphabet
☐ 30 percent could understand the beginning sounds of words
☐ 17 percent could understand the ending sounds of words
☐ 2 percent could read common words
☐ 1 percent could recognize words in context

However, there were many differences among young children in the reading skills they brought to school. The following sections examine differences in each of the skill areas between boys and girls, among racial/ethnic groups, between boys and girls within each racial/ethnic group, among children grouped by SES, and among children grouped by age.

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[9] Zill and West, 2001.

As shown in Figure 1, 65 percent of the nation's kindergartners were able to recognize the letters of the alphabet in the Fall of the kindergarten year. There were major differences among racial/ethnic groups in this skill, however. Asian children were more likely to be proficient in this area than all other children. In addition, White children were more likely to be proficient in this area than Black, Hispanic, multi-race, and American Indian/Alaska Native children. While 80 percent of Asian students and 71 percent of White students were proficient in this reading skill, considerably smaller percentages of children in other racial/ethnic groups were. Some of these differences were quite large. For example, American Indian/Alaska Native children were about one standard deviation below White children.

Girls were significantly more likely than boys to be proficient in letter recognition: 69 percent of female kindergartners demonstrated this skill, compared to 61 percent of males. This difference is small, about one-fifth of a standard deviation. This statistically significant gender difference existed only for White kindergartners. There was no statistically significant gender difference for other racial/ethnic groups.

There was a strong, direct relationship between being able to recognize letters and SES, as shown in the top portion of Figure 2. The higher the quintile of SES, the higher the percentage of kindergartners who were proficient in letter recognition. At the highest SES level, 85 percent of the children were proficient, compared to only 39 percent of the children at the lowest quintile of SES (a difference of more than a standard deviation).

The lower portion of Figure 2 shows differences among racial/ethnic groups within the same SES grouping. Among similar SES groups, fewer differences were found. At the highest SES quintile, the only difference was between Asian and Hispanic kindergartners, where Asians were about one-half of a standard deviation higher. The only other racial/ethnic difference was found at the two lowest SES quintiles, where White kindergartners were more likely to be proficient than Hispanic kindergartners. This difference is small, however (about one-third of a standard deviation), but statistically significant.

As shown in Figure 3, age was also related to kindergartners' proficiency in letter recognition. 72 percent of the oldest kindergartners were proficient, compared to 58 percent of the youngest kindergartners (a difference of about one-third of a standard deviation). Across all age groups, females were more likely than males to be proficient in letter recognition (differences between males and females are about one-fourth of a standard deviation or less).

Racial/ethnic differences in letter-recognition skills persisted within various age groups. Asian and White children were more likely to be proficient across all four age groups. Many of these differences exceeded one-half of a standard deviation.

## Figure 1: Percentage of Kindergartners Who Can Recognize Letters of the Alphabet, by Gender and Race/Ethnicity

| | Percentage Proficient |
|---|---|
| All Kindergartners | 65 |
| Males | 61 |
| Females | 69* |

| | |
|---|---|
| Asian | 80 |
| White | 71 |
| Multi-race | 61 |
| Native Hawaiian/Pacific Island | 58 |
| Black | 57 |
| Hispanic | 50 |
| American Indian/Alaska Native | 36 |

| | |
|---|---|
| Asian Males | 79 |
| Asian Females | 81 |
| White Males | 67 |
| White Females | 75* |
| Multi-race Males | 56 |
| Multi-race Females | 66 |
| Native Hawaiian/Pacific Island Males | 50 |
| Native Hawaiian/Pacific Island Females | 69 |
| Black Males | 54 |
| Black Females | 61 |
| Hispanic Males | 45 |
| Hispanic Females | 54 |
| American Indian/Alaska Native Males | 35 |
| American Indian/Alaska Native Females | 37 |

0    25    50    75    100

Percentage Proficient

*Statistically significant difference between males and females

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## Figure 2: Percentage of Kindergartners Who Can Recognize Letters of the Alphabet, by Socioeconomic Status and Race/Ethnicity

| | |
|---|---|
| High SES | 85 |
| | 74 |
| All Kindergartners | 64 |
| | 55 |
| Low SES | 39 |

**High SES (Quintile 5)**
- Asian 93
- White 86
- Multi-race 80
- Black 77
- Hispanic 73

**(Quintile 4)**
- Asian 80
- White 76
- Multi-race 73
- Black 74
- Hispanic 68

**(Quintile 3)**
- Asian 77
- White 67
- Multi-race 57
- Black 65
- Hispanic 54

**(Quintile 2)**
- Asian 58
- White 60
- Multi-race 47
- Black 56
- Hispanic 44

**Low SES (Quintile 1)**
- Asian 60
- White 45
- Multi-race 41
- Black 41
- Hispanic 30

0    25    50    75    100

Percentage Proficient

14

## Figure 3: Percentage of Kindergartners Who Can Recognize Letters of the Alphabet, by Age Quartile, Gender, and Race/Ethnicity

| | |
|---|---|
| 4th Quartile (Older) | 72 |
| All Kindergartners | 68 |
| | 62 |
| 1st Quartile (Younger) | 58 |

| | | |
|---|---|---|
| Males | 69 | Quartile 4 |
| Females | 77* | (Older) |
| Males | 64 | Quartile 3 |
| Females | 72* | |
| Males | 58 | Quartile 2 |
| Females | 65* | |
| Males | 52 | Quartile 1 |
| Females | 63* | (Younger) |

| | | |
|---|---|---|
| Asian | 83 | |
| White | 77 | |
| Multi-race | 71 | Quartile 4 |
| Black | 66 | (Older) |
| Hispanic | 59 | |
| American Indian/Alaska Native | 50 | |
| Asian | 82 | |
| White | 74 | |
| Multi-race | 66 | Quartile 3 |
| Black | 60 | |
| Hispanic | 53 | |
| American Indian/Alaska Native | 35 | |
| Asian | 78 | |
| White | 68 | |
| Multi-race | 52 | Quartile 2 |
| Black | 55 | |
| Hispanic | 47 | |
| American Indian/Alaska Native | 25 | |
| Asian | 78 | |
| White | 65 | |
| Multi-race | 54 | Quartile 1 |
| Black | 49 | (Younger) |
| Hispanic | 42 | |
| American Indian/Alaska Native | 31 | |

0     25     50     75     100

Percentage Proficient

*Statistically significant difference between males and females

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As shown in Figure 4, 30 percent of kindergartners could understand the letter-sound relationship at the beginning of words. The percentage of kindergartners with this skill varied significantly across racial/ethnic groups, however. Asians were more likely to be proficient than kindergartners from all other groups. The difference between Asian and Black and Hispanic kindergartners was more than one-half of a standard deviation. White kindergartners also outperformed Black and Hispanic kindergartners, although by a smaller margin.

This is another area of reading proficiency where girls outperformed boys, on average, although the difference was small. This small female advantage held true for White kindergartners; but for the other racial/ethnic groups there were no statistically significant gender differences.

There was a strong relationship between SES and understanding the beginning sounds of words, as shown in the top portion of Figure 5. About half (51 percent) of kindergartners in the highest quintile of SES were proficient in this area, compared to only 10 percent in the lowest quintile of SES, a difference of about one standard deviation.

Racial/ethnic differences in proficiency within SES groupings are shown in the lower portion of Figure 5. No statistically significant differences among racial/ethnic groups were found when comparisons were made among kindergartners in similar SES groups.

As shown in Figure 6, 37 percent of kindergartners in the highest age quartile were proficient in understanding the beginning sounds of words, compared to 22 percent in the youngest quartile (a difference of about one-half of a standard deviation). Females were more likely than males to be proficient in this reading area across all four age groups (by about one-quarter of a standard deviation or less). Age had no effect on racial/ethnic differences. Across all age groups, Asian and White kindergartners were more likely to be proficient than kindergartners in other racial/ethnic groups.

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# Figure 4: Percentage of Kindergartners Who Can Understand the Beginning Sounds of Words, by Gender and Race/Ethnicity

All Kindergartners 30
Males 27
Females 33*

Asian 44
White 34
Multi-race 27
Native Hawaiian/Pacific Island 26
Black 20
Hispanic 20
American Indian/Alaska Native 13

Asian Males 41
Asian Females 46

White Males 31
White Females 37*

Multi-race Males 25
Multi-race Females 28

Native Hawaiian/Pacific Island Males 22
Native Hawaiian/Pacific Island Females 31

Black Males 19
Black Females 22

Hispanic Males 16
Hispanic Females 24

American Indian/Alaska Native Males 13
American Indian/Alaska Native Females 13

0    25    50    75    100

Percentage Proficient

*Statistically significant difference between males and females

## Figure 5: Percentage of Kindergartners Who Can Understand the Beginning Sounds of Words, by Socioeconomic Status and Race/Ethnicity



High SES — 51
35
All Kindergartners — 26
19
Low SES — 10

| | | |
|---|---|---|
| Asian | 64 | High SES |
| White | 52 | (Quintile 5) |
| Multi-race | 46 | |
| Black | 42 | |
| Hispanic | 41 | |
| | | |
| Asian | 40 | |
| White | 37 | |
| Multi-race | 37 | (Quintile 4) |
| Black | 33 | |
| Hispanic | 32 | |
| | | |
| Asian | 31 | |
| White | 28 | |
| Multi-race | 18 | (Quintile 3) |
| Black | 23 | |
| Hispanic | 21 | |
| | | |
| Asian | 18 | |
| White | 21 | |
| Multi-race | 16 | (Quintile 2) |
| Black | 17 | |
| Hispanic | 14 | |
| | | |
| Asian | 17 | |
| White | 12 | |
| Multi-race | 12 | Low SES |
| Black | 8 | (Quintile 1) |
| Hispanic | 8 | |

0    25    50    75    100

Percentage Proficient

18

# Figure 6: Percentage of Kindergartners Who Can Understand the Beginning Sounds of Words, by Age Quartile, Gender, and Race/Ethnicity

| | | |
|---|---|---|
| 4th Quartile (Older) | | 37 |
| All Kindergartners | | 32 |
| | | 27 |
| 1st Quartile (Younger) | | 22 |

| | | |
|---|---|---|
| Males | | 34 |
| Females | | 41* |
| Males | | 29 |
| Females | | 35* |
| Males | | 23 |
| Females | | 30* |
| Males | | 18 |
| Females | | 25* |

Quartile 4 (Older)
Quartile 3
Quartile 2
Quartile 1 (Younger)

| | | |
|---|---|---|
| Asian | | 47 |
| White | | 41 |
| Multi-race | | 35 |
| Black | | 25 |
| Hispanic | | 28 |
| American Indian/Alaska Native | | 18 |
| Asian | | 51 |
| White | | 36 |
| Multi-race | | 33 |
| Black | | 23 |
| Hispanic | | 22 |
| American Indian/Alaska Native | | 14 |
| Asian | | 41 |
| White | | 31 |
| Multi-race | | 18 |
| Black | | 19 |
| Hispanic | | 18 |
| American Indian/Alaska Native | | 10 |
| Asian | | 38 |
| White | | 26 |
| Multi-race | | 22 |
| Black | | 15 |
| Hispanic | | 14 |
| American Indian/Alaska Native | | 9 |

Quartile 4 (Older)
Quartile 3
Quartile 2
Quartile 1 (Younger)

0   25   50   75   100

Percentage Proficient

*Statistically significant difference between males and females

Figure 7 shows that 17 percent of beginning kindergartners understood the letter-sound relationship at the ending of words. Asians outperformed all other racial/ethnic groups. In particular, they outperformed Black, Hispanic, multi-race, and American Indian/Alaska Native kindergartners by more than one-half of a standard deviation. White kindergartners also outperformed American Indian/Alaska Native, Black, and Hispanic kindergartners by one-third of a standard deviation or more.

Nineteen percent of girls were proficient in this reading area, compared to 15 percent of boys, a small but statistically significant difference. Although White females outperformed their male counterparts by a small margin, there were no statistically significant gender differences within the other racial/ethnic groups.

Here again, there was a strong, consistent relationship between SES and proficiency: 33 percent of high-SES kindergartners understood the ending sounds of words, compared to only 4 percent of low-SES kindergartners (a difference of about one standard deviation). These differences are shown in the top portion of Figure 8.

Within similar SES groups, however, there were no statistically significant racial/ethnic differences in proficiency.

Figure 9 shows age differences in kindergartners' understanding of the ending sounds of words. Roughly one-fourth (23 percent) of kindergartners in the highest age quartile were proficient in this skill area, compared to 11 percent in the youngest quartile (a difference of less than one-half of a standard deviation). Females were more likely than males to be proficient in this reading area only in one age group. Age had no effect on racial/ethnic performance differences. Across all age groups, Asian and White kindergartners were more likely than other kindergartners to be proficient in this area. Many of these differences exceeded one-half of a standard deviation.

## Figure 7: Percentage of Kindergartners Who Can Understand the Ending Sounds of Words, by Gender and Race/Ethnicity

All Kindergartners 17
Males 15
Females 19*

Asian 29
White 20
Multi-race 15
Native Hawaiian/Pacific Island 15
Black 10
Hispanic 11
American Indian/Alaska Native 7

Asian Males 26
Asian Females 31

White Males 18
White females 22*

Multi-race Males 15
Multi-race Females 16

Native Hawaiian/Pacific Island Males 14
Native Hawaiian/Pacific Island Females 16

Black Males 10
Black Females 11

Hispanic Males 8
Hispanic Females 13

American Indian/Alaska Native Males 7
American Indian/Alaska Native Females 6

0       25       50       75       100

Percentage Proficient

*Statistically significant difference between males and females

21

**Figure 8: Percentage of Kindergartners Who Can Understand the Ending Sounds of Words, by Socioeconomic Status and Race/Ethnicity**



| | | |
|---|---|---|
| High SES | 33 | |
| | 20 | All Kindergartners |
| | 14 | |
| | 9 | |
| Low SES | 4 | |

| | | |
|---|---|---|
| Asian | 46 | High SES |
| White | 33 | (Quintile 5) |
| Multi-race | 32 | |
| Black | 26 | |
| Hispanic | 25 | |

| | | |
|---|---|---|
| Asian | 24 | |
| White | 21 | (Quintile 4) |
| Multi-race | 21 | |
| Black | 19 | |
| Hispanic | 18 | |

| | | |
|---|---|---|
| Asian | 18 | |
| White | 15 | |
| Multi-race | 9 | (Quintile 3) |
| Black | 11 | |
| Hispanic | 11 | |

| | | |
|---|---|---|
| Asian | 8 | |
| White | 10 | |
| Multi-race | 8 | (Quintile 2) |
| Black | 8 | |
| Hispanic | 7 | |

| | | |
|---|---|---|
| Asian | 8 | |
| White | 6 | Low SES |
| Multi-race | 5 | (Quintile 1) |
| Black | 3 | |
| Hispanic | 3 | |

0      25      50      75      100

Percentage Proficient

22
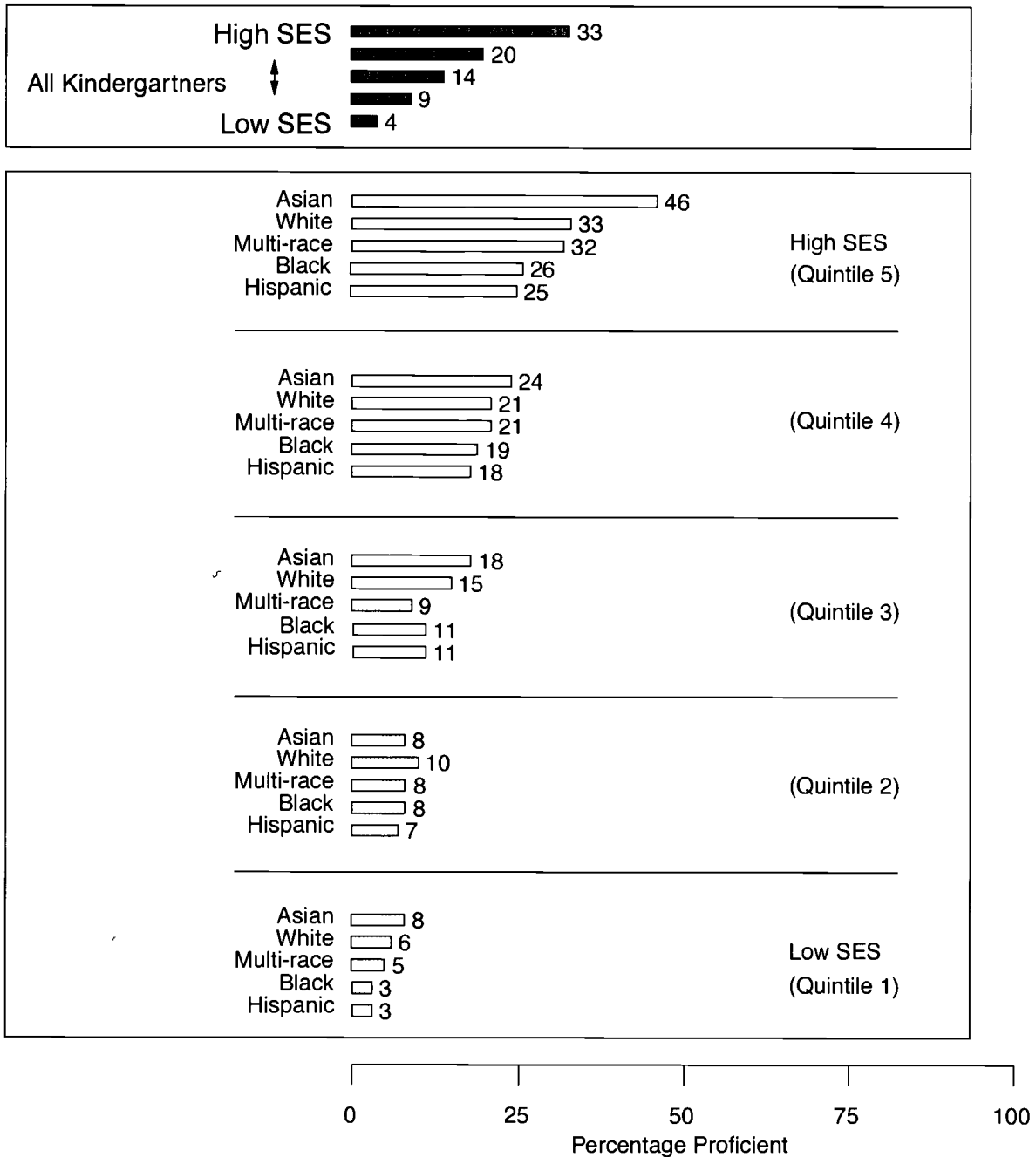
## Figure 9: Percentage of Kindergartners Who Can Understand the Ending Sounds of Words, by Age Quartile, Gender, and Race/Ethnicity

| | |
|---|---|
| 4th Quartile (Older) | 23 |
| All Kindergartners | 18 |
| | 15 |
| 1st Quartile (Younger) | 11 |

| | | |
|---|---|---|
| Males | 21 | Quartile 4 |
| Females | 25 | (Older) |
| Males | 16 | Quartile 3 |
| Females | 20 | |
| Males | 12 | Quartile 2 |
| Females | 17* | |
| Males | 10 | Quartile 1 |
| Females | 13 | (Younger) |

| | | |
|---|---|---|
| Asian | 31 | |
| White | 26 | |
| Multi-race | 22 | Quartile 4 |
| Black | 14 | (Older) |
| Hispanic | 16 | |
| American Indian/Alaska Native | 9 | |
| Asian | 34 | |
| White | 21 | |
| Multi-race | 20 | Quartile 3 |
| Black | 12 | |
| Hispanic | 11 | |
| American Indian/Alaska Native | 7 | |
| Asian | 27 | |
| White | 17 | |
| Multi-race | 10 | Quartile 2 |
| Black | 10 | |
| Hispanic | 9 | |
| American Indian/Alaska Native | 5 | |
| Asian | 24 | |
| White | 14 | |
| Multi-race | 10 | Quartile 1 |
| Black | 7 | (Younger) |
| Hispanic | 7 | |
| American Indian/Alaska Native | 4 | |

0   25   50   75   100

Percentage Proficient

*Statistically significant difference between males and females

Two percent of children were able to recognize common words at the beginning of kindergarten. Asian children (9 percent) were more likely to be proficient in this reading area than White, Black, and Hispanic children (by about one-half of a standard deviation). In addition, White children were more likely to be proficient than Black, Hispanic, and American Indian/Alaska Native children, although these differences were small. These data are shown in the top portion of Figure 10.

Differences between boys and girls for each racial/ethnic group are shown in the lower portion of Figure 10. There were no gender differences for any of the groups.

Figure 11 shows differences among SES groups. Kindergartners in the highest two SES quintiles were more likely to be proficient in recognizing common words than those in the three lower quintiles, although these differences were small.

In examining racial/ethnic differences within SES groups, no performance disparities were found for any of the SES quintiles.
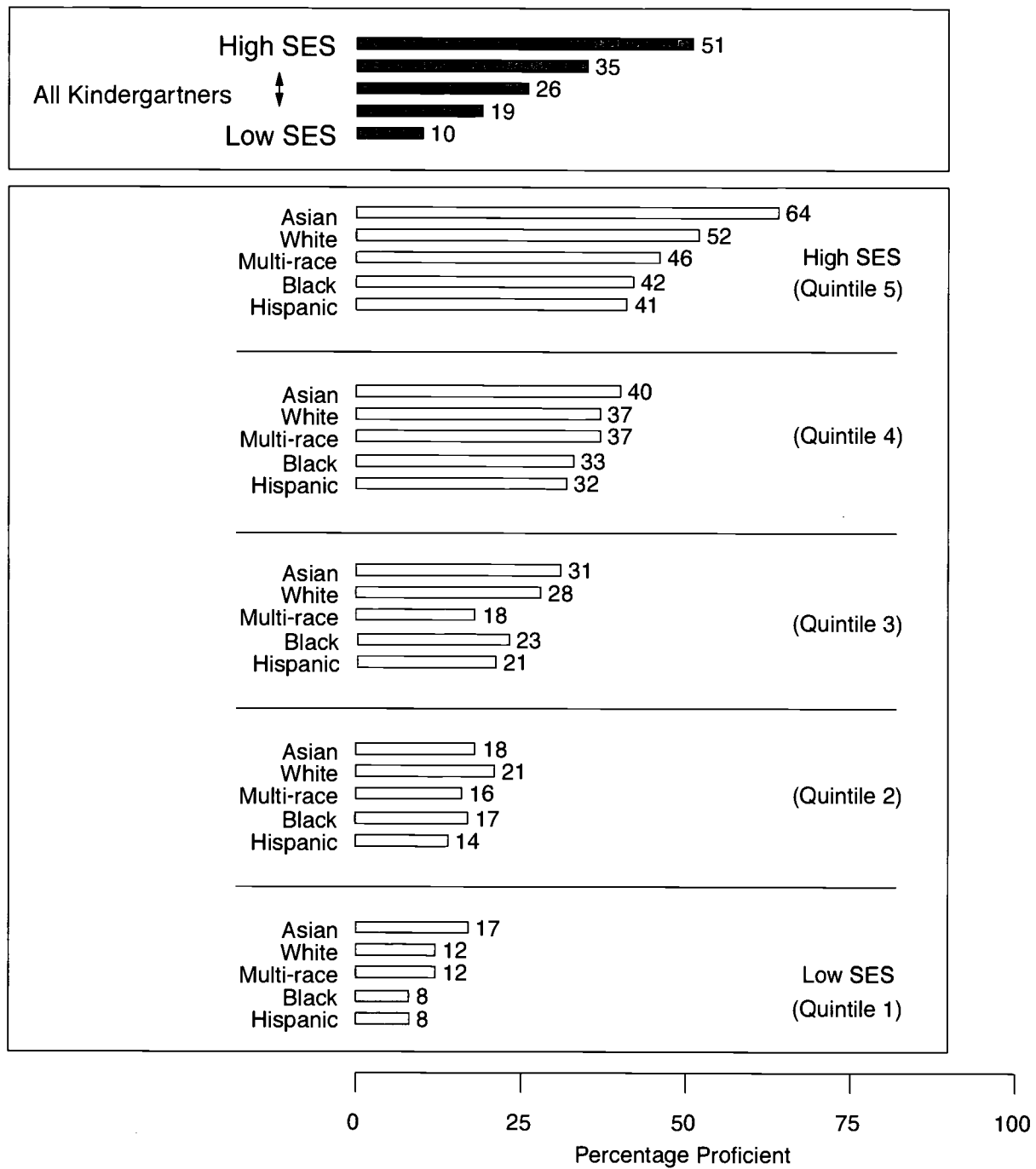
As shown in Figure 12, 4 percent of kindergartners in the highest age quartile were proficient in recognizing common words, compared to about 1 percent in the youngest quartile (a difference of about one-third of a standard deviation). No gender differences were found across the age groups. In addition, when proficiency was examined across the age groups, racial/ethnic differences disappeared, with one exception. The only remaining difference was that, in the second age quartile, White children were more likely to recognize common words in print than American Indian/Alaska Native children.

**Figure 10: Percentage of Kindergartners Who Can Recognize Common Words, by Gender and Race/Ethnicity**

```
All Kindergartners  □ 2
            Males  □ 3
          Females  □ 2
```

```
                            Asian  [====] 9
                            White  □ 3
                       Multi-race  □ 4
  Native Hawaiian/Pacific Island  □ 3
                            Black  ▯ 1
                         Hispanic  ▯ 1
  American Indian/Alaska Native  ▮ 0.5
```

```
                    Asian Males  [===] 8
                  Asian Females  [====] 9

                    White Males  □ 3
                  White females  □ 3

              Multi-race Males  □ 5
            Multi-race Females  □ 2

  Native Hawaiian/Pacific Island Males  □ 3
Native Hawaiian/Pacific Island Females  □ 2

                    Black Males  ▯ 1.4
                  Black Females  ▯ 0.9

                 Hispanic Males  ▯ 1
               Hispanic Females  ▯ 1

  American Indian/Alaska Native Males  ▯ 0.6
American Indian/Alaska Native Females  0.4
```

```
0        25        50        75        100
```

Percentage Proficient

# Figure 11: Percentage of Kindergartners Who Can Recognize Common Words, by Socioeconomic Status and Race/Ethnicity

| | |
|---|---|
| High SES | ▭ 6 |
| | ▭ 3 |
| All Kindergartners  ↕ | ▫ 2 |
| | ▫ 1 |
| Low SES | <.5 |

| | | |
|---|---|---|
| Asian | ▭ 17 | |
| White | ▭ 6 | |
| Multi-race | ▭ 13 | High SES |
| Black | ▭ 3 | (Quintile 5) |
| Hispanic | ▭ 5 | |
| | | |
| Asian | ▫ 4 | |
| White | ▫ 3 | |
| Multi-race | ▫ 2 | (Quintile 4) |
| Black | ▫ 3 | |
| Hispanic | ▫ 2 | |
| | | |
| Asian | ▭ 6 | |
| White | ▫ 2 | |
| Multi-race | 0.3 | (Quintile 3) |
| Black | ▫ 0.8 | |
| Hispanic | ▫ 1 | |
| | | |
| Asian | 0.2 | |
| White | ▫ 1 | |
| Multi-race | 0.1 | (Quintile 2) |
| Black | ▫ 1 | |
| Hispanic | 0.4 | |
| | | |
| Asian | ▫ 0.7 | |
| White | ▫ 0.6 | |
| Multi-race | ▫ 1.2 | Low SES |
| Black | 0 | (Quintile 1) |
| Hispanic | 0.2 | |

0   25   50   75   100

Percentage Proficient

26
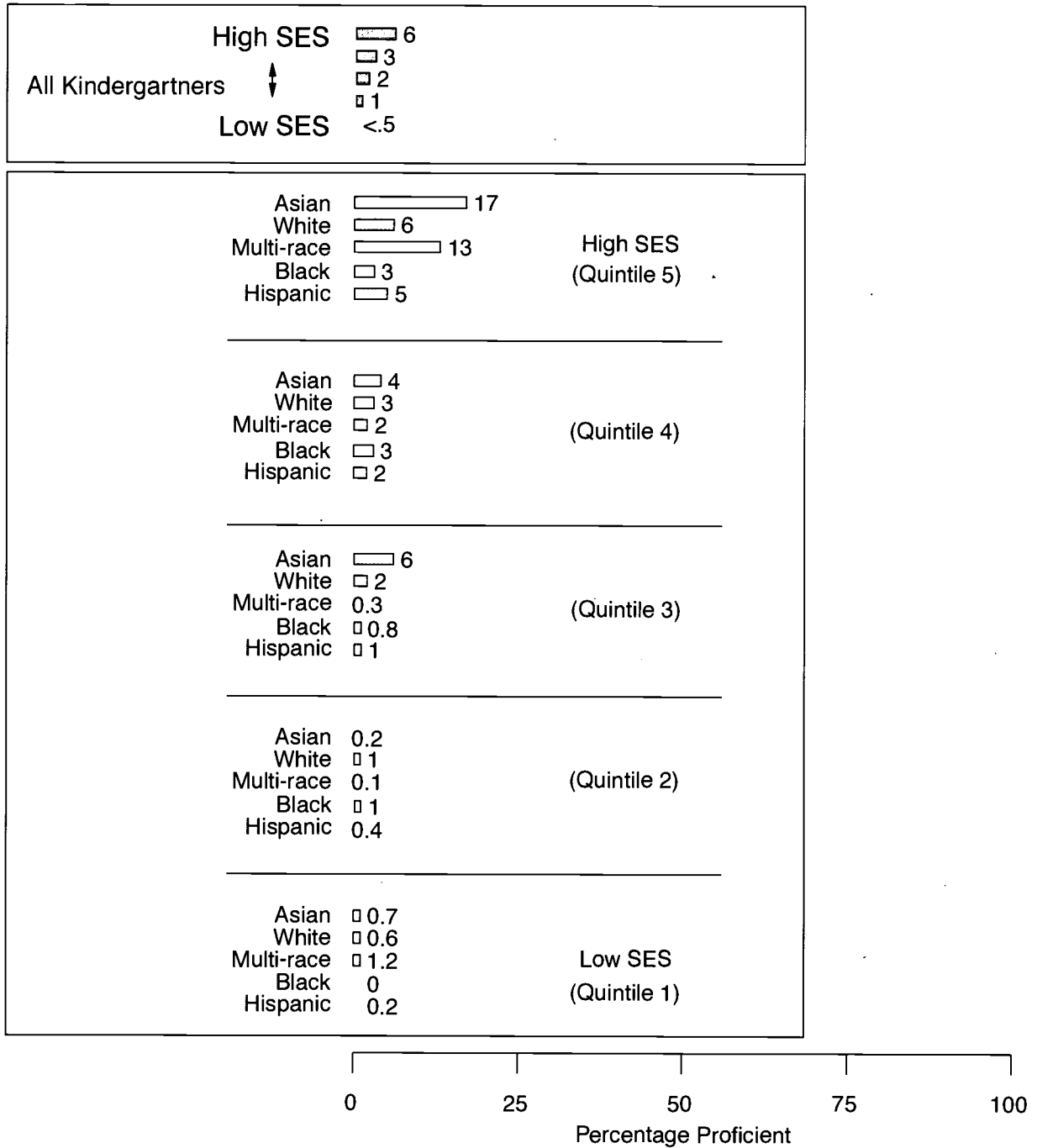
# Figure 12: Percentage of Kindergartners Who Can Recognize Common Words, by Age Quartile, Gender, and Race/Ethnicity

| | | |
|---|---|---|
| 4th Quartile (Older) | ☐ 4.1 | |
| **All Kindergartners** | ☐ 2.4 | |
| | ☐ 1.8 | |
| 1st Quartile (Younger) | ☐ 1.3 | |

| | | |
|---|---|---|
| Males | ☐ 4.2 | Quartile 4 |
| Females | ☐ 4.1 | (Older) |
| Males | ☐ 2.5 | Quartile 3 |
| Females | ☐ 2.3 | |
| Males | ☐ 1.8 | Quartile 2 |
| Females | ☐ 1.8 | |
| Males | ☐ 1.4 | Quartile 1 |
| Females | ☐ 1.2 | (Younger) |

| | | |
|---|---|---|
| Asian | ☐ 9.6 | |
| White | ☐ 4.7 | |
| Multi-race | ☐ 8 | Quartile 4 |
| Black | ☐ 2 | (Older) |
| Hispanic | ☐ 1.8 | |
| American Indian/Alaska Native | ☐ 1.3 | |
| Asian | ☐ 9.1 | |
| White | ☐ 2.6 | |
| Multi-race | ☐ 3.7 | Quartile 3 |
| Black | ☐ 1.6 | |
| Hispanic | ☐ 1.6 | |
| American Indian/Alaska Native | I 0.3 | |
| Asian | ☐ 10.9 | |
| White | ☐ 2.1 | |
| Multi-race | ▯ 0.8 | Quartile 2 |
| Black | ▮ 0.5 | |
| Hispanic | ▯ 0.8 | |
| American Indian/Alaska Native | 0 | |
| Asian | ☐ 5.7 | |
| White | ☐ 1.5 | |
| Multi-race | ☐ 1.8 | Quartile 1 |
| Black | ▯ 0.7 | (Younger) |
| Hispanic | ▯ 0.6 | |
| American Indian/Alaska Native | 0 | |

0    25    50    75    100

Percentage Proficient

Just 1 percent of the nation's kindergartners could understand words in context at the beginning of the kindergarten year. These data are shown in Figure 13. Asian children were more likely to demonstrate this skill than were students in the other racial/ethnic groups. In addition, White children were more likely than American Indian/Alaska Native children to be proficient in this area. All of these differences were quite small, however.

Data shown in the lower portion of Figure 13 reveal no gender differences in this skill area for any of the racial/ethnic groups.

There were small but statistically significant differences in reading proficiency among SES groups, however, as shown in Figure 14. Children in the highest quintile outperformed all other children, and those in the second highest SES quintile outperformed children in the lower three quintile groups.

The lower portion of Figure 14 shows racial/ethnic differences in performance within the SES groups. There were no statistically significant differences among racial/ethnic groups when they were grouped by SES.

Figure 15 shows age differences in this area of reading proficiency. Overall, older students were more likely to be proficient in understanding words in context than were younger students, although few students in any age group were proficient. Similarly, there were no significant gender or racial/ethnic differences across age groups.

## Figure 13: Percentage of Kindergartners Who Can Understand Words in Context, by Gender and Race/Ethnicity

All Kindergartners ▯ 1
Males ▯ 1
Females ▯ 1

Asian ▭ 5
White ▯ 1
Multi-race ▯ 2
Native Hawaiian/Pacific Island ▯ 1
Black  0.4
Hispanic ▮ 0.5
American Indian/Alaska Native  0.1

Asian Males ▭ 5
Asian Females ▭ 5

White Males ▯ 1.2
White females ▯ 0.9

Multi-race Males ▯ 2
Multi-race Females ▯ 1

Native Hawaiian/Pacific Island Males  0.3
Native Hawaiian/Pacific Island Females ▯ 1.3

Black Males ▯ 0.6
Black Females  0.2

Hispanic Males ▯ 0.5
Hispanic Females ▯ 0.5

American Indian/Alaska Native Males  0
American Indian/Alaska Native Females  0.1

0 25 50 75 100

Percentage Proficient

29

**Figure 14: Percentage of Kindergartners Who Can Understand Words in Context, by Socioeconomic Status and Race/Ethnicity**

High SES     ⊑ 3
              ▫ 1
All Kindergartners  ↕     0.4
                          0.4
Low SES       0.1

Asian      ▭ 9
White      ▢ 2
Multi-race ▭ 8        High SES
Black      ▫ 1        (Quintile 5)
Hispanic   ▢ 3

Asian      ▢ 3
White      ▫ 1
Multi-race    0.1     (Quintile 4)
Black      ▫ 1
Hispanic   ▢ 1

Asian      ▢ 3
White      ▫ 0.5
Multi-race    0       (Quintile 3)
Black         0.1
Hispanic      0.1

Asian         0
White      ▫ 0.5
Multi-race    0       (Quintile 2)
Black         0.3
Hispanic      0.1

Asian      ▫ 0.6
White         0.3
Multi-race    0       Low SES
Black         0       (Quintile 1)
Hispanic      0.1

```
    0        25        50        75        100
```
Percentage Proficient

30
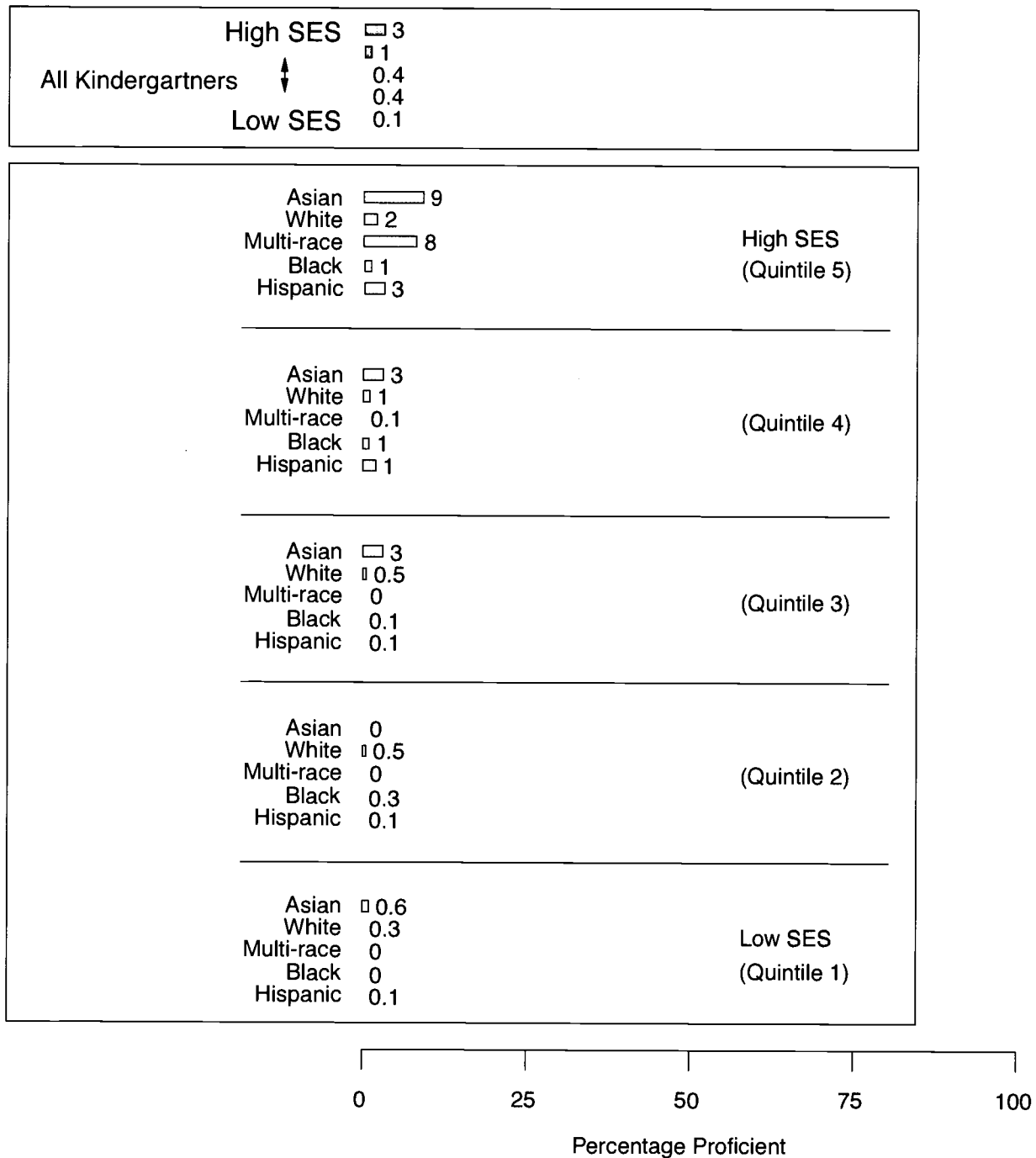
## Figure 15: Percentage of Kindergartners Who Can Understand Words in Context, by Age Quartile, Gender, and Race/Ethnicity

|  |  |
|---|---|
| 4th Quartile (Older) | ☐ 1.7 |
| All Kindergartners | ◻ 0.9 |
|  | ◻ 0.6 |
| 1st Quartile (Younger) | ▮ 0.5 |

| Gender | Value | Quartile |
|---|---|---|
| Males | ☐ 1.7 | Quartile 4 |
| Females | ☐ 1.8 | (Older) |
| Males | ◻ 1.1 | Quartile 3 |
| Females | ◻ 0.6 | |
| Males | ◻ 0.7 | Quartile 2 |
| Females | ◻ 0.5 | |
| Males | ◻ 0.5 | Quartile 1 |
| Females | ▮ 0.4 | (Younger) |

| Race/Ethnicity | Value | Quartile |
|---|---|---|
| Asian | ☐ 6 | Quartile 4 |
| White | ☐ 1.9 | (Older) |
| Multi-race | ☐ 3.8 | |
| Black | ◻ 0.6 | |
| Hispanic | ◻ 0.9 | |
| American Indian/Alaska Native | ▮ 0.3 | |
| Asian | ☐ 4.7 | Quartile 3 |
| White | ◻ 0.8 | |
| Multi-race | ☐ 1.6 | |
| Black | ◻ 0.6 | |
| Hispanic | ◻ 0.7 | |
| American Indian/Alaska Native | 0 | |
| Asian | ☐ 5.8 | Quartile 2 |
| White | ◻ 0.7 | |
| Multi-race | 0 | |
| Black | 0 | |
| Hispanic | ▮ 0.2 | |
| American Indian/Alaska Native | 0 | |
| Asian | ☐ 2.8 | Quartile 1 |
| White | ◻ 0.4 | (Younger) |
| Multi-race | ☐ 1.6 | |
| Black | ▮ 0.3 | |
| Hispanic | ▮ 0.3 | |
| American Indian/Alaska Native | 0 | |

0        25        50        75        100

Percentage Proficient

31

# MATHEMATICS

In addition to the reading measures, the ECLS-K assessed kindergartners' skills in various areas of mathematics, including:

(1) identifying some one-digit numerals, recognizing geometric shapes, and one-to-one counting of up to 10 items;

(2) reading all single-digit numerals, counting beyond 10, recognizing the sequence in basic patterns, and using non-standard units of length to compare objects;

(3) reading two-digit numerals, recognizing the next number in a sequence, identifying the ordinal position in a sequence, identifying the ordinal position of an object, and solving a simple word problem;

(4) solving simple addition and subtraction problems; and

(5) solving simple multiplication and division problems and recognizing more complex number patterns.

It should be noted that these five mathematics skills were intended to stretch across kindergarten and first grade. Thus, only a small proportion of kindergartners were expected to be proficient in the more advanced skill areas.

Overall, the nation's kindergartners performed as follows in the Fall of 1998:

- ❑ 93 percent could recognize numbers and shapes
- ❑ 57 percent understood relative size
- ❑ 21 percent understood ordinal sequence
- ❑ 4 percent could perform addition and subtraction
- ❑ less than .5 percent could perform multiplication and division

There were many differences among these young children in the mathematics skills they brought to school. This section examines skill differences between boys and girls, among racial/ethnic groups, between boys and girls within each racial/ethnic group, among children grouped by SES, and among children grouped by age.

As shown in Figure 16, 93 percent of the nation's kindergartners were able to identify numbers and shapes (identify some one-digit numerals, recognize geometric shapes, and count up to 10 items) in the Fall of 1998. The graph shows the differences among racial/ethnic groups. Asian and White kindergartners were more likely than Black, Hispanic, and American Indian/Alaska Native kindergartners to be proficient in this mathematics area (differences are about one-half of a standard deviation). The difference between White and Asian kindergartners and American Indian/Alaska Native kindergartners was large (about one standard deviation), while the difference between White and Asian kindergartners and Hispanic and Black kindergartners was slightly less than one-half of a standard deviation. In addition, multi-race children were more likely to be proficient in this mathematics area than American Indian/Alaska Native children (the difference is about one-half of a standard deviation).

Figure 16 also shows gender differences. Overall, females were more likely than males to be able to recognize numbers and shapes, although the difference was small. There were no gender differences in performance within the various racial/ethnic groups.

The relationship between SES and proficiency in recognizing numbers and shapes is shown in the upper portion of Figure 17. Among all kindergartners, there is a strong relationship between SES and proficiency. Almost all (98 percent) of the children in the highest SES quintile could recognize numbers and shapes, compared to 84 percent of children in the lowest quintile (a difference of about one standard deviation).

The lower portion of Figure 17 shows racial/ethnic differences within SES groups. When racial/ethnic groups were compared within similar SES groupings, no statistically significant differences were found. Among the two highest SES groups, for example, only a few percentage points separate the groups.

Figure 18 shows age differences. Among all kindergartners, there was a small but statistically significant relationship between proficiency and age: 96 percent of the oldest children were able to recognize numbers and shapes compared to 90 percent of children in the youngest group. There were no gender differences within age groups. Among racial/ethnic groups, Asian and White kindergartners hold an advantage over Black and Hispanic kindergartners in the lower three age quartiles; there were no differences among the oldest group.

## Figure 16: Percentage of Kindergartners Who Can Recognize Numbers and Shapes, by Gender and Race/Ethnicity

| | Percentage Proficient |
|---|---|
| All Kindergartners | 93 |
| Males | 92 |
| Females | 94* |

| | |
|---|---|
| Asian | 97 |
| White | 96 |
| Multi-race | 93 |
| Native Hawaiian/Pacific Island | 91 |
| Black | 89 |
| Hispanic | 90 |
| American Indian/Alaska Native | 81 |

| | |
|---|---|
| Asian Males | 97 |
| Asian Females | 97 |
| White Males | 95 |
| White Females | 96 |
| Multi-race Males | 92 |
| Multi-race Females | 94 |
| Native Hawaiian/Pacific Island Males | 89 |
| Native Hawaiian/Pacific Island Females | 93 |
| Black Males | 87 |
| Black Females | 91 |
| Hispanic Males | 89 |
| Hispanic Females | 91 |
| American Indian/Alaska Native Males | 79 |
| American Indian/Alaska Native Females | 83 |

0          25          50          75          100

Percentage Proficient

*Statistically significant difference between males and females

# Figure 17: Percentage of Kindergartners Who Can Recognize Numbers and Shapes, by Socioeconomic Status and Race/Ethnicity

| | |
|---|---|
| High SES | 98 |
| | 97 |
| All Kindergartners ↕ | 94 |
| | 91 |
| Low SES | 84 |

**High SES (Quintile 5)**
- Asian — 99
- White — 99
- Multi-race — 96
- Black — 95
- Hispanic — 97

**(Quintile 4)**
- Asian — 97
- White — 97
- Multi-race — 97
- Black — 94
- Hispanic — 95

**(Quintile 3)**
- Asian — 98
- White — 96
- Multi-race — 95
- Black — 92
- Hispanic — 92

**(Quintile 2)**
- Asian — 93
- White — 92
- Multi-race — 88
- Black — 89
- Hispanic — 89

**Low SES (Quintile 1)**
- Asian — 92
- White — 87
- Multi-race — 87
- Black — 82
- Hispanic — 82

Percentage Proficient

0    25    50    75    100

35
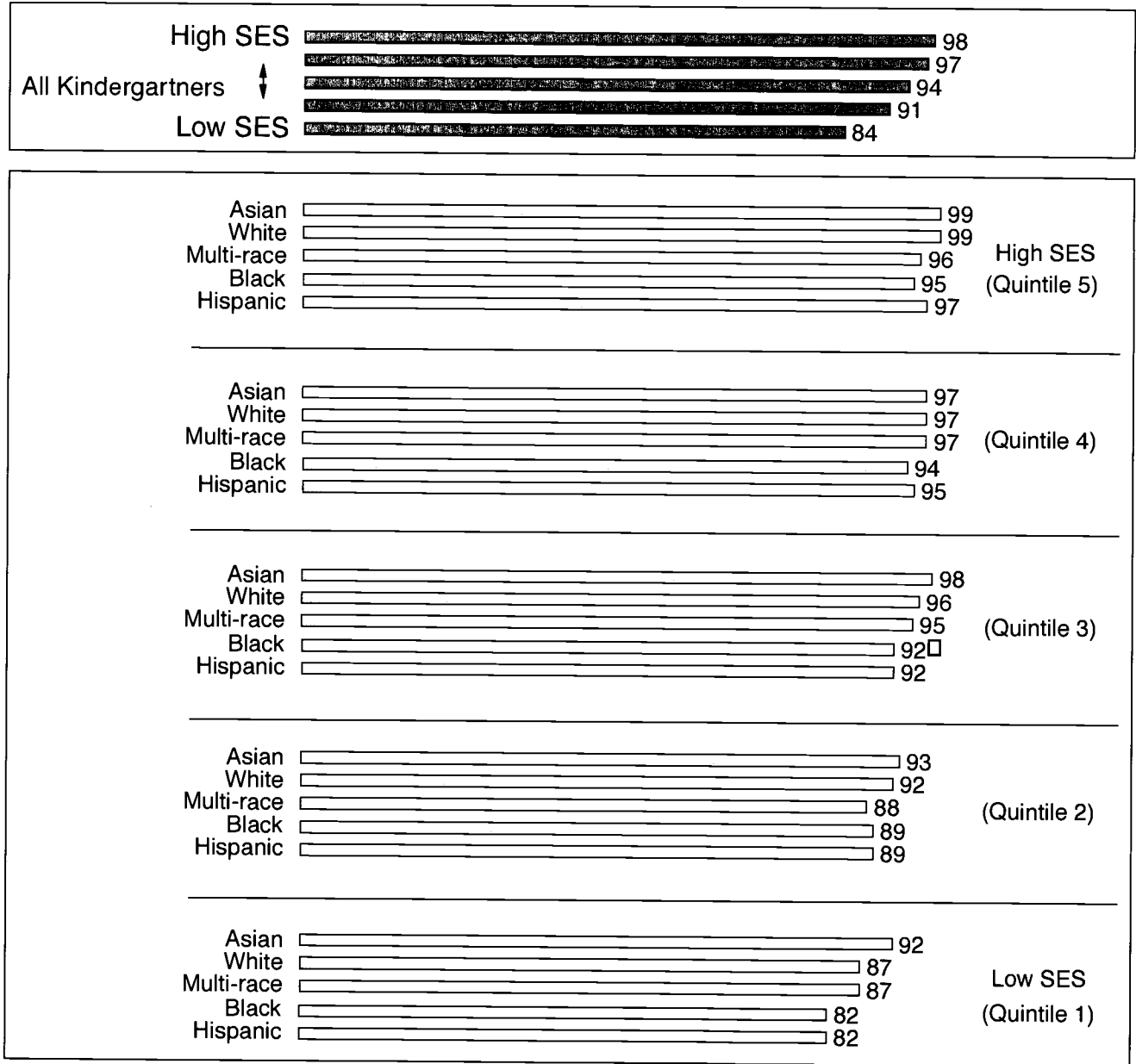
## Figure 18: Percentage of Kindergartners Who Can Recognize Numbers and Shapes, by Age Quartile, Gender, and Race/Ethnicity

| | |
|---|---|
| 4th Quartile (Older) | 96 |
| All Kindergartners | 95 |
| | 93 |
| 1st Quartile (Younger) | 90 |

| | | |
|---|---|---|
| Males | 95 | Quartile 4 |
| Females | 97 | (Older) |
| Males | 94 | Quartile 3 |
| Females | 96 | |
| Males | 92 | Quartile 2 |
| Females | 93 | |
| Males | 88 | Quartile 1 |
| Females | 91 | (Younger) |

| | | |
|---|---|---|
| Asian | 97 | |
| White | 97 | |
| Multi-race | 95 | Quartile 4 |
| Black | 94 | (Older) |
| Hispanic | 94 | |
| American Indian/Alaska Native | 90 | |
| Asian | 99 | |
| White | 97 | |
| Multi-race | 93 | |
| Black | 89 | Quartile 3 |
| Hispanic | 93 | |
| American Indian/Alaska Native | 81 | |
| Asian | 97 | |
| White | 95 | |
| Multi-race | 91 | Quartile 2 |
| Black | 88 | |
| Hispanic | 89 | |
| American Indian/Alaska Native | 76 | |
| Asian | 95 | |
| White | 93 | |
| Multi-race | 92 | Quartile 1 |
| Black | 85 | (Younger) |
| Hispanic | 84 | |
| American Indian/Alaska Native | 74 | |

0    25    50    75    100

Percentage Proficient

36

*35*

As shown in Figure 19, 57 percent of kindergartners were proficient in under-standing relative size (reading all single-digit numbers, counting beyond 10, recognizing the sequence of patterns, and using non-standard units of length to compare objects). Asian and White children were more likely to be proficient in this area than children in other racial/ethnic groups. All of these differences were one-third of a standard deviation or more; in fact, the difference between Asian children and American Indian/Alaska Native children was about one standard deviation. In addition, multi-race children were more likely to be proficient than Hispanic children (by less than one-half of a standard deviation). There were no gender differences in performance among any of the racial/ethnic groups.

The upper portion of Figure 20 shows the relationship between SES and profi-ciency in this area of mathematics. Across all SES groups there was a strong relationship with proficiency: 77 percent of kindergartners in the highest SES quintile were proficient in this mathematics area, compared to only 31 percent in the lowest quintile, a difference of more than one standard deviation.

When the proficiencies of the racial/ethnic groups were compared within SES groups, some differences persisted. At the highest and lowest SES levels, Asian and White kindergartners outperformed Black and Hispanic kindergartners by about one-half of a standard deviation. In the middle three quintiles, White kindergartners were more likely than Black and Hispanic kindergartners to be proficient in this skill area, although these differences were not as large as in the high and low SES quintiles.

Age differences are shown in Figure 21. Among all kindergartners, 68 percent of the oldest group was proficient in this area compared to 44 percent in the youngest group (a difference of two-thirds of a standard deviation).

There were no gender differences in performance among children in similar age groups. Racial/ethnic differences persisted, however. Asian and White students continued to outperform other students across all four age groups, sometimes by substantial margins.

## Figure 19: Percentage of Kindergartners Who Can Understand Relative Size, by Gender and Race/Ethnicity

| | Percentage |
|---|---|
| All Kindergartners | 57 |
| Males | 56 |
| Females | 57 |

| | Percentage |
|---|---|
| Asian | 69 |
| White | 64 |
| Multi-race | 52 |
| Native Hawaiian/Pacific Island | 48 |
| Black | 41 |
| Hispanic | 43 |
| American Indian/Alaska Native | 35 |

| | Percentage |
|---|---|
| Asian Males | 69 |
| Asian Females | 69 |
| White Males | 64 |
| White Females | 65 |
| Multi-race Males | 52 |
| Multi-race Females | 52 |
| Native Hawaiian/Pacific Island Males | 42 |
| Native Hawaiian/Pacific Island Females | 54 |
| Black Males | 40 |
| Black Females | 43 |
| Hispanic Males | 41 |
| Hispanic Females | 45 |
| American Indian/Alaska Native Males | 34 |
| American Indian/Alaska Native Females | 35 |

0    25    50    75    100

Percentage Proficient

38

# Figure 20: Percentage of Kindergartners Who Can Understand Relative Size, by Socioeconomic Status and Race/Ethnicity

High SES ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓ 77
▓▓▓▓▓▓▓▓▓▓▓▓▓ 65
All Kindergartners ↕ ▓▓▓▓▓▓▓▓▓▓ 56
▓▓▓▓▓▓▓▓ 46
Low SES ▓▓▓▓▓ 31

| | | |
|---|---|---|
| Asian | 82 | |
| White | 79 | |
| Multi-race | 72 | High SES |
| Black | 65 | (Quintile 5) |
| Hispanic | 60 | |
| | | |
| Asian | 66 | |
| White | 69 | |
| Multi-race | 63 | (Quintile 4) |
| Black | 54 | |
| Hispanic | 59 | |
| | | |
| Asian | 64 | |
| White | 61 | |
| Multi-race | 50 | (Quintile 3) |
| Black | 47 | |
| Hispanic | 46 | |
| | | |
| Asian | 46 | |
| White | 52 | |
| Multi-race | 41 | (Quintile 2) |
| Black | 38 | |
| Hispanic | 40 | |
| | | |
| Asian | 51 | |
| White | 39 | |
| Multi-race | 27 | Low SES |
| Black | 26 | (Quintile 1) |
| Hispanic | 27 | |

0        25        50        75        100

Percentage Proficient

## Figure 21: Percentage of Kindergartners Who Can Understand Relative Size, by Age Quartile, Gender, and Race/Ethnicity

| | |
|---|---|
| 4th Quartile (Older) | 68 |
| All Kindergartners | 60 |
| | 54 |
| 1st Quartile (Younger) | 44 |

| | | |
|---|---|---|
| Males | 67 | Quartile 4 |
| Females | 68 | (Older) |
| Males | 59 | Quartile 3 |
| Females | 62 | |
| Males | 53 | Quartile 2 |
| Females | 55 | |
| Males | 42 | Quartile 1 |
| Females | 46 | (Younger) |

| | | |
|---|---|---|
| Asian | 76 | |
| White | 73 | |
| Multi-race | 63 | Quartile 4 |
| Black | 52 | (Older) |
| Hispanic | 56 | |
| American Indian/Alaska Native | 47 | |
| Asian | 76 | |
| White | 67 | |
| Multi-race | 58 | Quartile 3 |
| Black | 45 | |
| Hispanic | 49 | |
| American Indian/Alaska Native | 33 | |
| Asian | 66 | |
| White | 61 | |
| Multi-race | 47 | Quartile 2 |
| Black | 39 | |
| Hispanic | 41 | |
| American Indian/Alaska Native | 29 | |
| Asian | 59 | |
| White | 53 | |
| Multi-race | 42 | Quartile 1 |
| Black | 31 | (Younger) |
| Hispanic | 30 | |
| American Indian/Alaska Native | 25 | |

0    25    50    75    100

Percentage Proficient

40

As shown in Figure 22, 21 percent of kindergartners were proficient in under-standing ordinal sequence (reading two-digit numerals, recognizing the next number in a sequence, identifying the ordinal position in a sequence, identifying the ordinal position of an object, and solving a simple word problem). Asian and White children were more likely to be proficient in this area than children in other racial/ethnic groups. Many of these differences were one-half of a standard deviation or more. While between one-quarter and one-third of Asian and White children were proficient in ordinal sequence, somewhere around one-tenth of children in the other racial/ethnic groups were proficient. In addition, multi-race children outperformed American Indian/Alaska Native and Black children, although the differences were not large.

There were no gender differences found for any of the racial/ethnic groups.

SES was strongly related to proficiency: 39 percent of children in the highest SES group were proficient, compared to only 6 percent in the lowest SES group, a difference of about one standard deviation. These data are shown in Figure 23.

When children in each racial/ethnic group were grouped into SES quintiles, Asian and White children still showed some advantages. Asian and White children outperformed Hispanic and Black children at the highest SES quintile (by more than one-half of a standard deviation). White kindergartners were more likely than Black and Hispanic kindergartners to be proficient across all SES quintiles, although these differences are not large (less than one-half of a standard deviation).

Figure 24 shows age differences. Age was strongly related to proficiency: 31 percent of kindergartners in the oldest group were proficient in this area of mathematics, compared to 12 percent in the youngest group (a difference of more than three-fourths of a standard deviation).

No gender differences in performance were found among age groups. Racial/ethnic differences persisted, however, As with other mathematics skills, Asian and White students continued to outperform other students across all four age groups, sometimes by substantial margins.

## Figure 22: Percentage of Kindergartners Who Can Understand Ordinal Sequence, by Gender and Race/Ethnicity

All Kindergartners ▨▨▨▨▨▨ 21
Males ⬜ 22
Females ⬜ 20

Asian ▬▬▬▬▬▬ 32
White ▬▬▬▬▬ 26
Multi-race ▬▬▬ 18
Native Hawaiian/Pacific Island ▬▬ 12
Black ▬ 9
Hispanic ▬▬ 12
American Indian/Alaska Native ▬ 8

Asian Males ⬜ 34
Asian Females ⬜ 30

White Males ⬜ 27
White Females ⬜ 25

Multi-race Males ⬜ 19
Multi-race Females ⬜ 16

Native Hawaiian/Pacific Island Males ⬜ 10
Native Hawaiian/Pacific Island Females ⬜ 14

Black Males ⬜ 10
Black Females ⬜ 9

Hispanic Males ⬜ 11
Hispanic Females ⬜ 13

American Indian/Alaska Native Males ⬜ 8
American Indian/Alaska Native Females ⬜ 8

0    25    50    75    100

Percentage Proficient

42

## Figure 23: Percentage of Kindergartners Who Can Understand Ordinal Sequence, by Socioeconomic Status and Race/Ethnicity

All Kindergartners

High SES    39
25
18
13
Low SES    6

| | | |
|---|---|---|
| Asian | 48 | |
| White | 41 | **High SES** |
| Multi-race | 36 | **(Quintile 5)** |
| Black | 21 | |
| Hispanic | 25 | |
| | | |
| Asian | 26 | |
| White | 28 | |
| Multi-race | 22 | **(Quintile 4)** |
| Black | 15 | |
| Hispanic | 20 | |
| | | |
| Asian | 23 | |
| White | 21 | |
| Multi-race | 12 | **(Quintile 3)** |
| Black | 11 | |
| Hispanic | 13 | |
| | | |
| Asian | 13 | |
| White | 16 | |
| Multi-race | 10 | **(Quintile 2)** |
| Black | 8 | |
| Hispanic | 9 | |
| | | |
| Asian | 15 | |
| White | 9 | **Low SES** |
| Multi-race | 5 | **(Quintile 1)** |
| Black | 4 | |
| Hispanic | 4 | |

0      25      50      75      100

Percentage Proficient

# Figure 24: Percentage of Kindergartners Who Can Understand Ordinal Sequence, by Age Quartile, Gender, and Race/Ethnicity

| | |
|---|---|
| 4th Quartile (Older) | 31 |
| All Kindergartners | 23 |
| | 18 |
| 1st Quartile (Younger) | 12 |

| | | |
|---|---|---|
| Males | 33 | Quartile 4 |
| Females | 30 | (Older) |
| Males | 23 | Quartile 3 |
| Females | 22 | |
| Males | 18 | Quartile 2 |
| Females | 18 | |
| Males | 12 | Quartile 1 |
| Females | 12 | (Younger) |

| | | |
|---|---|---|
| Asian | 41 | |
| White | 37 | |
| Multi-race | 25 | Quartile 4 |
| Black | 14 | (Older) |
| Hispanic | 21 | |
| American Indian/Alaska Native | 13 | |
| Asian | 39 | |
| White | 27 | |
| Multi-race | 19 | Quartile 3 |
| Black | 12 | |
| Hispanic | 14 | |
| American Indian/Alaska Native | 8 | |
| Asian | 28 | |
| White | 22 | |
| Multi-race | 16 | Quartile 2 |
| Black | 7 | |
| Hispanic | 10 | |
| American Indian/Alaska Native | 5 | |
| Asian | 22 | |
| White | 15 | |
| Multi-race | 11 | Quartile 1 |
| Black | 5 | (Younger) |
| Hispanic | 6 | |
| American Indian/Alaska Native | 5 | |

0    25    50    75    100

Percentage Proficient

Four percent of beginning kindergartners were proficient in solving simple addition and subtraction problems, as shown in Figure 25. Asian children were more likely to be proficient in addition and subtraction than other children (except White children). These differences were about one-half of a standard deviation. White children were also more likely to be proficient in addition and subtraction than American Indian/Alaska Native, Black, and Hispanic children, although these differences were less than one-half of a standard deviation.

Overall, boys were more likely than girls to demonstrate proficiency in addition and subtraction. There were no statistically significant gender differences among any of the racial/ethnic groups.

SES was strongly related to proficiency, as shown in Figure 26. Nine percent of children in the highest SES group were proficient in addition and subtraction, compared to only 1 percent in the lowest two quintiles, a difference of about one-half of a standard deviation.

Some racial/ethnic differences persisted even among similar SES groups. At the high end of SES, White and Asian kindergartners outperformed Black kindergartners. The difference between Asians and Blacks was about one-half of a standard deviation. In addition, White children outperformed Black children in the fourth and second SES quintiles, although these differences were quite small.

As shown in Figure 27, age was related to proficiency in addition and subtraction: 7 percent of the oldest kindergartners demonstrated skill in this area, compared to about 1 percent of the youngest kindergartners (a difference of more than one-half of a standard deviation).

No gender differences were found among age groups. Some racial/ethnic differences persisted, however. Across all age groups, White children were more likely than Black, Hispanic, and American Indian/Alaska Native children to be proficient in addition and subtraction. Although Asian children appear to outperform all other groups, the differences were not statistically significant.

## Figure 25: Percentage of Kindergartners Who Can Perform Addition and and Subtraction, by Gender and Race/Ethnicity

All Kindergartners ☐ 4
Males ☐ 4*
Females ☐ 3

Asian ☐ 9
White ☐ 5
Multi-race ☐ 3
Native Hawaiian/Pacific Island ☐ 3
Black ▯ 1
Hispanic ☐ 2
American Indian/Alaska Native ▯ 1

Asian Males ☐ 11
Asian Females ☐ 7

White Males ☐ 6
White Females ☐ 4

Multi-race Males ☐ 4
Multi-race Females ☐ 2

Native Hawaiian/Pacific Island Males ☐ 2.8
Native Hawaiian/Pacific Island Females ☐ 2.2

Black Males ▯ 1.2
Black Females ▯ 0.7

Hispanic Males ☐ 1.5
Hispanic Females ☐ 1.7

American Indian/Alaska Native Males ▯ 1.3
American Indian/Alaska Native Females ▯ 0.7

```
0        25        50        75       100
```
Percentage Proficient

*Statistically significant difference between males and females

46

## Figure 26: Percentage of Kindergartners Who Can Perform Addition and Subtraction, by Socioeconomic Status and Race/Ethnicity

High SES ▬▬▬▬ 9

All Kindergartners ↕ ▪▪ 4

▪ 2

▪ 1

Low SES ▪ 1

Asian ▭▭▭▭ 16
White ▭▭ 10
Multi-race ▭▭ 9    High SES
Black ▭ 3    (Quintile 5)
Hispanic ▭ 4

Asian ▭ 5
White ▭ 5
Multi-race ▭ 4    (Quintile 4)
Black ▭ 2
Hispanic ▭ 3

Asian ▭ 5
White ▭ 3
Multi-race ▫ 1    (Quintile 3)
Black ▫ 1
Hispanic ▫ 1

Asian ▭ 1.6
White ▭ 2
Multi-race ▫ 1    (Quintile 2)
Black 0.4
Hispanic ▫ 1

Asian ▭ 3
White ▫ 1
Multi-race ▭ 1.7    Low SES
Black 0.2    (Quintile 1)
Hispanic ▫ 0.6

```
0        25        50        75        100
```
Percentage Proficient

47
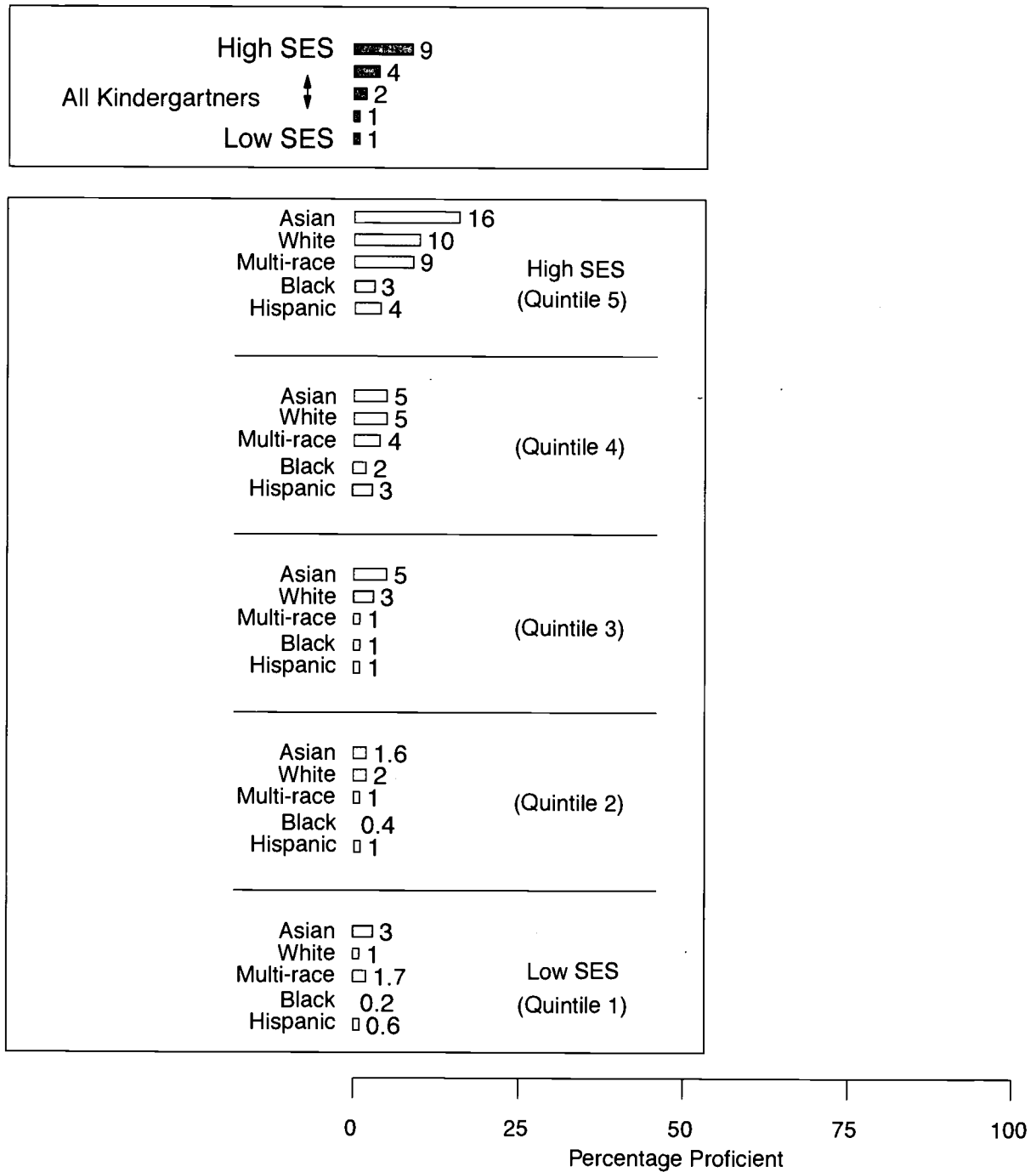
## Figure 27: Percentage of Kindergartners Who Can Perform Addition and Subtraction by Age Quartile, Gender, and Socioeconomic Status

| | |
|---|---|
| 4th Quartile (Older) | ☐ 7.1 |
| All Kindergartners | ☐ 3.8 |
| | ☐ 2.5 |
| 1st Quartile (Younger) | ☐ 1.5 |

| | | |
|---|---|---|
| Males | ☐ 8 | Quartile 4 |
| Females | ☐ 6.1 | (Older) |
| Males | ☐ 4.3 | Quartile 3 |
| Females | ☐ 3.4 | |
| Males | ☐ 2.7 | Quartile 2 |
| Females | ☐ 2.4 | |
| Males | ☐ 1.9 | Quartile 1 |
| Females | ☐ 1.3 | (Younger) |

| | | |
|---|---|---|
| Asian | ☐ 13 | |
| White | ☐ 9 | |
| Multi-race | ☐ 5.1 | Quartile 4 |
| Black | ☐ 1.3 | (Older) |
| Hispanic | ☐ 3.7 | |
| American Indian/Alaska Native | ☐ 2.2 | |
| Asian | ☐ 11.8 | |
| White | ☐ 4.6 | |
| Multi-race | ☐ 4.1 | Quartile 3 |
| Black | ☐ 1.7 | |
| Hispanic | ☐ 1.8 | |
| American Indian/Alaska Native | ☐ 0.7 | |
| Asian | ☐ 6.8 | |
| White | ☐ 3.4 | |
| Multi-race | ☐ 3 | Quartile 2 |
| Black | ☐ 0.4 | |
| Hispanic | ☐ 0.8 | |
| American Indian/Alaska Native | ☐ 0.4 | |
| Asian | ☐ 4.9 | |
| White | ☐ 2.1 | |
| Multi-race | ☐ 1.4 | Quartile 1 |
| Black | ☐ 0.4 | (Younger) |
| Hispanic | ☐ 0.5 | |
| American Indian/Alaska Native | ☐ 0.3 | |

```
0        25        50        75        100
```
Percentage Proficient

48

As shown in Figure 28, less than 1 percent of beginning kindergartners were proficient in solving simple multiplication and division problems and recognizing more complex number patterns. Among racial/ethnic groups, there were some differences, although few students in any category were proficient.

Among all kindergartners, boys were more likely to be proficient in this mathematics area than girls, although this difference is small. There were no gender differences among any of the racial/ethnic groups.

As shown in Figure 29, among SES groups, children in the highest SES quintile were more likely to be proficient than children in the other quintiles. Since so few children are proficient in this area, comparisons of racial/ethnic differences in proficiency across SES groups are not made.

Figure 30 shows age differences. Here again, older students were more likely to be proficient than younger students, although the difference is small. Among the oldest group, White students were more likely to be proficient in multiplication and division than Black students. Again, however, few students in any age or racial/ethnic group were proficient.

# Figure 28: Percentage of Kindergartners Who Can Perform Multiplication and Division, by Gender and Race/Ethnicity

| | |
|---|---|
| All Kindergartners | 0.3 |
| Males | ▯0.5* |
| Females | 0.1 |

| | |
|---|---|
| Asian | ▯1.2 |
| White | 0.4 |
| Multi-race | 0.2 |
| Native Hawaiian/Pacific Island | 0.1 |
| Black | 0 |
| Hispanic | 0 |
| American Indian/Alaska Native | 0 |

| | |
|---|---|
| Asian Males | ☐2 |
| Asian Females | 0.4 |
| White Males | ▯0.7 |
| White Females | 0.2 |
| Multi-race Males | 0.4 |
| Multi-race Females | 0 |
| Native Hawaiian/Pacific Island Males | 0.2 |
| Native Hawaiian/Pacific Island Females | 0 |
| Black Males | 0.1 |
| Black Females | 0 |
| Hispanic Males | 0.1 |
| Hispanic Females | 0 |
| American Indian/Alaska Native Males | 0 |
| American Indian/Alaska Native Females | 0 |

```
0        25        50        75        100
```
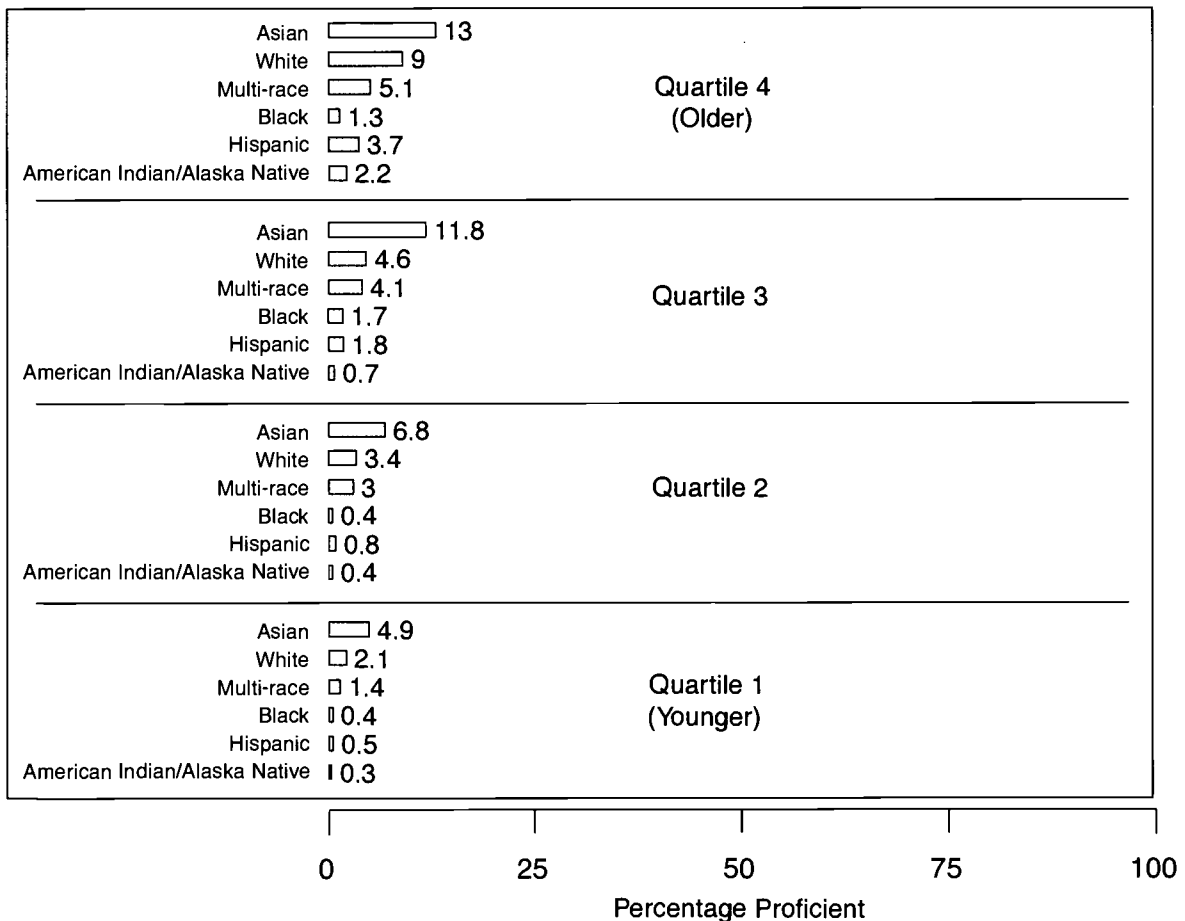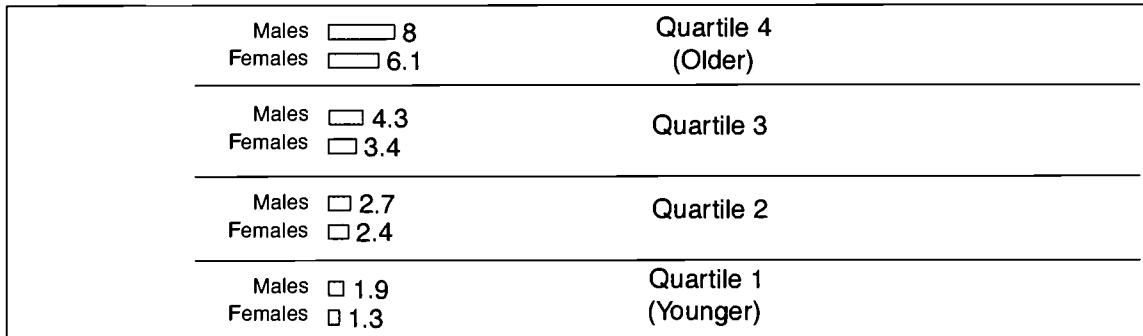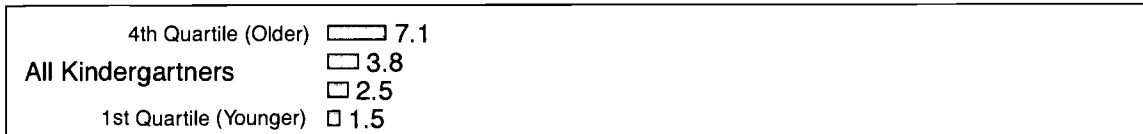Percentage Proficient

*Statistically significant difference between males and females

Figure 29: Percentage of Kindergartners Who Can Perform Multiplication and Division, by Socioeconomic Status and Race/Ethnicity

| | | |
|---|---|---|
| High SES | □ 1.1 | |
| | 0.3 | |
| All Kindergartners ↕ | 0.1 | |
| | 0 | |
| Low SES | 0 | |

| | | |
|---|---|---|
| Asian | ▢ 2.7 | |
| White | □ 1 | |
| Multi-race | □ 0.8 | High SES |
| Black | □ 0.6 | (Quintile 5) |
| Hispanic | □ 0.6 | |
| | | |
| Asian | 0.2 | |
| White | 0.4 | |
| Multi-race | 0.3 | (Quintile 4) |
| Black | 0 | |
| Hispanic | 0 | |
| | | |
| Asian | 0.2 | |
| White | 0.1 | |
| Multi-race | 0 | (Quintile 3) |
| Black | 0 | |
| Hispanic | 0 | |
| | | |
| Asian | 0 | |
| White | 0 | |
| Multi-race | 0 | (Quintile 2) |
| Black | 0 | |
| Hispanic | 0 | |
| | | |
| Asian | □ 0.6 | |
| White | 0 | Low SES |
| Multi-race | 0 | (Quintile 1) |
| Black | 0 | |
| Hispanic | 0 | |

0          25          50          75          100

Percentage Proficient

51
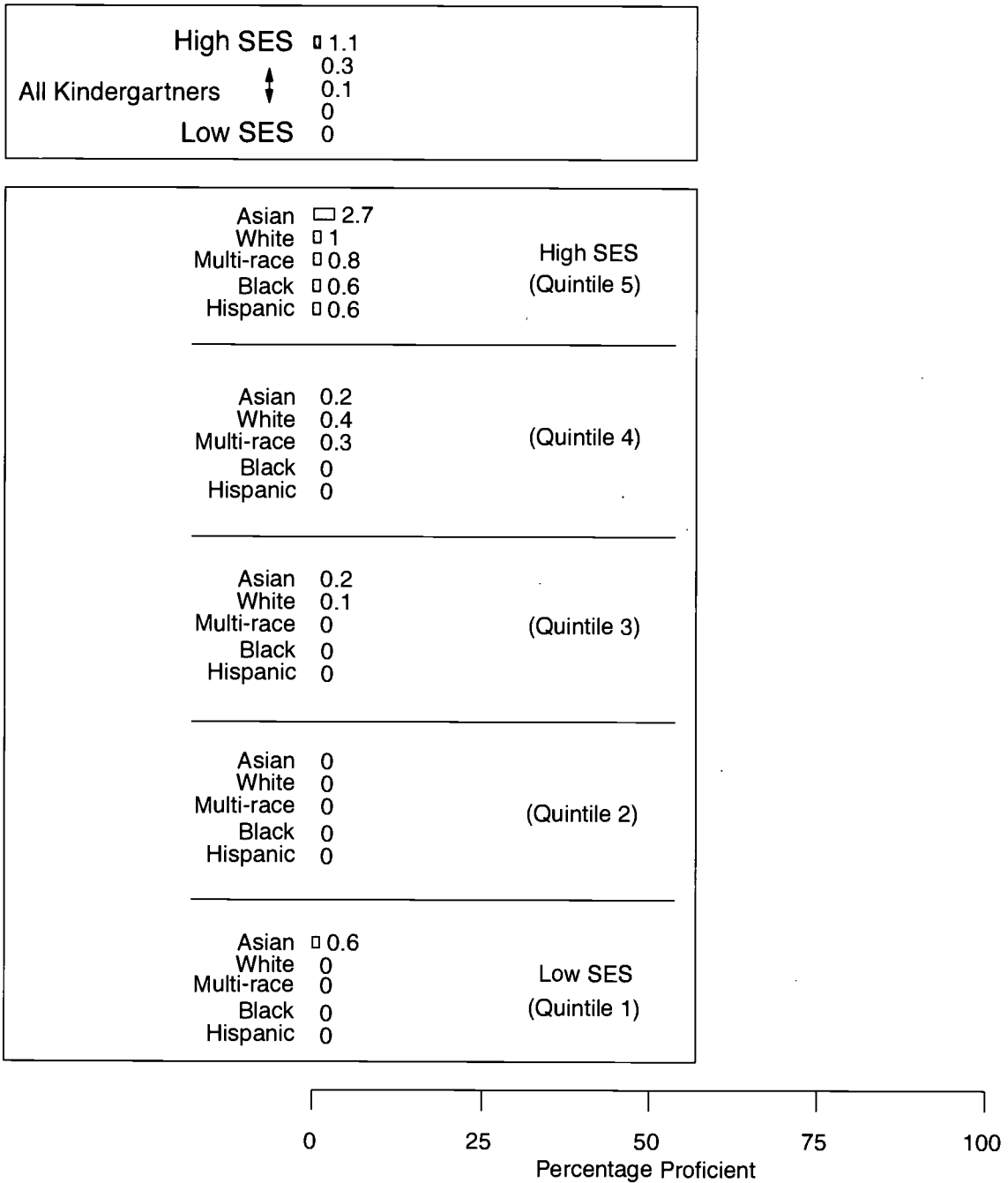
## Figure 30: Percentage of Kindergartners Who Can Perform Multiplication and Division, by Age Quartile, Gender, and Race/Ethnicity

| | |
|---|---|
| 4th Quartile (Older) | ▯ 0.7 |
| All Kindergartners | ▮ 0.3 |
| | ▮ 0.2 |
| 1st Quartile (Younger) | ▮ 0.1 |

| | | |
|---|---|---|
| Males | ▯ 1 | Quartile 4 |
| Females | ▮ 0.4 | (Older) |
| Males | ▮ 0.4 | Quartile 3 |
| Females | ▮ 0.1 | |
| Males | ▮ 0.3 | Quartile 2 |
| Females | 0 | |
| Males | ▮ 0.2 | Quartile 1 |
| Females | 0 | (Younger) |

| | | |
|---|---|---|
| Asian | ▢ 2.4 | |
| White | ▯ 1 | |
| Multi-race | ▮ 0.3 | Quartile 4 |
| Black | 0 | (Older) |
| Hispanic | ▮ 0.3 | |
| American Indian/Alaska Native | ▮ 0.1 | |
| Asian | ▯ 1.1 | |
| White | ▮ 0.3 | |
| Multi-race | ▮ 0.1 | Quartile 3 |
| Black | ▮ 0.1 | |
| Hispanic | 0 | |
| American Indian/Alaska Native | 0 | |
| Asian | ▯ 1.4 | |
| White | ▮ 0.2 | |
| Multi-race | 0 | Quartile 2 |
| Black | 0 | |
| Hispanic | 0 | |
| American Indian/Alaska Native | 0 | |
| Asian | ▮ 0.3 | |
| White | ▮ 0.1 | |
| Multi-race | 0 | Quartile 1 |
| Black | ▮ 0.1 | (Younger) |
| Hispanic | 0 | |
| American Indian/Alaska Native | 0 | |

```
0        25        50        75        100
```

Percentage Proficient

52

The home environment is critical not only to a child's development, but also to his or her readiness for school and subsequent school performance.[10] The extent to which parents read to their children and the extent to which kindergarten children read books or picture books on their own is of significant interest to educators and policymakers. Such behaviors are thought to be important to a child's academic development and are behaviors that are within the reach of all households, regardless of their socioeconomic status.

This section of the report examines the extent to which parents of kindergartners read to their children and the extent to which kindergartners look at picture books outside of school. This information was gathered from the parents of children participating in the ECLS-K assessment in the fall of 1998. Differences among kindergartners in these experiences are discussed in terms of gender, race/ethnicity, gender within race/ethnicity, socioeconomic status, and race/ethnicity within socioeconomic status categories.

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[10] NCES, 2000; Paul E. Barton and Richard J. Coley, *America's Smallest School: The Family*, Policy Information Report, Policy Information Center, Educational Testing Service, 1992.

Nearly half (46 percent) of all parents reported reading to their children on a daily basis. These data are shown in Figure 31, along with results by race/ ethnicity and gender.

There were a few differences in this area of home reading experiences among racial/ethnic groups. Asian and White parents were more likely to read to their children every day than were Black parents, and White parents were also more likely than Hispanic parents to read to their children daily. These differences were small, however — about one-quarter of a standard deviation or less.

Overall, among all kindergartners, parents were more likely to read every day to girls than to boys, although the difference was small. This gender gap was also the case among White kindergartners. Among other racial/ethnic groups, there were no statistically significant gender differences.

There was a strong relationship between a kindergartner's SES and the extent to which their parents read to them, as shown in Figure 32. At the highest quintile of SES, 62 percent of the parents reported reading to their child every day, compared to only 36 percent of the parents at the lowest quintile of SES, a difference of about one-half of a standard deviation.

The lower portion of Figure 32 shows the percentage of parents reading to their child every day for each racial/ethnic category grouped into quintiles of SES. There were no statistically significant differences among racial/ethnic groups when they were grouped by SES.

## Figure 31: Percentage of Kindergartners Whose Parents Read to Them Every Day, by Gender and Race/Ethnicity

All Kindergartners ......... 46
Males ......... 44
Females ......... 48*

Asian ......... 49
White ......... 49
Multi-race ......... 43
Native Hawaiian/Pacific Island ......... 47
Black ......... 42
Hispanic ......... 35
American Indian/Alaska Native ......... 40

Asian Males ......... 48
Asian Females ......... 49

White Males ......... 47
White females ......... 52*

Multi-race Males ......... 40
Multi-race Females ......... 46

Native Hawaiian/Pacific Island Males ......... 45
Native Hawaiian/Pacific Island Females ......... 49

Black Males ......... 33
Black Females ......... 37

Hispanic Males ......... 40
Hispanic Females ......... 44

American Indian/Alaska Native Males ......... 40
American Indian/Alaska Native Females ......... 41

0      25      50      75      100
Percentage

*Statistically significant differences between males and females.

## Figure 32: Percentage of Kindergartners Whose Parents Read to Them Every Day, by Socioeconomic Status and Race/Ethnicity
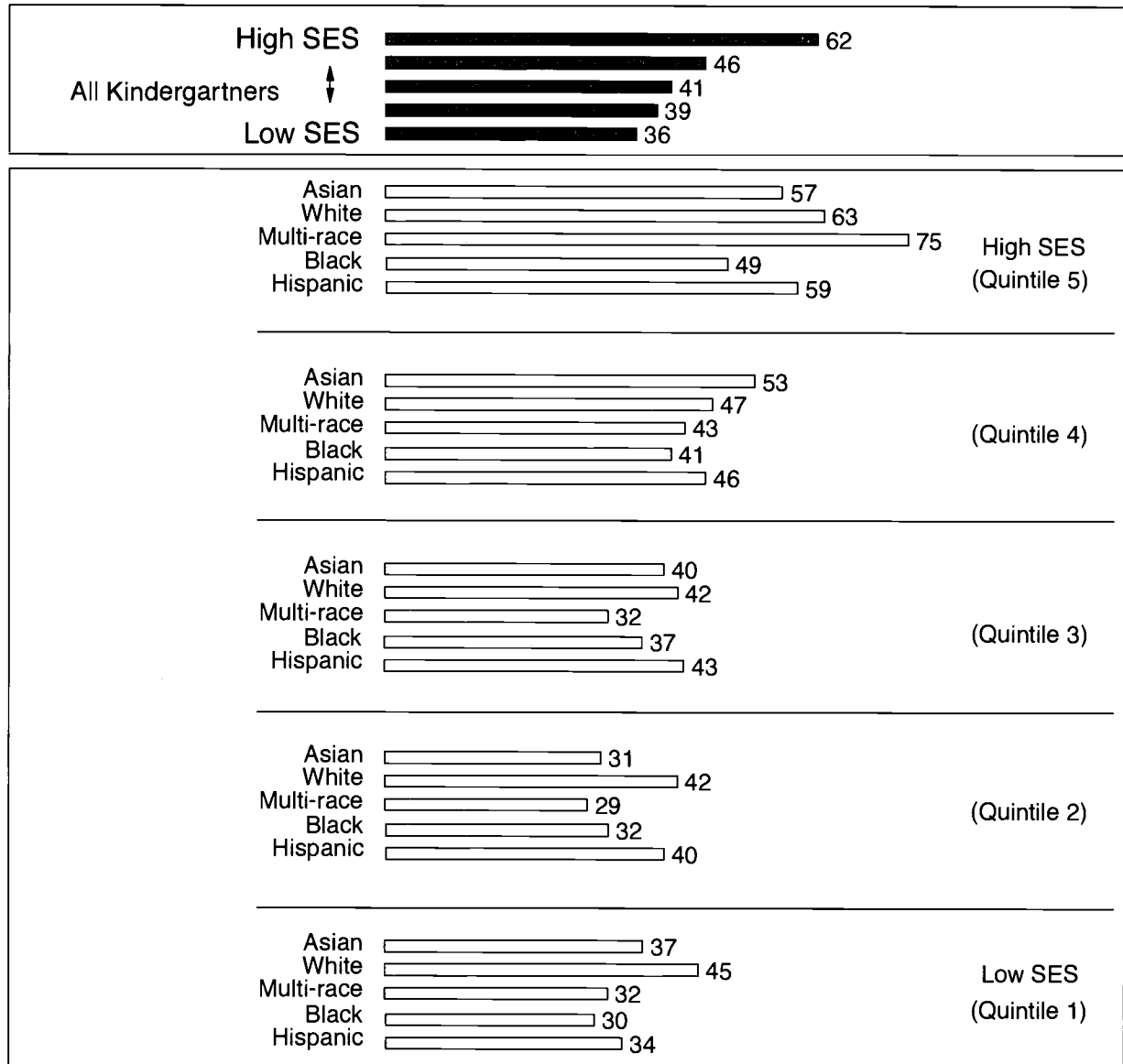
| | Percentage |
|---|---|
| High SES | 62 |
| | 46 |
| All Kindergartners | 41 |
| | 39 |
| Low SES | 36 |

**High SES (Quintile 5)**

| | Percentage |
|---|---|
| Asian | 57 |
| White | 63 |
| Multi-race | 75 |
| Black | 49 |
| Hispanic | 59 |

**(Quintile 4)**

| | Percentage |
|---|---|
| Asian | 53 |
| White | 47 |
| Multi-race | 43 |
| Black | 41 |
| Hispanic | 46 |

**(Quintile 3)**

| | Percentage |
|---|---|
| Asian | 40 |
| White | 42 |
| Multi-race | 32 |
| Black | 37 |
| Hispanic | 43 |

**(Quintile 2)**

| | Percentage |
|---|---|
| Asian | 31 |
| White | 42 |
| Multi-race | 29 |
| Black | 32 |
| Hispanic | 40 |

**Low SES (Quintile 1)**

| | Percentage |
|---|---|
| Asian | 37 |
| White | 45 |
| Multi-race | 32 |
| Black | 30 |
| Hispanic | 34 |

Percentage: 0   25   50   75   100

Finally, ECLS obtained information from parents on the frequency with which their kindergarten children looked at picture books outside of school within a one-week period. Among all kindergartners, 50 percent looked at picture books every day. These data are shown in Figure 33. There were no racial/ethnic differences in the percentage of kindergartners looking at picture books outside of school every day.

Female kindergartners (57 percent) were more likely than males (45 percent) to look at picture books every day, a difference of about one-quarter of a standard deviation. This gender difference also applies to White kindergartners.

As shown in Figure 34, there was a strong relationship between socioeconomic status and the percentage of kindergartners who looked at picture books outside of school every day. In the highest SES quintile, 62 percent of students looked at picture books everyday, compared to 45 percent in the lowest SES quintile (a difference of about one-third of a standard deviation). The relationship with SES was strong throughout the distribution.

In comparing racial/ethnic groups within SES groups, there was only one difference. At the lowest quintile of SES, White kindergartners were more likely to look at picture books outside of school than were Hispanic kindergartners (a difference of about one-quarter of a standard deviation).

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## Figure 33: Percentage of Kindergartners Looking at Picture Books Outside of School Every Day, by Race/Ethnicity and Gender

| | Percentage |
|---|---|
| All Kindergartners | 50 |
| Males | 45 |
| Females | 57* |

| | Percentage |
|---|---|
| Asian | 51 |
| White | 54 |
| Multi-race | 47 |
| Native Hawaiian/Pacific Island | 49 |
| Black | 48 |
| Hispanic | 47 |
| American Indian/Alaska Native | 50 |

| | Percentage |
|---|---|
| Asian Males | 47 |
| Asian Females | 54 |
| White Males | 47 |
| White females | 60* |
| Multi-race Males | 40 |
| Multi-race Females | 54 |
| Native Hawaiian/Pacific Island Males | 44 |
| Native Hawaiian/Pacific Island Females | 54 |
| Black Males | 42 |
| Black Females | 53 |
| Hispanic Males | 42 |
| Hispanic Females | 52 |
| American Indian/Alaska Native Males | 45 |
| American Indian/Alaska Native Females | 56 |

0    25    50    75    100

Percentage

*Statistically significant difference between males and females.

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**Figure 34: Percentage of Kindergartners Looking at Picture Books Outside of School Every Day, by Socioeconomic Status and Race/Ethnicity**

| | Percentage | SES Category |
|---|---|---|
| High SES | 62 | |
| All Kindergartners | 53 | |
| | 48 | |
| | 47 | |
| Low SES | 45 | |

**High SES (Quintile 5)**
- Asian: 59
- White: 62
- Multi-race: 61
- Black: 55
- Hispanic: 62

**(Quintile 4)**
- Asian: 56
- White: 54
- Multi-race: 49
- Black: 51
- Hispanic: 51

**(Quintile 3)**
- Asian: 41
- White: 48
- Multi-race: 41
- Black: 48
- Hispanic: 49

**(Quintile 2)**
- Asian: 37
- White: 47
- Multi-race: 38
- Black: 44
- Hispanic: 47

**Low SES (Quintile 1)**
- Asian: 39
- White: 52
- Multi-race: 43
- Black: 40
- Hispanic: 44

Percentage scale: 0, 25, 50, 75, 100

Percentage

Children start kindergarten with varying degrees of reading and mathematics skills. Children also differ with respect to their early home reading experiences — being read to by their parents and looking at picture books outside of school. To be sure, there are kindergartners in every racial/ethnic, socioeconomic, and age group who show high levels of school readiness. But the overall finding of these analyses is that, on average, there are many statistically significant differences in the readiness of the nation's kindergartners to learn reading and mathematics.

Asian and White children were more likely to begin school with proficiency in reading and mathematics skills than were children from other racial/ethnic groups. Gender differences in reading and mathematics were already present at the beginning of kindergarten, as well. In reading, girls were more likely than boys to be able to recognize letters and to recognize the beginning and ending sounds of words. In math, girls were more likely than boys to be able to perform basic math tasks, but boys were more likely to be proficient in more advanced skills — addition, subtraction, multiplication, and division.

Socioeconomic status was also found to be strongly related to school readiness. When kindergartners were grouped according to SES, those in the higher SES groups were more likely than those in the lower SES groups to demonstrate various reading and mathematics skills. When children from different racial/ethnic groups were compared with those of similar SES, however, many of the performance disparities disappeared. As might be expected, age was related to proficiency as well.

Inequalities also existed in children's home reading experiences and most of these differences paralleled inequalities in reading and mathematics proficiency. Asian and White parents were more likely to read to their children on a daily basis than were Black parents, and White parents were more likely to read to their children daily than were Hispanic parents. Here again, the frequency of parents reading to their children was

related to SES: parents in higher SES groups were more likely than parents in lower SES groups to read to their children daily. Within the same SES groups, however, this difference disappeared. Parents were more likely to read to girls every day than to boys.

Kindergarten girls were more likely than boys to look at picture books outside of school every day, and children in high SES groups were more likely to do so than were those in lower SES groups. No racial/ethnic differences were found in picture book reading overall. However, when those in similar SES groups were compared, White kindergarteners in the lowest SES group were more likely than Hispanic kindergarteners in that group to look at picture books daily.

What conclusions can be drawn from these data? First and foremost, to reduce the pervasive inequalities in students' success in school it is necessary to address the differences that exist among children before they start school. Children come to kindergarten with a variety of preschool and home experiences. Many have been enrolled in daycare, preschool programs, and/or Head Start, but some have not. The nature and quality of these programs vary greatly. Children also come from different family circumstances. Some children start school at an early age; others are enrolled later for various reasons. Many have not learned to speak English, while others speak it as a second language. Some are poor. Some have disabilities that may affect their ability to learn.

The data in this report suggest that identifying children who may be at risk of school failure and making available quality preschool experiences that provide these students with the needed skills are important for reducing inequalities in school readiness. In identifying at-risk students, these data suggest a second conclusion: policymakers need to be sensitive to the complex nature of school readiness and focus their efforts accordingly. Policymakers cannot target a group of students based upon a single demographic characteristic like income, for example. Rather, they need to take into account the interactions among race/ethnicity,

gender, socioeconomic status, and age. They also need to recognize that a given group of students may be at-risk in one subject or area within a subject, and not in another.

This report represents only a first step in understanding inequality in school readiness. Other studies should be undertaken to help explain these inequalities and determine how to overcome them. To what extent are family factors important? Availability and quality of early childhood programs? Age at school entry? Early screening for learning disabilities, developmental delays, and other potential needs? School characteristics? Statistical models should be developed using ECLS data to address these issues.

Finally, ECLS-K is one in a long list of studies that reinforces the importance of home factors in child development. The ECLS-K database should be systematically explored to identify and disseminate specific parent behaviors that make a difference in the learning readiness of children. Further, as the subsequent phases of this longitudinal study are undertaken, it will be important to explore what happens to early inequalities as children proceed from kindergarten onward. Some important questions include the following. How do differences in proficiency among different types of students change as the students progress through school? What are the characteristics of the "less ready" kindergartners who go on to achieve success in school? Do differences in proficiency that are related to age persist as students mature? What school characteristics or teaching practices seem to be effective in overcoming an "uneven start?"

Addressing these and other important questions will enable us to identify ways in which schools can help all children — regardless of their backgrounds, their characteristics, or their school readiness — to achieve success in school.

## Appendix Figure 1: Distribution of Kindergartners by Socioeconomic Status Quintile and Race/Ethnicity
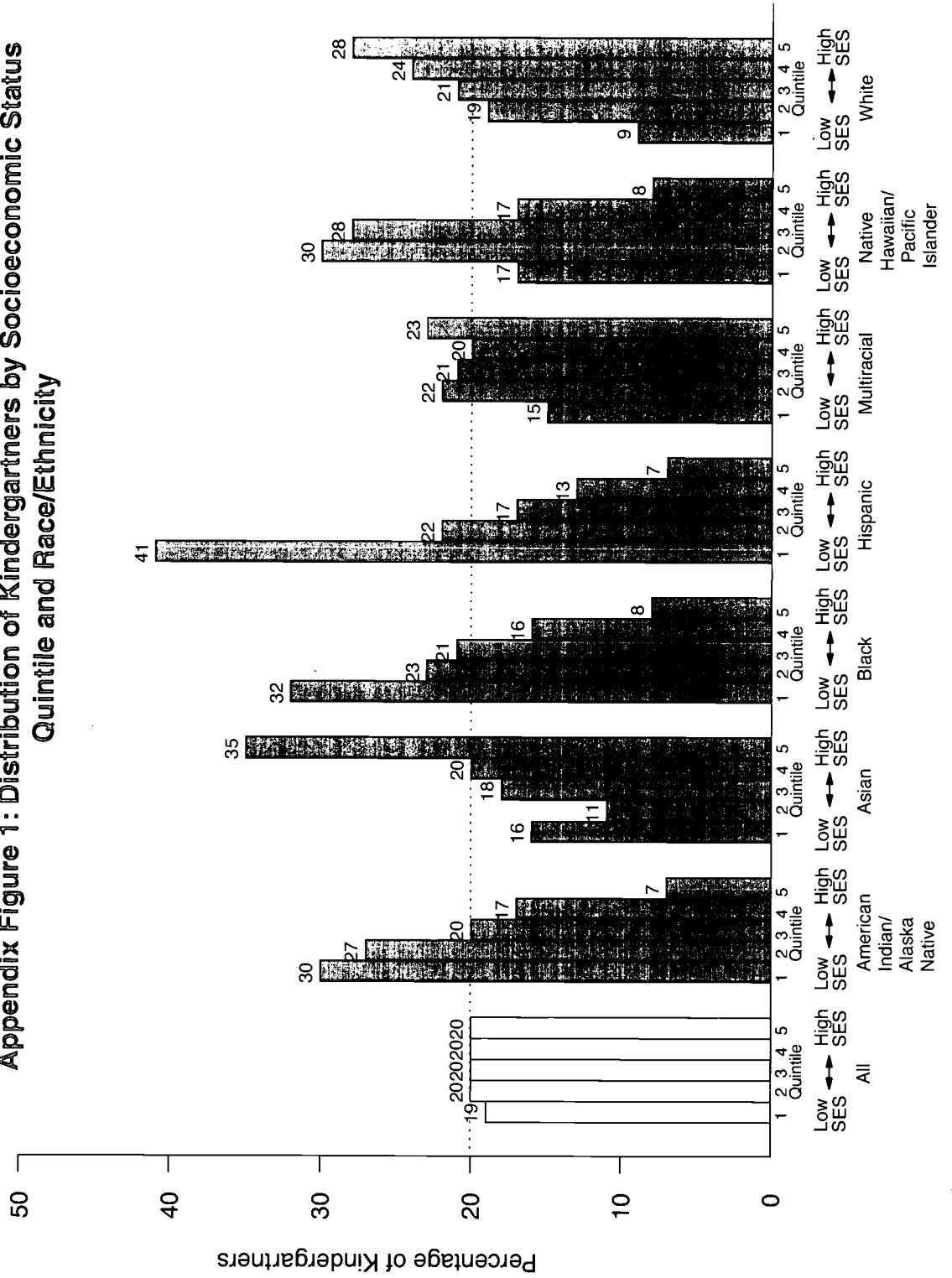
Appendix Figure 2: Distribution of Kindergartners by Age Quartile and Race/Ethnicity

Age Quartiles

Q1 = 54 to 65 months
Q2 = 65 to 68 months
Q3 = 68 to 71 months
Q4 = 71 to 79 months
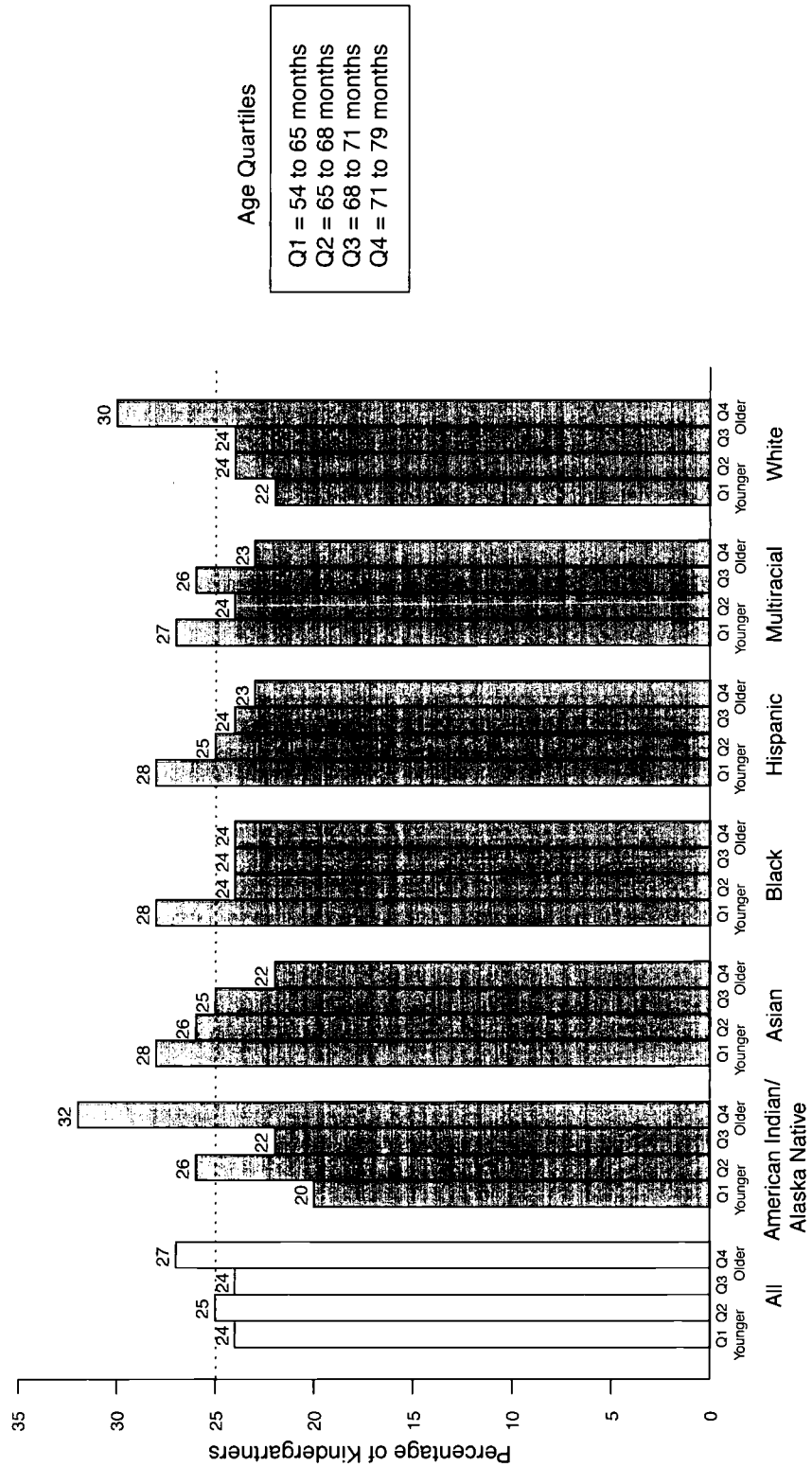
## Appendix Table 1: Sample Sizes

| | N | Weighted N | | Socioeconomic Status | N | Weighted N |
|---|---|---|---|---|---|---|
| **All** | 15,594 | 3,172,105 | | SES Q5 (High) | 3,688 | 696,769 |
| Male | 7,830 | 1,605,378 | | SES Q4 | 3,460 | 680,458 |
| Female | 7,764 | 1,566,726 | | SES Q3 | 3,240 | 671,873 |
| | | | | SES Q2 | 2,977 | 636,015 |
| **White** | 9,558 | 1,990,606 | | SES Q1(Low) | 2,229 | 486,987 |
| Male | 4,835 | 1,013,212 | | | | |
| Female | 4,723 | 977,394 | | White Q5 | 3,801 | 555,222 |
| | | | | Black Q5 | 214 | 43,802 |
| **Black** | 2,395 | 518,221 | | Hispanic Q5 | 227 | 44,169 |
| Male | 1,174 | 257,163 | | Asian Q5 | 288 | 29,290 |
| Female | 1,221 | 261,053 | | Multi-race Q5 | 110 | 17,718 |
| | | | | | | |
| **Hispanic** | 2,029 | 436,835 | | White Q4 | 2,346 | 475,009 |
| Male | 1,022 | 221,049 | | Black Q4 | 388 | 80,983 |
| Female | 1,007 | 215,786 | | Hispanic Q4 | 392 | 80,102 |
| | | | | Asian Q4 | 157 | 15,470 |
| **Asian** | 694 | 71,079 | | Multi-race Q4 | 90 | 15,123 |
| Male | 330 | 33,951 | | | | |
| Female | 364 | 37,128 | | White Q3 | 2,025 | 427,649 |
| | | | | Black Q3 | 494 | 108,311 |
| **NH/PI** | 173 | 17,095 | | Hispanic Q3 | 421 | 89,844 |
| Male | 94 | 9,262 | | Asian Q3 | 97 | 11,053 |
| Female | 79 | 7,832 | | Multi-race Q3 | 96 | 17,042 |
| | | | | | | |
| **AI/AN** | 279 | 54,477 | | White Q2 | 1,667 | 365,560 |
| Male | 133 | 26,437 | | Black Q2 | 550 | 121,665 |
| Female | 146 | 28,040 | | Hispanic Q2 | 473 | 104,666 |
| | | | | Asian Q2 | 74 | 6,990 |
| **Multi-race** | 444 | 79,256 | | Multi-race Q2 | 88 | 17,830 |
| Male | 228 | 41,210 | | | | |
| Female | 216 | 38,045 | | White Q1 | 719 | 167,165 |
| | | | | Black Q1 | 749 | 163,457 |
| | | | | Hispanic Q1 | 516 | 118,052 |
| | | | | Asian Q1 | 78 | 8,275 |
| | | | | Multi-race Q1 | 60 | 11,541 |

Key: AI/AN = American Indian/Alaska Native; A = Asian; B = Black; H/PI = Hawaiian Native/Pacific Islander; H = Hispanic; M = Multi-race; W = White.

Note that for SES comparisons, American Indian/Alaska Native and Native Hawaiian/Pacific Islander groups are not included because of insufficient cell sizes in some of the SES quintiles. For the age analysis, Hawaiian Native/Pacific Islander kindergartners are excluded for the same reason.

## Appendix Table 1: (Continued)

| Age | N | Weighted N |
|---|---|---|
| Age Q4 (Older) | 4,266 | 770,849 |
| Age Q3 | 3,708 | 776,467 |
| Age Q2 | 3,782 | 755,086 |
| Age Q1 (Younger) | 3,836 | 869,304 |
| | | |
| White Q4 | 2,868 | 588,642 |
| Black Q4 | 580 | 125,733 |
| Hispanic Q4 | 458 | 99,126 |
| Asian Q4 | 143 | 15,505 |
| Multi-race Q4 | 101 | 18,491 |
| AI/AN Q4 | 90 | 17,198 |
| | | |
| White Q3 | 2,257 | 471,311 |
| Black Q3 | 570 | 124,257 |
| Hispanic Q3 | 484 | 104,289 |
| Asian Q3 | 175 | 17,446 |
| Multi-race Q3 | 115 | 20,296 |
| AI/AN Q3 | 60 | 12,160 |
| | | |
| White Q2 | 2,296 | 485,066 |
| Black Q2 | 577 | 125,473 |
| Hispanic Q2 | 510 | 110,681 |
| Asian Q2 | 178 | 18,219 |
| Multi-race Q2 | 107 | 18,691 |
| AI/AN Q2 | 73 | 14,013 |
| | | |
| White Q1 | 2,135 | 445,189 |
| Black Q1 | 668 | 142,757 |
| Hispanic Q1 | 577 | 122,739 |
| Asian Q1 | 198 | 19,909 |
| Multi-race Q1 | 121 | 21,776 |
| AI/AN Q1 | 56 | 11,105 |

Appendix Table 2: Reading - Means (M), Standard Errors (SE), and Standard Deviations (SD), by Race/Ethnicity and Gender

| | Letter Recognition | | | Beginning Sounds | | | Ending Sounds | | | Sight Words | | | Words in Context | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD |
| **All** | .65 | .007 | .42 | .30 | .006 | .36 | .17 | .004 | .27 | .024 | .002 | .13 | .009 | .001 | .08 |
| Male | .61 | .010 | .43 | .27 | .006 | .35 | .15 | .006 | .26 | .026 | .003 | .13 | .011 | .002 | .08 |
| Female | .69 | .010 | .41 | .33 | .008 | .36 | .19 | .006 | .28 | .024 | .003 | .12 | .008 | .001 | .07 |
| **White** | .71 | .008 | .39 | .34 | .008 | .37 | .20 | .006 | .29 | .029 | .003 | .13 | .010 | .001 | .08 |
| Male | .67 | .012 | .41 | .31 | .011 | .36 | .18 | .008 | .28 | .029 | .004 | .14 | .012 | .002 | .09 |
| Female | .75 | .011 | .37 | .37 | .011 | .37 | .22 | .009 | .29 | .028 | .004 | .13 | .009 | .002 | .07 |
| **Black** | .57 | .019 | .43 | .20 | .013 | .30 | .10 | .009 | .21 | .012 | .004 | .09 | .004 | .002 | .04 |
| Male | .54 | .027 | .54 | .19 | .019 | .30 | .10 | .013 | .20 | .014 | .006 | .10 | .006 | .003 | .05 |
| Female | .61 | .026 | .42 | .22 | .019 | .31 | .11 | .013 | .22 | .009 | .004 | .07 | .002 | .002 | .03 |
| **Hispanic** | .50 | .021 | .44 | .20 | .015 | .31 | .11 | .010 | .22 | .012 | .004 | .09 | .005 | .002 | .06 |
| Male | .45 | .030 | .44 | .16 | .019 | .28 | .08 | .013 | .19 | .011 | .006 | .09 | .005 | .003 | .05 |
| Female | .54 | .030 | .44 | .24 | .023 | .34 | .13 | .016 | .24 | .012 | .006 | .09 | .005 | .004 | .06 |
| **Asian** | .80 | .027 | .33 | .44 | .033 | .40 | .29 | .028 | .35 | .087 | .021 | .25 | .047 | .015 | .18 |
| Male | .79 | .040 | .33 | .41 | .046 | .39 | .26 | .040 | .34 | .084 | .030 | .25 | .045 | .021 | .17 |
| Female | .81 | .038 | .33 | .46 | .046 | .41 | .31 | .040 | .36 | .090 | .030 | .26 | .049 | .021 | .18 |
| **NH/PI** | .58 | .071 | .43 | .26 | .057 | .35 | .15 | .042 | .25 | .028 | .023 | .14 | .007 | .011 | .07 |
| Male | .50 | .096 | .43 | .22 | .077 | .34 | .14 | .060 | .27 | .034 | .032 | .14 | .003 | .002 | .01 |
| Female | .69 | .100 | .41 | .31 | .083 | .34 | .16 | .058 | .24 | .021 | .032 | .13 | .013 | .025 | .10 |
| **AI/AN** | .36 | .055 | .42 | .13 | .034 | .26 | .07 | .022 | .17 | .005 | .007 | .05 | .008 | .001 | .01 |
| Male | .35 | .079 | .42 | .13 | .050 | .26 | .07 | .034 | .18 | .006 | .010 | .05 | .005 | .001 | .01 |
| Female | .37 | .076 | .42 | .13 | .046 | .26 | .06 | .029 | .16 | .004 | .010 | .05 | .001 | .003 | .01 |
| **Multi-race** | .61 | .044 | .43 | .27 | .036 | .35 | .15 | .028 | .27 | .035 | .016 | .16 | .017 | .011 | .11 |
| Male | .56 | .064 | .44 | .25 | .050 | .35 | .15 | .040 | .28 | .046 | .027 | .19 | .024 | .019 | .13 |
| Female | .66 | .061 | .42 | .28 | .051 | .35 | .16 | .039 | .26 | .023 | .018 | .12 | .010 | .013 | .08 |

Appendix Table 3: Reading - Means (M), Standard Errors (SE), and Standard Deviations (SD), by SES and Race/Ethnicity

| | Letter Recognition | | | Beginning Sounds | | | Ending Sounds | | | Sight Words | | | Words in Context | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD |
| SES Q5 (High) | .85 | .001 | .31 | .51 | .013 | .39 | .33 | .012 | .34 | .06 | .007 | .20 | .026 | .004 | .13 |
| SES Q4 | .74 | .013 | .37 | .35 | .013 | .37 | .20 | .010 | .28 | .03 | .004 | .13 | .010 | .003 | .08 |
| SES Q3 | .64 | .015 | .41 | .26 | .012 | .33 | .14 | .009 | .23 | .02 | .003 | .09 | .004 | .002 | .05 |
| SES Q2 | .55 | .017 | .43 | .19 | .011 | .29 | .09 | .007 | .20 | .01 | .003 | .08 | .004 | .002 | .05 |
| SES Q1(Low) | .39 | .019 | .42 | .10 | .009 | .20 | .04 | .005 | .12 | .003 | .002 | .04 | .001 | .001 | .03 |
| White Q5 | .86 | .012 | .29 | .52 | .015 | .38 | .33 | .014 | .34 | .06 | .007 | .19 | .022 | .005 | .12 |
| Black Q5 | .77 | .054 | .37 | .42 | .058 | .39 | .26 | .047 | .32 | .03 | .020 | .13 | .009 | .011 | .07 |
| Hispanic Q5 | .73 | .057 | .40 | .41 | .056 | .39 | .25 | .045 | .32 | .05 | .027 | .19 | .026 | .021 | .14 |
| Asian Q5 | .93 | .026 | .21 | .64 | .048 | .37 | .46 | .048 | .38 | .17 | .043 | .33 | .089 | .031 | .24 |
| Multi-race Q5 | .80 | .074 | .36 | .46 | .082 | .40 | .32 | .077 | .37 | .13 | .064 | .31 | .077 | .047 | .23 |
| White Q4 | .76 | .016 | .36 | .37 | .016 | .37 | .21 | .013 | .29 | .03 | .005 | .13 | .009 | .003 | .08 |
| Black Q4 | .74 | .041 | .38 | .33 | .039 | .36 | .19 | .030 | .27 | .03 | .017 | .15 | .014 | .010 | .09 |
| Hispanic Q4 | .68 | .045 | .41 | .32 | .039 | .36 | .18 | .030 | .27 | .02 | .012 | .11 | .008 | .008 | .07 |
| Asian Q4 | .80 | .058 | .34 | .40 | .066 | .38 | .24 | .053 | .31 | .04 | .031 | .18 | .025 | .024 | .14 |
| Multi-race Q4 | .73 | .088 | .39 | .37 | .086 | .38 | .21 | .064 | .78 | .02 | .018 | .08 | .001 | .001 | .01 |
| White Q3 | .67 | .019 | .41 | .28 | .016 | .34 | .15 | .012 | .25 | .017 | .005 | .10 | .005 | .002 | .05 |
| Black Q3 | .65 | .040 | .41 | .23 | .030 | .31 | .11 | .020 | .20 | .008 | .006 | .07 | .001 | .001 | .02 |
| Hispanic Q3 | .54 | .046 | .43 | .21 | .033 | .31 | .11 | .022 | .21 | .010 | .007 | .07 | .001 | .002 | .02 |
| Asian Q3 | .77 | .072 | .32 | .31 | .078 | .35 | .18 | .064 | .29 | .056 | .046 | .21 | .027 | .029 | .13 |
| Multi-race Q3 | .57 | .093 | .42 | .18 | .063 | .29 | .09 | .040 | .18 | .003 | .005 | .02 | .000 | .000 | .00 |
| White Q2 | .60 | .022 | .42 | .21 | .016 | .30 | .10 | .011 | .20 | .012 | .005 | .09 | .005 | .003 | .06 |
| Black Q2 | .56 | .039 | .42 | .17 | .026 | .28 | .09 | .017 | .19 | .010 | .007 | .08 | .003 | .003 | .03 |
| Hispanic Q2 | .44 | .043 | .43 | .14 | .026 | .26 | .07 | .017 | .17 | .004 | .004 | .04 | .001 | .002 | .02 |
| Asian Q2 | .58 | .101 | .40 | .18 | .072 | .28 | .08 | .045 | .18 | .002 | .003 | .01 | .000 | .000 | .00 |
| Multi-race Q2 | .47 | .103 | .45 | .16 | .062 | .27 | .08 | .040 | .17 | .001 | .001 | .01 | .000 | .000 | .00 |
| White Q1 | .45 | .035 | .43 | .12 | .019 | .23 | .06 | .012 | .15 | .006 | .005 | .07 | .003 | .003 | .04 |
| Black Q1 | .41 | .033 | .42 | .08 | .014 | .17 | .03 | .007 | .09 | .000 | .000 | .01 | .000 | .000 | .00 |
| Hispanic Q1 | .30 | .038 | .40 | .08 | .018 | .19 | .03 | .010 | .11 | .002 | .003 | .04 | .001 | .002 | .02 |
| Asian Q1 | .60 | .106 | .43 | .17 | .066 | .27 | .08 | .042 | .17 | .007 | .019 | .08 | .006 | .018 | .07 |
| Multi-race Q1 | .41 | .121 | .43 | .12 | .063 | .22 | .05 | .042 | .15 | .012 | .023 | .08 | .000 | .001 | .01 |

Appendix Table 4: Reading - Means (M), Standard Errors (SE), and Standard Deviations (SD), by Age and Race/Ethnicity

| | Letter Recognition | | | Beginning Sounds | | | Ending Sounds | | | Sight Words | | | Words in Context | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD |
| Age Q4 (Older) | .72 | .013 | .39 | .37 | .013 | .39 | .23 | .011 | .32 | .04 | .006 | .17 | 1.7 | .004 | .11 |
| Age Q3 | .68 | .015 | .41 | .32 | .013 | .36 | .18 | .010 | .28 | .02 | .005 | .13 | 0.9 | .003 | .08 |
| Age Q2 | .62 | .015 | .43 | .27 | .012 | .34 | .15 | .009 | .25 | .02 | .004 | .11 | 0.6 | .002 | .07 |
| Age Q1 (Younger) | .58 | .015 | .43 | .22 | .011 | .31 | .11 | .008 | .22 | .01 | .003 | .09 | 0.5 | .002 | .06 |
| White Q4 | .77 | .015 | .37 | .41 | .016 | .39 | .26 | .013 | .33 | .047 | .007 | .18 | .019 | .005 | .12 |
| Black Q4 | .66 | .037 | .41 | .25 | .030 | .33 | .14 | .022 | .25 | .020 | .011 | .12 | .006 | .005 | .06 |
| Hispanic Q4 | .59 | .044 | .44 | .28 | .037 | .36 | .16 | .027 | .27 | .018 | .011 | .11 | .009 | .009 | .08 |
| Asian Q4 | .83 | .056 | .31 | .47 | .072 | .40 | .31 | .065 | .36 | .096 | .049 | .27 | .060 | .039 | .22 |
| Multi-race Q4 | .71 | .088 | .41 | .35 | .081 | .37 | .22 | .070 | .33 | .080 | .054 | .25 | .038 | .033 | .15 |
| AI/AN Q4 | .49 | .099 | .43 | .18 | .068 | .30 | .09 | .048 | .21 | .013 | .023 | .10 | .003 | .006 | .02 |
| White Q3 | .74 | .017 | .38 | .36 | .017 | .37 | .21 | .013 | .28 | .026 | .006 | .13 | .008 | .003 | .08 |
| Black Q3 | .60 | .039 | .43 | .23 | .029 | .32 | .12 | .021 | .23 | .016 | .010 | .11 | .006 | .006 | .06 |
| Hispanic Q3 | .53 | .044 | .45 | .22 | .031 | .32 | .11 | .022 | .23 | .016 | .010 | .13 | .007 | .008 | .08 |
| Asian Q3 | .82 | .055 | .34 | .51 | .067 | .41 | .34 | .059 | .36 | .091 | .043 | .26 | .047 | .029 | .18 |
| Multi-race Q3 | .66 | .084 | .41 | .33 | .078 | .39 | .20 | .062 | .31 | .037 | .032 | .16 | .016 | .023 | .12 |
| AI/AN Q3 | .35 | .120 | .43 | .14 | .077 | .28 | .07 | .052 | .19 | .003 | .005 | .02 | .000 | .000 | .00 |
| White Q2 | .68 | .018 | .40 | .31 | .016 | .36 | .17 | .012 | .27 | .021 | .005 | .12 | .007 | .003 | .07 |
| Black Q2 | .55 | .039 | .44 | .19 | .027 | .29 | .10 | .018 | .20 | .005 | .004 | .04 | .000 | .000 | .00 |
| Hispanic Q2 | .47 | .043 | .45 | .18 | .029 | .29 | .09 | .019 | .20 | .008 | .007 | .07 | .002 | .003 | .03 |
| Asian Q2 | .78 | .057 | .35 | .41 | .065 | .40 | .27 | .058 | .35 | .109 | .047 | .29 | .058 | .033 | .20 |
| Multi-race Q2 | .52 | .093 | .44 | .18 | .061 | .29 | .10 | .046 | .22 | .008 | .010 | .05 | .000 | .000 | .00 |
| AI/AN Q2 | .25 | .097 | .38 | .10 | .060 | .24 | .05 | .034 | .13 | .000 | .000 | .00 | .000 | .000 | .00 |
| White Q1 | .65 | .019 | .41 | .26 | .016 | .33 | .14 | .011 | .24 | .015 | .005 | .09 | .004 | .002 | .05 |
| Black Q1 | .49 | .036 | .44 | .15 | .022 | .27 | .07 | .015 | .18 | .007 | .006 | .07 | .003 | .004 | .05 |
| Hispanic Q1 | .42 | .040 | .44 | .14 | .024 | .27 | .07 | .016 | .18 | .006 | .006 | .09 | .003 | .004 | .04 |
| Asian Q1 | .78 | .054 | .35 | .38 | .060 | .39 | .24 | .050 | .32 | .057 | .033 | .21 | .028 | .020 | .13 |
| Multi-race Q1 | .54 | .088 | .45 | .21 | .060 | .31 | .10 | .040 | .20 | .018 | .026 | .13 | .016 | .023 | .05 |
| AI/AN Q1 | .31 | .011 | .40 | .09 | .060 | .21 | .04 | .039 | .14 | .000 | .000 | .00 | .000 | .000 | .00 |

## Appendix Table 5: Mathematics - Means (M), Standard Errors (SE), and Standard Deviations (SD), by Race/Ethnicity and Gender

| | Number & Shape | | | Relative Size | | | Ordinal Sequence | | | Addition/Subtraction | | | Multiplication/Division | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD |
| **All** | .93 | .003 | .17 | .57 | .006 | .36 | .21 | .005 | .31 | .039 | .002 | .12 | .003 | .001 | .04 |
| Male | .92 | .004 | .18 | .56 | .007 | .37 | .22 | .007 | .32 | .044 | .003 | .14 | .005 | .001 | .05 |
| Female | .94 | .003 | .16 | .58 | .008 | .36 | .20 | .007 | .30 | .032 | .002 | .11 | .001 | .001 | .02 |
| **White** | .96 | .003 | .13 | .64 | .007 | .35 | .26 | .007 | .33 | .050 | .003 | .14 | .004 | .001 | .04 |
| Male | .95 | .004 | .14 | .64 | .011 | .35 | .27 | .010 | .34 | .058 | .005 | .16 | .007 | .001 | .06 |
| Female | .96 | .004 | .13 | .65 | .010 | .34 | .25 | .010 | .32 | .043 | .004 | .12 | .002 | .001 | .02 |
| **Black** | .89 | .009 | .22 | .41 | .015 | .34 | .09 | .008 | .20 | .009 | .002 | .05 | .000 | .001 | .02 |
| Male | .87 | .015 | .24 | .40 | .022 | .35 | .10 | .013 | .21 | .012 | .004 | .07 | .001 | .001 | .02 |
| Female | .91 | .011 | .19 | .43 | .021 | .34 | .09 | .011 | .19 | .007 | .002 | .03 | .000 | .000 | .00 |
| **Hispanic** | .90 | .009 | .20 | .34 | .017 | .36 | .12 | .011 | .24 | .016 | .003 | .07 | .000 | .001 | .02 |
| Male | .89 | .014 | .21 | .41 | .024 | .35 | .11 | .016 | .23 | .015 | .004 | .07 | .001 | .002 | .02 |
| Female | .91 | .013 | .19 | .45 | .024 | .36 | .13 | .017 | .25 | .017 | .005 | .07 | .000 | .000 | .01 |
| **Asian** | .97 | .009 | .11 | .69 | .027 | .33 | .32 | .030 | .37 | .088 | .017 | .21 | .012 | .006 | .08 |
| Male | .97 | .013 | .10 | .69 | .040 | .33 | .34 | .045 | .38 | .113 | .030 | .25 | .021 | .013 | .10 |
| Female | .97 | .012 | .11 | .69 | .036 | .32 | .30 | .041 | .37 | .065 | .018 | .16 | .004 | .004 | .03 |
| **NH/PI** | .91 | .034 | .21 | .48 | .057 | .35 | .12 | .038 | .23 | .025 | .019 | .12 | .001 | .001 | .01 |
| Male | .89 | .050 | .22 | .42 | .077 | .35 | .10 | .048 | .21 | .028 | .031 | .14 | .002 | .003 | .01 |
| Female | .93 | .045 | .18 | .54 | .084 | .34 | .14 | .062 | .25 | .022 | .022 | .09 | .000 | .001 | .00 |
| **AI/AN** | .81 | .037 | .29 | .35 | .046 | .35 | .08 | .025 | .19 | .010 | .007 | .05 | .000 | .000 | .00 |
| Male | .79 | .057 | .30 | .34 | .067 | .35 | .08 | .038 | .20 | .013 | .014 | .07 | .000 | .001 | .01 |
| Female | .83 | .049 | .27 | .35 | .063 | .35 | .08 | .034 | .19 | .007 | .005 | .03 | .000 | .000 | .00 |
| **Multi-race** | .93 | .016 | .16 | .52 | .038 | .37 | .18 | .030 | .29 | .033 | .012 | .11 | .002 | .003 | .03 |
| Male | .92 | .025 | .17 | .52 | .053 | .37 | .19 | .045 | .31 | .045 | .021 | .14 | .004 | .006 | .04 |
| Female | .94 | .021 | .14 | .52 | .053 | .36 | .16 | .040 | .27 | .021 | .011 | .07 | .000 | .000 | .00 |

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Appendix Table 6: Mathematics - Means (M), Standard Errors (SE), and Standard Deviations (SD), by Socioeconomic Status (SES) and Race/Ethnicity

| | Number & Shape | | | Relative Size | | | Ordinal Sequence | | | Addition/Subtraction | | | Multiplication/Division | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD |
| SES Q5 (High) | .98 | .002 | .07 | .77 | .010 | .29 | .39 | .013 | .37 | .090 | .007 | .20 | .011 | .002 | .07 |
| SES Q4 | .97 | .004 | .11 | .65 | .012 | .34 | .25 | .012 | .32 | .040 | .004 | .13 | .003 | .001 | .03 |
| SES Q3 | .94 | .006 | .15 | .56 | .013 | .35 | .18 | .010 | .28 | .020 | .003 | .09 | .001 | .001 | .02 |
| SES Q2 | .91 | .008 | .20 | .46 | .014 | .35 | .13 | .009 | .24 | .010 | .002 | .06 | .000 | .000 | .01 |
| SES Q1 (Low) | .84 | .012 | .26 | .31 | .014 | .33 | .06 | .007 | .16 | .006 | .002 | .04 | .000 | .001 | .01 |
| White Q5 | .99 | .002 | .06 | .79 | .011 | .28 | .41 | .015 | .37 | .099 | .008 | .20 | .010 | .003 | .07 |
| Black Q5 | .95 | .022 | .15 | .60 | .051 | .34 | .21 | .044 | .30 | .035 | .019 | .13 | .006 | .009 | .06 |
| Hispanic Q5 | .97 | .013 | .09 | .65 | .049 | .34 | .25 | .045 | .31 | .044 | .020 | .14 | .006 | .009 | .07 |
| Asian Q5 | .99 | .005 | .04 | .82 | .032 | .25 | .48 | .050 | .39 | .155 | .035 | .28 | .027 | .015 | .12 |
| Multi-race Q5 | .96 | .023 | .11 | .72 | .069 | .33 | .36 | .078 | .38 | .085 | .036 | .18 | .008 | .012 | .06 |
| White Q4 | .97 | .004 | .09 | .69 | .014 | .32 | .28 | .015 | .34 | .051 | .006 | .14 | .004 | .002 | .04 |
| Black Q4 | .94 | .016 | .15 | .54 | .038 | .34 | .15 | .028 | .26 | .016 | .007 | .06 | .000 | .001 | .01 |
| Hispanic Q4 | .95 | .014 | .13 | .59 | .037 | .34 | .20 | .033 | .30 | .030 | .010 | .09 | .000 | .000 | .00 |
| Asian Q4 | .97 | .020 | .12 | .66 | .056 | .32 | .26 | .058 | .33 | .051 | .066 | .15 | .002 | .001 | .01 |
| Multi-race Q4 | .97 | .021 | .09 | .63 | .077 | .33 | .22 | .070 | .30 | .037 | .031 | .13 | .003 | .008 | .04 |
| White Q3 | .96 | .005 | .12 | .61 | .016 | .34 | .21 | .014 | .30 | .030 | .005 | .10 | .001 | .001 | .02 |
| Black Q3 | .92 | .018 | .19 | .47 | .033 | .34 | .11 | .020 | .21 | .011 | .005 | .06 | .000 | .000 | .00 |
| Hispanic Q3 | .92 | .018 | .17 | .46 | .037 | .36 | .13 | .025 | .24 | .012 | .004 | .04 | .000 | .000 | .00 |
| Asian Q3 | .98 | .011 | .05 | .64 | .068 | .31 | .23 | .074 | .34 | .050 | .030 | .14 | .002 | .003 | .01 |
| Multi-race Q3 | .95 | .032 | .14 | .50 | .074 | .33 | .12 | .049 | .22 | .012 | .009 | .04 | .000 | .000 | .00 |
| White Q2 | .92 | .009 | .18 | .52 | .019 | .35 | .16 | .014 | .27 | .020 | .004 | .07 | .000 | .001 | .01 |
| Black Q2 | .89 | .020 | .21 | .40 | .031 | .34 | .08 | .015 | .16 | .040 | .002 | .02 | .000 | .000 | .00 |
| Hispanic Q2 | .89 | .020 | .20 | .38 | .034 | .34 | .09 | .021 | .21 | .010 | .004 | .04 | .000 | .000 | .00 |
| Asian Q2 | .93 | .039 | .15 | .46 | .091 | .36 | .13 | .061 | .24 | .016 | .015 | .06 | .000 | .000 | .00 |
| Multi-race Q2 | .88 | .051 | .22 | .41 | .081 | .35 | .10 | .050 | .22 | .011 | .011 | .04 | .000 | .000 | .00 |
| White Q1 | .87 | .019 | .24 | .39 | .028 | .35 | .09 | .016 | .20 | .008 | .003 | .04 | .000 | .000 | .00 |
| Black Q1 | .82 | .021 | .27 | .27 | .023 | .29 | .04 | .008 | .11 | .002 | .001 | .02 | .000 | .000 | .00 |
| Hispanic Q1 | .82 | .025 | .26 | .26 | .028 | .30 | .04 | .013 | .15 | .006 | .004 | .05 | .000 | .000 | .00 |
| Asian Q1 | .92 | .050 | .20 | .51 | .084 | .34 | .15 | .072 | .29 | .033 | .028 | .12 | .006 | .018 | .07 |
| Multi-race Q1 | .87 | .052 | .19 | .027 | .082 | .29 | .05 | .050 | .18 | .017 | .028 | .10 | .000 | .000 | .00 |

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Appendix Table 7: Mathematics - Means (M), Standard Errors (SE), and Standard Deviations (SD), by Age and Race/Ethnicity

| | Number & Shape | | | Relative Size | | | Ordinal Sequence | | | Addition/Subtraction | | | Multiplication/Division | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD | M | SE | SD |
| Age Q4 (Older) | .96 | .004 | .13 | .68 | .011 | .35 | .31 | .012 | .37 | .071 | .006 | .18 | .007 | .002 | .06 |
| Age Q3 | .95 | .005 | .15 | .60 | .013 | .36 | .23 | .011 | .32 | .038 | .004 | .12 | .003 | .001 | .04 |
| Age Q2 | .93 | .006 | .18 | .54 | .013 | .36 | .18 | .010 | .29 | .025 | .003 | .09 | .002 | .001 | .03 |
| Age Q1 (Younger) | .90 | .007 | .21 | .44 | .013 | .36 | .12 | .008 | .23 | .015 | .003 | .07 | .001 | .001 | .02 |
| White Q4 | .97 | .005 | .11 | .73 | .013 | .32 | .37 | .015 | .38 | .090 | .008 | .20 | .010 | .003 | .07 |
| Black Q4 | .94 | .015 | .16 | .52 | .031 | .35 | .14 | .022 | .25 | .013 | .005 | .05 | .000 | .000 | .00 |
| Hispanic Q4 | .94 | .014 | .14 | .56 | .037 | .37 | .21 | .032 | .32 | .037 | .012 | .12 | .003 | .004 | .04 |
| Asian Q4 | .97 | .022 | .12 | .76 | .056 | .31 | .41 | .072 | .40 | .130 | .047 | .26 | .024 | .020 | .11 |
| Multi-race Q4 | .95 | .027 | .13 | .63 | .079 | .37 | .25 | .071 | .33 | .051 | .032 | .15 | .009 | .014 | .07 |
| AI/AN Q4 | .90 | .049 | .21 | .47 | .082 | .36 | .13 | .058 | .38 | .022 | .021 | .09 | .001 | .006 | .01 |
| White Q3 | .97 | .005 | .11 | .67 | .015 | .33 | .27 | .015 | .34 | .046 | .006 | .13 | .003 | .002 | .04 |
| Black Q3 | .89 | .020 | .22 | .45 | .033 | .33 | .12 | .021 | .23 | .017 | .008 | .09 | .001 | .002 | .02 |
| Hispanic Q3 | .93 | .017 | .17 | .49 | .035 | .36 | .14 | .024 | .25 | .018 | .008 | .08 | .000 | .000 | .00 |
| Asian Q3 | .99 | .010 | .06 | .76 | .048 | .29 | .39 | .064 | .39 | .118 | .040 | .25 | .011 | .010 | .06 |
| Multi-race Q3 | .93 | .035 | .17 | .58 | .072 | .36 | .19 | .062 | .30 | .041 | .028 | .14 | .001 | .002 | .01 |
| AI/AN Q3 | .81 | .082 | .29 | .33 | .098 | .35 | .08 | .055 | .20 | .007 | .007 | .03 | .000 | .000 | .00 |
| White Q2 | .95 | .007 | .15 | .61 | .016 | .35 | .22 | .014 | .31 | .034 | .005 | .11 | .002 | .001 | .03 |
| Black Q2 | .88 | .021 | .23 | .39 | .030 | .34 | .07 | .015 | .16 | .004 | .002 | .02 | .000 | .000 | .00 |
| Hispanic Q2 | .89 | .020 | .21 | .41 | .034 | .36 | .10 | .021 | .21 | .008 | .003 | .03 | .000 | .000 | .00 |
| Asian Q2 | .97 | .017 | .11 | .66 | .052 | .32 | .28 | .059 | .36 | .068 | .029 | .18 | .014 | .017 | .11 |
| Multi-race Q2 | .91 | .040 | .19 | .47 | .075 | .36 | .16 | .061 | .29 | .030 | .023 | .11 | .000 | .000 | .00 |
| AI/AN Q2 | .76 | .083 | .33 | .29 | .085 | .34 | .05 | .031 | .12 | .004 | .008 | .03 | .000 | .000 | .00 |
| White Q1 | .93 | .008 | .17 | .53 | .017 | .35 | .15 | .012 | .26 | .021 | .004 | .09 | .001 | .001 | .03 |
| Black Q1 | .85 | .021 | .26 | .31 | .027 | .32 | .05 | .012 | .14 | .004 | .003 | .04 | .001 | .003 | .03 |
| Hispanic Q1 | .84 | .023 | .26 | .30 | .029 | .32 | .06 | .015 | .17 | .005 | .003 | .03 | .000 | .000 | .00 |
| Asian Q1 | .95 | .021 | .14 | .59 | .054 | .35 | .22 | .049 | .32 | .049 | .023 | .15 | .003 | .003 | .02 |
| Multi-race Q1 | .92 | .031 | .16 | .42 | .070 | .36 | .11 | .046 | .24 | .014 | .011 | .05 | .000 | .000 | .00 |
| AI/AN Q1 | .73 | .090 | .31 | .25 | .094 | .32 | .05 | .042 | .14 | .003 | .003 | .01 | .000 | .000 | .00 |

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**Appendix Table 8: Home Reading Experiences - Means (M), Standard Errors (SE), and Standard Deviations (SD), by Race/Ethnicity and Gender**

| | Percent of Children Whose Parents Read to Them Everyday | | | Percent of Children Looking at Picture Books Outside of School Everyday | | |
|---|---|---|---|---|---|---|
| | M | SE | SD | M | SE | SD |
| **All** | .46 | .008 | .49 | .51 | .008 | .50 |
| Male | .44 | .011 | .49 | .45 | .011 | .50 |
| Female | .48 | .012 | .49 | .57 | .011 | .50 |
| **White** | .49 | .010 | .50 | .54 | .010 | .50 |
| Male | .47 | .015 | .50 | .47 | .015 | .50 |
| Female | .52 | .015 | .50 | .60 | .015 | .49 |
| **Black** | .35 | .020 | .48 | .48 | .021 | .50 |
| Male | .33 | .029 | .47 | .42 | .030 | .49 |
| Female | .37 | .029 | .48 | .53 | .030 | .49 |
| **Hispanic** | .42 | .023 | .49 | .47 | .023 | .50 |
| Male | .40 | .032 | .49 | .42 | .032 | .49 |
| Female | .44 | .032 | .49 | .52 | .032 | .50 |
| **Asian** | .49 | .039 | .50 | .51 | .039 | .50 |
| Male | .48 | .057 | .50 | .47 | .057 | .50 |
| Female | .49 | .054 | .50 | .54 | .054 | .49 |
| **NH/PI** | .47 | .080 | .49 | .49 | .080 | .50 |
| Male | .45 | .109 | .49 | .44 | .108 | .50 |
| Female | .49 | .118 | .50 | .54 | .118 | .50 |
| **AI/AN** | .40 | .062 | .49 | .50 | .063 | .50 |
| Male | .39 | .089 | .49 | .45 | .090 | .49 |
| Female | .41 | .086 | .49 | .56 | .088 | .50 |
| **Multi-race** | .43 | .050 | .49 | .47 | .050 | .50 |
| Male | .40 | .069 | .49 | .40 | .069 | .49 |
| Female | .46 | .072 | .49 | .54 | .072 | .50 |

**Appendix Table 9: Home Reading Experiences - Means (M), Standard Errors (SE), and Standard Deviations (SD), by Socioeconomic Status (SES) and Race/Ethnicity**

| | Percent of Children Whose Parents Read to Them Everyday | | | Percent of Children Looking at Picture Books Outside of School Everyday | | |
|---|---|---|---|---|---|---|
| | M | SE | SD | M | SE | SD |
| SES Q5 (High) | .62 | .017 | 0.49 | 62 | .017 | 0.49 |
| SES Q4 | .46 | .018 | 0.49 | 53 | .018 | 0.50 |
| SES Q3 | .41 | .018 | 0.49 | 48 | .018 | 0.50 |
| SES Q2 | .39 | .019 | 0.49 | 47 | .019 | 0.50 |
| SES Q1(Low) | .36 | .021 | 0.48 | 45 | .022 | 0.50 |
| White Q5 | .63 | .019 | 0.48 | 62 | .019 | 0.48 |
| Black Q5 | .49 | .072 | 0.49 | 55 | .072 | 0.50 |
| Hispanic Q5 | .59 | .069 | 0.49 | 62 | .068 | 0.49 |
| Asian Q5 | .57 | .061 | 0.49 | 59 | .061 | 0.49 |
| Multi-race Q5 | .75 | .089 | 0.44 | 61 | .099 | 0.49 |
| White Q4 | .47 | .022 | 0.49 | 54 | .022 | 0.50 |
| Black Q4 | .41 | .053 | 0.49 | 51 | .054 | 0.50 |
| Hispanic Q4 | .46 | .053 | 0.46 | 51 | .053 | 0.50 |
| Asian Q4 | .53 | .084 | 0.49 | 56 | .084 | 0.50 |
| Multi-race Q4 | .43 | .109 | 0.49 | 49 | .111 | 0.50 |
| White Q3 | .42 | .023 | 0.49 | 48 | .023 | 0.50 |
| Black Q3 | .37 | .046 | 0.48 | 48 | .048 | 0.50 |
| Hispanic Q3 | .43 | .051 | 0.49 | 49 | .051 | 0.50 |
| Asian Q3 | .40 | .102 | 0.49 | 41 | .102 | 0.49 |
| Multi-race Q3 | .32 | .102 | 0.46 | 41 | .107 | 0.49 |
| White Q2 | .42 | .025 | 0.49 | 47 | .026 | 0.50 |
| Black Q2 | .32 | .042 | 0.46 | 47 | .045 | 0.50 |
| Hispanic Q2 | .39 | .047 | 0.48 | 44 | .047 | 0.50 |
| Asian Q2 | .31 | .112 | 0.46 | 37 | .118 | 0.48 |
| Multi-race Q2 | .29 | .103 | 0.45 | 38 | .110 | 0.49 |
| White Q1 | .45 | .039 | 0.49 | 52 | .039 | 0.50 |
| Black Q1 | .30 | .035 | 0.46 | 44 | .038 | 0.50 |
| Hispanic Q1 | .34 | .042 | 0.47 | 40 | .044 | 0.49 |
| Asian Q1 | .37 | .106 | 0.48 | 39 | .108 | 0.49 |
| Multi-race Q1 | .32 | .126 | 0.47 | 43 | .134 | 0.50 |

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