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Early Childhood Longitudinal Study - Kindergarten Class of 1998-99, Fall 1998

America's Kindergartners

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Executive Summary

Kindergarten is a critical period in children's early school careers. It sets them on a path that influences their subsequent learning and school achievement. For most children, kindergarten represents the first step in a journey through the world of formal schooling. However, children entering kindergarten in the United States in the 1990s are different from those who entered kindergarten in prior decades. They come from increasingly diverse racial, ethnic, cultural, social, economic and language backgrounds. Many kindergartners now come from single-parent families and from step-parent families. They also differ in the level and types of early care and educational experiences that they have had prior to kindergarten (Zill et al. 1995).

Our nation's schools face new opportunities and new challenges. Schools are expected to meet the educational needs of each child regardless of their background and experience. Services, such as meals and before- and after-school child care, that were provided by other institutions in the past are now being provided by schools. Teachers are faced with classrooms of children with increasingly diverse needs. In addition, growing pressure to raise academic standards and to assess all students' progress towards meeting those standards places even more burden on schools and teachers.

Much of the literature on the status of children in our nation's schools is focused on elementary (e.g., fourth-graders in the National Assessment of Educational Progress) and secondary school children (e.g., twelfth-graders in the National Assessment of Educational Progress and eighth-, tenth- and twelfth-graders in the National Education Longitudinal Study of 1988). Little information is available on kindergarten programs in the United States and on the nation's children as they enter kindergarten and move through the primary grades. Information about the entry status of the nation's kindergartners can inform educational policy and practice, and especially those policies and practices that are targeted to meeting the needs of a diverse population of children entering kindergarten for the first time.

In the fall of 1998, about 4 million children were attending kindergarten in the United States, approximately 95 percent of them for the first time. Of the children attending kindergarten, 85 percent were in public school, 15 percent in private school, 55 percent were in full day programs and 45 percent were in part day program. [1]

[1] U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Whether or not children succeed in school is in part related to events and experiences that occur prior to their entering kindergarten for the first time. Children's preparedness for school and their later school success are related to multiple aspects of their development. Children's physical well-being, social development, cognitive skills and knowledge and how they approach learning are all factors that contribute to their chance for success in school (Kagan et al. 1995). Additionally, the differences we see in children's knowledge and skill as they enter kindergarten can be contributed to a variation in family characteristics (e.g., maternal education, family type) and home experiences (home educational activities, nonparental care). A complex and continuous collaboration exists between the child and the family; and, the family can provide the resources and support that children require to increase their chances of succeeding in school (Maccoby 1992). For some children, the absence of resources and support place them at increased risk for school failure.

This report presents the first findings from a new national study of kindergartners, their schools, classrooms, teachers and families. The Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K), sponsored by the U.S. Department of Education, National Center for Education Statistics (NCES), began following a nationally representative sample of some 22,000 kindergartners in the fall of 1998. The ECLS-K will follow the same cohort of children from their entry to kindergarten through their fifth grade year. Data will be collected not only in the fall of kindergarten but also spring kindergarten, fall first grade, spring first grade, spring third grade and spring fifth grade. In the fall of kindergarten, data were collected from children, their parents and their teachers. Information from children was gathered during an individualized in-person assessment with the child in the child's school, parents were interviewed over the phone and teachers were given self-administered questionnaires. Westat, Inc. is conducting the kindergarten and first grade collections for NCES.

This report is based on the 95 percent of children entering kindergarten for the first time in the fall of 1998. Future reports will provide information on those children who repeated kindergarten in the fall of 1998.

Cognitive Skills and Knowledge

Children's cognitive skills and knowledge are frequently thought of as core ingredients in the recipe for success in school. Researchers have conceived cognitive development as an extended set of

multidimensional skills and proficiencies which include language/literacy, reasoning and general knowledge (Kagan et al. 1995). Children's language and literacy refers to both their oral communication (language) and understanding of the written word (literacy). Children's reasoning refers to their mathematical skills. The concept of general knowledge refers to children's conceptions and understandings of the world around them.

As children enter kindergarten for the first time, they differ in their cognitive skills and knowledge. Children's reading, mathematics and general knowledge are related to their age as they enter kindergarten, the level of their mother's education (see figure A), their family type, the primary language spoken in the home and their race-ethnicity.

- In reading, mathematics and general knowledge, older kindergartners (born in 1992) outperform the younger kindergartners (born September through December 1993). The older kindergartners are more likely to score in the highest quartile of the distribution of scores than the younger kindergartners. However, some of the youngest children, those just turning 5, also score in the highest quartile (16 percent in reading, 12 percent in mathematics and 12 percent in general knowledge). Additionally, some of the older kindergartners (born in 1992) are scoring in the lowest quartile (15-19 percent in reading, 13-17 percent in mathematics and 11-16 percent in general knowledge).

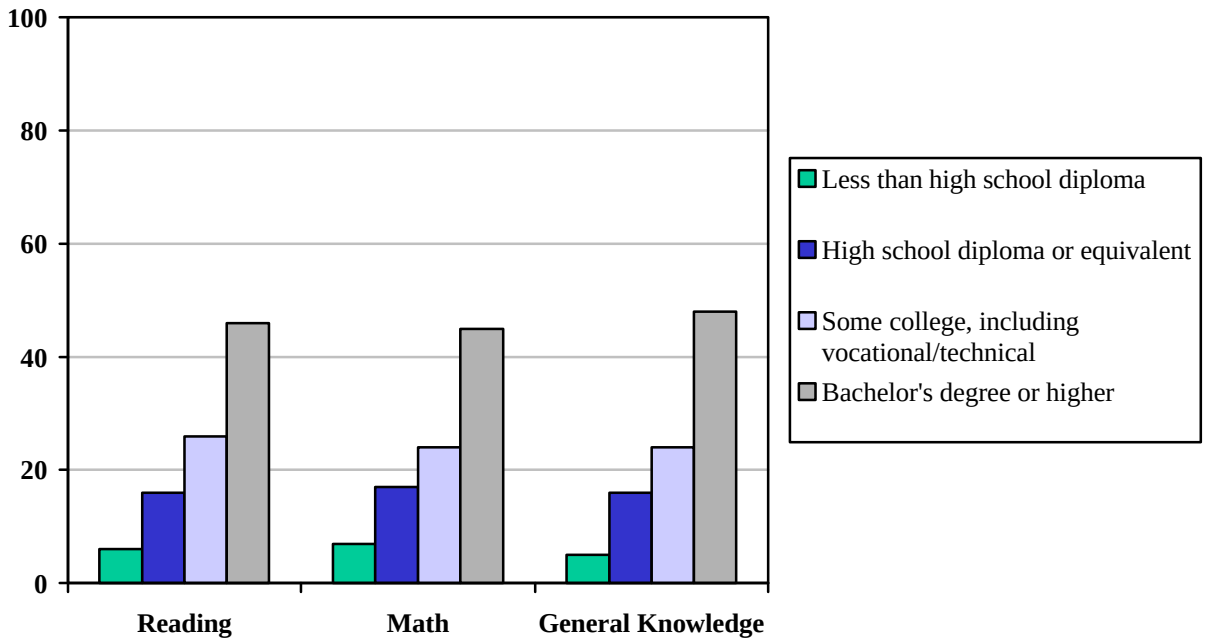
- Children's performance in reading, mathematics and general knowledge increases with the level of their mothers' education. Kindergartners whose mothers have more education are more likely to score in the highest quartile in reading, mathematics and general knowledge than all other children. However, some children whose mothers have less than a high school education also score in the highest quartile (6 percent in reading, 7 percent in mathematics and 4 percent in general knowledge). Additionally, some children whose mothers have a bachelor's degree or higher are scoring in the lowest quartile (8 percent in reading, 18 percent in mathematics and 10 percent in general knowledge).

- Children's performance in reading, mathematics and general knowledge differs by their family type: kindergartners from two-parent families are more likely to score in the highest quartile in reading, mathematics and general knowledge than children from single-mother families. However, some children with single mothers also score in the highest quartile (14 percent in reading, 14 percent in mathematics and 12 percent in general knowledge). Additionally, some children from two-parent families are scoring in the lowest quartile (22 percent in reading, 21 percent in mathematics and 20 percent in general knowledge).

In terms of their specific skills in reading and math, 66 percent of first-time kindergartners are proficient in recognizing their letters, 29 percent are proficient in understanding the beginning sounds (letter sound relationship at the beginning of words) and about 17 percent are proficient in understanding the ending sounds (letter sound relationship at the end of words). In math, nearly all (94 percent) first-time kindergartners are proficient in number and shape (recognizing numbers, shapes and counting to 10),

58 percent are proficient in understanding relative size (sequencing patterns and using nonstandard units of length to compare objects) and 20 percent are proficient in understanding ordinal sequence (identification of the ordinal position of an object in a sequence—e.g., fifth in line).

Figure A.—Percentage of first-time kindergartners scoring in the highest quartile of reading, math and general knowledge, by maternal education: Fall 1998



SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Social Skills

Children's social skills relate both to the quality and success of their school experiences (Meisels et al. 1996). Young children construct knowledge by interacting with others and their environment (Bandura 1986). In order to interact successfully in a variety of circumstances and with a variety of people, children need to possess interpersonal skills. They need to feel secure enough to join, question and listen to their peers and adults. This report explores indicators of children's social development by looking at children's interpersonal skills and behavioral patterns as rated by their parents and teachers.

For the most part, parents and teachers report a high incidence of prosocial behaviors and a low incidence of problem behaviors. Parents report that about 82-89 percent of first-time kindergartners often to very often join others in play, make friends and comfort others. Teachers report that about 75 percent of first-time kindergartners are accepting of peer ideas and form friendships. In terms of more problematic behaviors (e.g., fighting and arguing), parents report that about 33 percent of first-time kindergartners argue with others often to very often and less than 20 percent of first-time kindergartners fight with others and get angry easily often to very often. Teacher ratings are lower, with about 10 percent of first-time kindergartners arguing with others, fighting with others and easily getting angry often to very often. Teacher ratings of children's prosocial and problem behaviors differ by children's family type and minority status.

- Kindergarten teachers rate children with some characteristics of risk for school difficulty (those whose mothers have less than a high school education, are single mothers or whose families have received or are receiving public assistance) less likely than children whose mothers have at least a high school diploma, who come from two-parent families and whose families have never utilized public assistance to accept peer ideas and form friendships.

- Reports of children's problem behaviors vary by race/ethnicity. The pattern of these differences and their magnitude depends on who is rating the children's behavior. When teachers rate the children in their classrooms, black children are more likely than white and Asian children to be seen as exhibiting higher levels of problem behaviors (arguing with others, fighting with others, getting angry easily). When parents rate their children, we see fewer differences between black and white children. Instead, we see more differences between Asian children and white, black and Hispanic children. Asian children are less likely than children in these other groups to be seen as arguing or fighting often to very often by their parents.

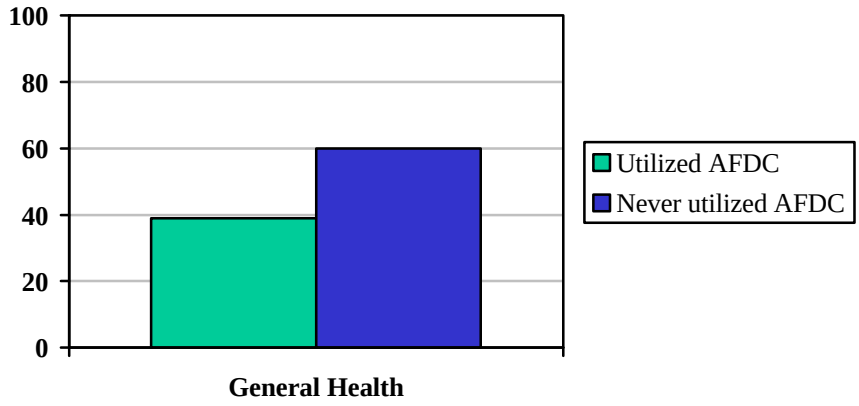
Physical Health and Well-Being

Information on children's physicality helps untangle the diverse skill set children possess at entry to kindergarten. An important part of learning relates to children having enough rest, enough good foods to eat and good physical health (Kagan et al. 1995). The concept of physical health and well-being is broad; it not only includes a disease-free state but also having gross and fine motor skills appropriate to the child's age.

The average first-time kindergartner in 1998 was about 45 inches tall and weighed about 46 pounds. About 12 percent of boys and 11 percent of girls have a body mass index which classifies them as at risk for being overweight. Kindergartners are generally healthy (see figure B)—though their general health differs by their family type, the level of their mothers education and whether or not they utilized

public assistance (i.e., Aid for Families with Dependent Children). A small percentage of kindergartners are showing signs of developmental difficulty (e.g., high activity level, low attention span).

Figure B.—Percentage of first-time kindergartners who are in excellent general health, by utilization of public assistance (Aid for Families with Dependent Children-AFDC): Fall 1998



SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

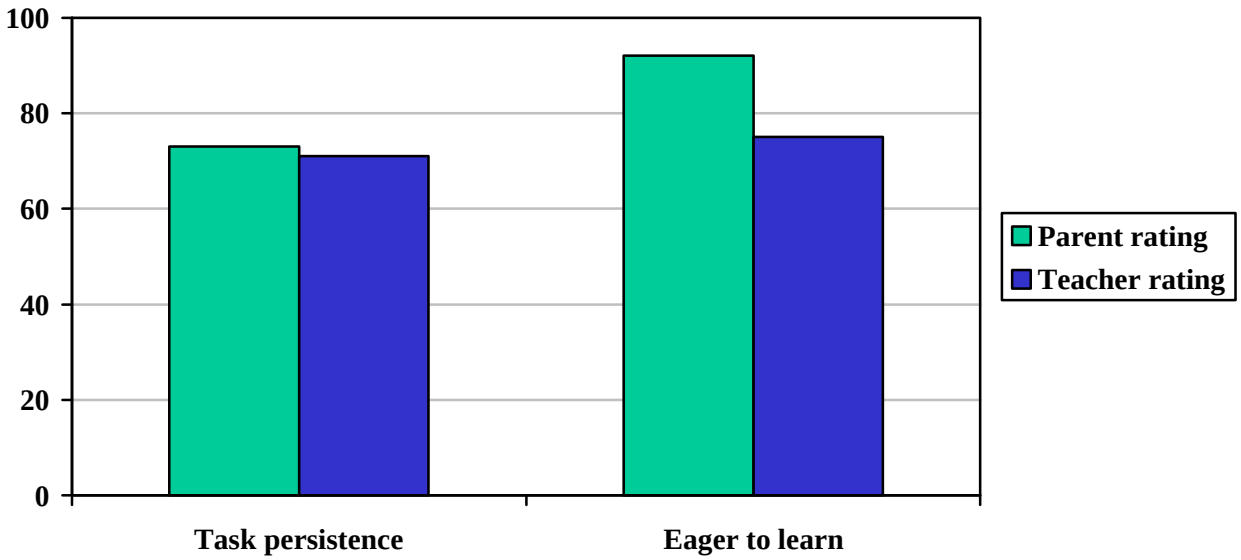
Approaches to Learning

How children approach learning is central to their chances for success in school. Children's learning styles reflect how they address the task of learning (Kagan et al. 1995). Children need to be able to persist at tasks, be eager to learn and be creative in their work. These characteristics tend to manifest themselves at a relatively early age, and children demonstrate diversity in their approaches and behaviors toward learning.

As children enter kindergarten for the first time, parents report that about 75 percent persist at tasks often to very often (figure C), about 92 percent seem eager to learn (figure C) and 85 percent demonstrate creativity in their work. Teachers are slightly more conservative in their ratings (figure C), reporting that about two-thirds to three-quarters of beginning kindergartners persist at tasks, seem eager to learn and are able to pay attention. Teacher ratings of kindergartners approaches to learning differ by child characteristics, such as their gender, age at entry, level of mother's education and minority status.

- Both parents and teachers report that girls persist at tasks more often than boys, older kindergartners (born in 1992) persist at tasks more often than the younger (born September through December 1993) and children not at risk persist at tasks more often than children at risk for school difficulty (mother's education less than high school, single-mother and receipt of public assistance), except on the basis of home language.

Figure C.—Percentage of first-time kindergartners teacher rate as persisting at tasks often to very often, by age of entry: Fall 1998



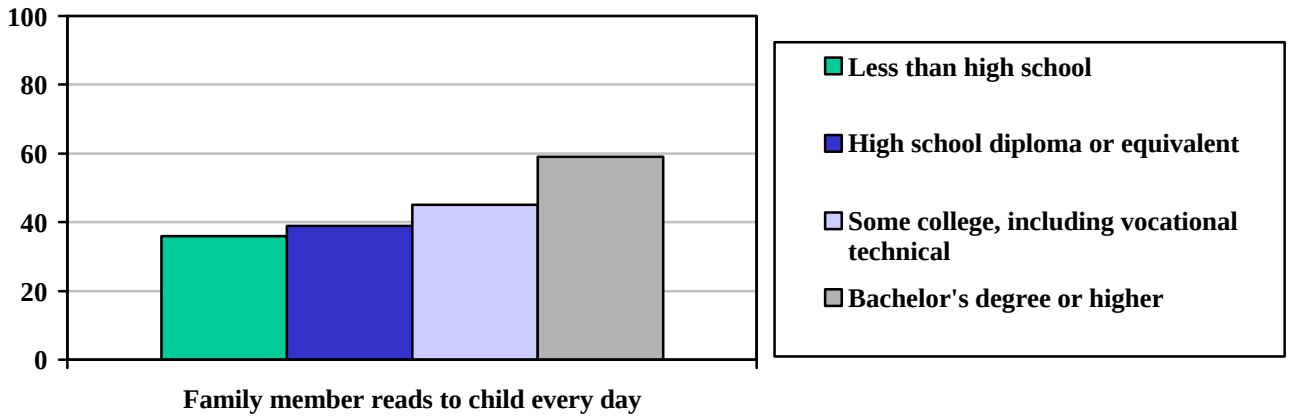
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

The Child and the Family

The nature and frequency of family interactions relate not only to children's development but also to children's preparedness for school. The frequency with which parents interact in positive ways with their children may indicate the investment parents make in their children's education. Home activities—such as reading to the child or interacting through play—are related to children's school preparedness and chances for success in school.

The majority of parents report having more than 25 children's books in the home, and more than half of parents report having more than five children's records, audio tapes or CDs in the home. Nearly half of parents report a family member reading to the child or singing songs with the child every day. Activities such as reading to children vary by level of mother's education (see figure D), family type, receipt of public assistance and minority status.

Figure D.—Percentage of first-time kindergartners read to every day by a family member, by family type: Fall 1998



SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

As the labor force participation rate of mothers with young children has increased, the percentage of children receiving care from someone other than their parents has increased as well. In the 1990s, a large majority of children have been cared for on a regular basis by someone other than their parents prior

to entering first grade (West et al. 1992). Today, many kindergarten and primary school children receive before- and after-school care regularly from persons other than their parents (Brimhall et al. 1999).

Prior to starting kindergarten, about four out of five first-time kindergartners received care on a regular basis from someone other than their parents. Upon entering kindergarten, about half of children currently receive care on a regular basis before or after school from someone other than their parents. Both the care children received prior to kindergarten and their current care (e.g., relative, nonrelative, center-based) varies by characteristics such as level of mother's education and race/ethnicity status.

At kindergarten entry, children whose mothers have less than a high school education are more likely to receive before- and/or after-school care from a relative than from a nonrelative or center-based provider. In contrast, kindergartners whose mothers have a college education are more likely to receive care in a center-based setting than in either of the two home-based settings.

- At kindergarten entry, black children are more likely than white, Asian or Hispanic children to receive before- and/or after-school care.

Summary

While first-time kindergartners are similar in many ways, this report demonstrates that differences exist in children's skills and knowledge in relation to their characteristics, background and experiences. The report adds to our understanding of the diversity of young children's skills and knowledge. Even as they are just beginning their formalized educational experience, children are different. They demonstrate differences in their cognitive skills and knowledge, social skills, health and approaches to learning, and bring with them differences in their home educational experiences and environments. This report is highly descriptive in nature, presenting a broad array of information on children's status as they begin their journey to school. Future reports based on the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K), will a take more analytical approach and examine specific issues more in depth. This report and future data from the ECLS-K will help to inform researchers, practitioners, educators, parents and policymakers on issues concerning young children's education during the elementary grades.

Future Directions

The findings in this report bring to light some areas for further investigation and some interesting patterns emerge across domains. For instance, differences exist in parent and teacher perceptions of children's prosocial skills, problem behaviors and approaches to learning. Primarily, we presented the data by looking at parent perceptions in relation to child and family characteristics and teacher perceptions in relation to child and family characteristics. However, future analysis can compare the similarities and the differences in parent and teacher perceptions of the same child. For example, in terms of approaches to learning, specifically children's eagerness to learn, the racial/ethnic differences seem much greater in the teacher ratings than in the parent ratings in the aggregate.

Furthermore, in this report, we look at the constructs by a specific set of child and family characteristics (e.g., child's sex, age at entry, race/ethnicity, maternal education). Future reports can take a different perspective, and analyze the constructs in terms of additional family characteristics and school characteristics. For example, the data can be analyzed in terms of pre-school attendance, kindergarten program type (i.e., full day/part day) and school type (e.g., public/nonpublic). These types of analysis may have policy implications.

Contents

List of Tables

Introduction

Kindergarten is a critical period in children's early school careers. It sets children on a path that influences their subsequent learning and school achievement. For most children, kindergarten represents the first step in a journey through the world of formal schooling. However, children entering kindergarten in the United States in the 1990s are different from those who entered kindergarten in prior decades. They come from increasingly diverse racial, ethnic, cultural, social, economic and language backgrounds. Many kindergartners now come from single-parent families, step-parent families and homes with very different social and economic backgrounds. They also differ in the level and types of early care and educational experiences that they have had prior to kindergarten (Zill et al. 1995).

These trends present new opportunities and pose challenges to our nation's schools. Schools are expected to meet the educational needs of each child regardless of their background and experience. Services, such as meals and before- and after-school child care, that were provided by other institutions in the past are now being provided by schools. Teachers are faced with classrooms of children with increasingly diverse needs. In addition, growing pressure to raise academic standards and to assess all students' progress toward meeting those standards places even more burden on schools and teachers (Kagan 1990, Meisels 1992).

Much of the literature on the status of children in our nation's schools is focused on elementary (e.g., fourth-graders in the National Assessment of Educational Progress) and secondary school children (e.g., eighth and twelfth-graders in the National Assessment of Educational Progress and eighth-, tenth- and twelfth-graders in the National Education Longitudinal Study of 1988). Little information is available on the achievement of children in kindergarten programs in the United States and on the nation's children as they enter kindergarten and move through the primary grades. Information about the entry status of the nation's first-time kindergartners can inform educational policy and practice, and especially those policies and practices that are targeted to meeting the needs of a diverse population of children entering kindergarten for the first time.

In the fall of 1998, about four million children were attending kindergarten in the United States, approximately 95 percent of them for the first time. Of the children attending kindergarten, 85 percent were in public school and 15 percent in private school. Over the past few decades, the nature of kindergarten programs has shifted from typically half-day programs to full-day programs. Presently, 55

percent of children are in full-day programs, and 45-percent in part day programs. [2] This report will present a snapshot of these first-time kindergartners. It describes some of the skills, knowledge and experiences that children bring with them as they enter kindergarten. It describes some of the things first-time kindergartners can and cannot do, what problems they may or may not have and what resources may or may not be available to them. The report examines variations in children's skills, knowledge and experiences across a set of sociodemographic characteristics of children and their families.

Children's Skills, Knowledge and Experiences

Whether or not children succeed in school is in part related to events and experiences that occur prior to the their entering kindergarten for the first time. Children's preparedness for school and their later school success are related to multiple aspects of the children's development, such as their physical well-being, social development, cognitive skills and knowledge and their approaches to learning (Kagan et al. 1995). Along with these characteristics, some would emphasize the role that schools play in determining whether particular children are prepared for school and their success in the classroom (Crinic and Lamberty 1994; Meisels 1999). Additionally, children's preparedness for school involves a complex and continuous collaboration between the child and the family. The family can provide the resources and support that children require to increase their chances to succeed in school (Maccoby 1992). For some children, the absence of resources and support place them at increased risk for school failure.

Cognitive Skills and Knowledge. Children's cognitive skills and knowledge are frequently thought of as core ingredients in the recipe for success in school. Researchers have conceived cognitive development as an extended set of multidimensional skills and proficiencies which include language/literacy (e.g., reading), reasoning (e.g., mathematical knowledge and skills) and general knowledge (Kagan et al. 1995). Children's language and literacy refers to both their oral communication (language) and understanding of the written word (literacy). In this study, children's reasoning refers to their mathematical skills. The concept of general knowledge refers to children's conceptions and understandings of the world around them.

These three cognitive domains—reading, mathematics and general knowledge—play an important role in children's chances for scholastic success. The cognitive skills children demonstrate at kindergarten entry can potentially shape their early school experience (Sameroff and Haith 1996).

[2] U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Therefore, documenting the skills children possess before they receive formal schooling provides a baseline for assessing their progress in kindergarten and beyond (Meisels 1996). This report will describe children's cognitive skills in the reading, mathematics and general knowledge domains as they enter kindergarten for the first time.

Social Skills. Children's social skills relate both to the quality and success of their school experiences (Meisels et al. 1996). Young children construct understanding by interacting with others and their environment (Bandura 1986). In interacting successfully in a variety of circumstances with a variety of people, children demonstrate interpersonal skills. They need to feel secure enough to join, question and listen to their peers and adults. This report will explore indicators of children's social development by looking at children's interpersonal skills and behavioral patterns as rated by their parents and teachers. Specifically, this report will present information on first-time kindergartners' interpersonal skills and behaviors, both prosocial and problem.

Physical Health and Well-Being. We also consider the relationships among children's physical well-being, motor development and educational outcomes. The stage for learning is often set with enough rest, good foods to eat and good physical health (Kagan et al. 1995). The concept of physical health and well-being is broad; it not only includes a disease-free state but also a physical prowess appropriate to the child's age in terms of gross and fine motor skills. Consequently, information on children's physicality helps untangle the diverse skill set children possess at entry to kindergarten. This report will present information on first-time kindergartners' height and weight, body mass index, fine and gross motor skills, general health and developmental difficulties they are experiencing that may affect their classroom experience.

Approaches to Learning. How children approach learning is central to their chances for success in school. Children's learning styles reflect how they address learning (Kagan et al. 1995). Children need to be able to persist at tasks and be eager to learn. In addition, demonstrating creativity in their thinking and in their work can also increase their chances for success in school. These characteristics tend to manifest themselves at a relatively early age. As early as kindergarten entry, children demonstrate diversity in their approaches and behaviors toward learning. Therefore, this report will explore basic information on children's approaches to learning.

The Child and the Family. The nature and frequency of family interactions relate not only to children's development but also to children's preparedness for school. The frequency with which parents interact with their children may indicate the investment parents make in their children's education. Home activities—such as reading to the child or interacting through play—are related to children's school preparedness and chances for success in school.

As the labor force participation rate of mothers with young children has increased, the percentage of children receiving care from someone other than their parents has increased as well. In the 1990s, a large majority of children have been cared for on a regular basis by someone other than their parents prior to entering first grade (West et al. 1995). Today, many kindergarten and primary school children receive before- and after-school care regularly from persons other than their parents (Brimhall et al. 1999).

The importance to early school success of the home literacy environment, parents' regular interaction with their children and children's participation in early care and education programs has led the National Education Goals Panel to include these as proxy measures of school readiness in their annual report. Consequently, this report on children's status at entry to kindergarten includes information on each of these measures.

Data Source

This report presents the first findings from a new national study of kindergartners, their schools, classrooms, teachers and families. The Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K), sponsored by the U.S. Department of Education, National Center for Education Statistics (NCES), began following a nationally representative sample of some 22,000 kindergartners in the fall of 1998. Westat, Inc., conducted the study for NCES.

In the fall of the 1998-99 school year, public and private schools offering kindergarten programs and a sample of the children attending kindergarten in these schools were selected to participate in the ECLS-K.[3] Baseline data about these children, their families and kindergarten programs were collected at this time. The findings reported here are based on data from telephone interviews with these children's parents/guardians and self-administered questionnaires completed by the children's kindergarten teachers. Findings also come from data gathered during an individualized assessment with each child (see the Methodology Section for a description of the variables and measures used in this report).

The current longitudinal design of the ECLS-K includes five additional waves of data collection. Data will be collected from the same sample of children in the spring of kindergarten, the fall[4] and spring of first grade and the spring of third and fifth grades.

Sample. A nationally representative sample of approximately 22,000 children enrolled in about 1,000 kindergarten programs during the 1998–99 school year were initially sampled. The children attended both public and private kindergartens that offered full-day and part-day programs. The sample included children from different racial/ethnic and socioeconomic backgrounds and included oversamples of Asian children, private kindergartens and private school kindergartners. This study supports separate estimates of public and private school kindergartners; black, Hispanic, white and Asian children; and children from different socioeconomic backgrounds. This report presents information on children entering kindergarten for the first time. Sample sizes and population counts for first-time kindergartners are presented in table 1.

[3] The ECLS-K sample of schools included traditional schools offering kindergarten and some combination of grades 1-12 and early childhood programs that offered kindergarten in addition to programs for preschoolers.

[4] The fall first grade data collection is limited to a parent/guardian interview and to a direct assessment of children's skills and knowledge in three domains: mathematics, reading and general knowledge. In addition, the goal of this round of data collection was to complete the parent interviews and direct child assessments for a 25 percent sub-sample of the full ECLS-K sample.

Table 1.—Sample sizes and population counts of first-time kindergartners, by child and family characteristics: Fall 1998

Characteristics	Sample	Population	Population Percentage
Total	17,223	3,678,473	100
Child's sex			
Male	8,659	1,867,904	51
Female	8,564	1,810,570	49
Child's age at entry			
Born Jan. – Aug. 1992	657	129,127	4
Born Sep. – Dec. 1992	4,019	869,575	24
Born Jan. – Apr. 1993	5,449	1,166,292	32
Born May – Aug. 1993	5,441	1,177,595	32
Born Sep. – Dec. 1993	1,600	326,637	9
Mother's education			
Less than high school	2,233	518,685	14
High school diploma or equivalent	5,041	1,115,650	30
Some college, including vocational/technical	5,432	1,152,511	31
Bachelor's degree or higher	4,070	798,065	22
Family type			
Single mother	3,547	790,442	21
Single father	303	66,430	2
Two parent	13,071	2,753,403	75
Welfare receipt			
Utilized AFDC	1,901	427,642	12
Never utilized AFDC	15,209	3,226,334	88
Primary language spoken in home			
Non-English	1,678	324,618	9
English	15,499	3,343,764	91
Child's race/ethnicity			
White, non-Hispanic	9,819	2,117,928	58
Black, non-Hispanic	2,473	570,111	15
Asian	939	108,030	3
Hispanic	3,019	704,214	19
Hawaiian Native/Pacific Islander	197	20,881	1
American Indian/Alaska Native	292	64,194	2
More than one race, non-Hispanic	460	88,101	2
Child's race/ethnicity by maternal education			
Maternal education:			
High school diploma/equivalent or more			
White, non-Hispanic	9,020	1,925,039	52
Black, non-Hispanic	1,987	458,563	12
Asian	749	87,038	2
Hispanic	1,957	446,094	12
Maternal education:			
Less than high school diploma or equivalent			
White, non-Hispanic	581	142,854	4
Black, non-Hispanic	420	97,482	3
Asian	136	15,252	(*)
Hispanic	985	240,126	7

* less than .5 percent.

NOTE: Percentages may not add to 100 due to rounding and/ or missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Report Approach

The ECLS-K is designed, in part, to describe children's status at school entry. The kindergarten population includes both first-time kindergartners and repeat kindergartners. In order to explore children's status as they enter school for the first time, first-time kindergartners need to be separated from repeat kindergartners. Therefore, this report concentrates only on first-time kindergartners,[5] and the findings generalize only to that population.

The report has two purposes: (1) it provides the first national picture of entering kindergartners in the United States and (2) it introduces the rich data set associated with the ECLS-K. This first publication uses the fall kindergarten data and provides descriptive statistics on many variables that relate to children and their families. Future reports will describe kindergarten teachers and kindergarten classrooms, address more complex models and hypotheses and will utilize the longitudinal nature of the study.

The majority of this publication focuses on the child, and information is presented according to several factors that may influence child development. Characteristics both intrinsic and extrinsic to the child potentially contribute to the child's chances for success or risk for failure. Children's sex, race/ethnicity and age at school entry (intrinsic factors) are often considered potential resource and/or risk factors. As others have shown, children's physical well-being, social skills, cognitive skills and learning approaches all vary to some extent by their sex, race/ethnicity and age at school entry (Hafner et al. 1990; Zill et al. 1995). Other factors that are extrinsic to the child also influence their health and physical-well being, social skills, cognitive skills and knowledge and how they approach the task of learning. These factors include their mother's education, family type (two-parent, one-parent), home language and their families' receipt of public assistance (Federal Interagency Forum on Child and Family Statistics 1999; Zill et al. 1995). Consequently, when reporting information on children and their families, this report will present the data by these salient characteristics.

In this report, children's physical well-being, social development, cognitive skills and knowledge and approaches to learning are treated separately. However, we recognize that although these domains represent different and unique aspects of children's development, they are related to and may influence one another. Thus, we also include information on the relationships between the different aspects of development in a separate section of the report.

[5] Parents were asked if this was their child's first or second year of kindergarten. Based on parent identification, this report refers to the 95 percent of kindergartners who are entering for the first time.

Findings

The findings in this report are presented in five sections. The first four sections organize the findings around four dimensions of children's development: children's cognitive skills and knowledge, physical well-being, social skills and approaches to learning. The fifth section presents information on children's home environment and child care experiences. The cognitive skills and knowledge section describes children's reading and mathematics skills and general knowledge. The physical well-being section presents information on children's height and weight, motor skills, general health and developmental difficulties. The section on children's social skills presents information on children's prosocial and problem behaviors. The approaches to learning section presents information on children's task persistence, eagerness to learn, creativity and ability to pay attention. Finally, the family section of the report presents information on the home environment, home educational activities and children's nonparental care experience.

In each of the sections, findings related to such child characteristics as sex and age at kindergarten entry are presented first. At this young age, much of what is being measured is thought to be developmental in nature. Therefore, some of the differences that relate to children's age at entry should be interpreted with caution. They may simply represent some of the natural developmental variation that is inherent in this age group. The next set of child characteristics pertain to factors closely associated with the risk for school failure or academic difficulties such as low maternal educational attainment level, family type (number of parents in household), receipt of welfare and primary language spoken in the home (Zill et al. 1995). When these risk factors occur in concert, the cumulative effect may place children at an even greater risk for school failure or academic difficulty.

Furthermore, because race/ethnicity and socioeconomic status are so closely linked, we also present estimates by children's race/ethnicity separately for children whose mothers have less than a high school education and those whose mothers have a high school diploma (or its equivalent) or more.[6] When describing findings, we use the term "at risk for school failure or school difficulties" to refer to children whose mothers have less than a high school education, come from a single mother family, have a history of public assistance or who live in a family whose primary language is not English. Due to sample size restrictions, the analysis in this publication only includes significance tests for white, black, Hispanic and

[6] When presenting estimates, white refers to white non-Hispanic and black refers to black non-Hispanic.

Asian children. Furthermore, though we felt it important to present the estimates by children's race/ethnicity separately for children whose mothers have less than a high school education and those those mothers have a high school diploma or more, due to low sample sizes we did not perform statistical comparisons. The findings pertain only to first-time kindergartners, and the cognitive skills and knowledge section presents information only for those first-time kindergartners who were assessed in English. In the discussion of findings from the family interview, parents are referred to as the respondent, which is true in the majority of cases (97 percent of respondents were parents). The survey methodology section includes details about the study design and instruments. Unless otherwise noted, all differences cited in the text are statistically significant at the .05 level. The standard errors are reported in the Appendix.

Cognitive Skills, Knowledge and Experiences

Elementary school (K-5) curricula focus on three broad areas of academic competence—reading, mathematics and general knowledge. These areas of school curricula are considered to be central to children's successful development and functioning as adult citizens in society. Much of the school day is spent learning core cognitive skills in reading and mathematics and increasing children's knowledge of the natural, physical and social worlds.

Children begin school already possessing knowledge and skills in the areas of reading (Vacca et al. 1995), mathematics (Baroody 1993; Ginsburg 1989) and general knowledge. Their experiences with their environment—street signs, number of steps up to their door, witnessing the change of seasons—all contribute to children's cognitive development. The foundation children have to build upon with school curricula will influence children's experiences in school and their cognitive growth. Because children have different background experiences, one would expect variation in the skills and knowledge children possess at school entry.

The ECLS-K assessment battery has been developed to assess common skills and knowledge across children. These common skills reflect school curricula across the nation; therefore, the battery samples typical and important elements of the curriculum with particular emphasis on content and process areas that are critical to growth and can be expected to reflect growth on the same scale over time.

Assessment Battery. For the most part, in kindergarten, reading skills refer to children's emergent literacy, phonemic knowledge and language development. Emergent literacy reflects the child's understanding that print in books has meaning; language development includes children's oral language and their receptive vocabulary (Snow et al. 1998). The two—language and literacy—cannot be separated; together, they enable children to express and interpret thoughts, beliefs and desires. A close relationship exists between learning language and learning to read, both of which are complex processes. Children's phonemic knowledge, understanding sounds and how they form words and learning to read are reciprocal. While phonemic knowledge plays an essential role in learning to read, growth in reading skills contributes to more advanced phonemic knowledge (Perfetti et al. 1987; Snow et al. 1998). The ECLS-K measure of reading in kindergarten assesses children's basic literacy skills (e.g., recognizing the printed word, identifying sounds, word reading, vocabulary and reading comprehension).

Mathematics has been described as “a way of thinking about the world” that is more than mere computation of numbers (Baroody 1993, p. 151). It involves conceptual understanding of numbers, shapes, mathematical operations and processes for problem solving. The skills and knowledge that support such problem solving contribute to children’s critical thinking thus benefiting not only mathematics learning but also overall cognitive development. The ECLS-K mathematics assessment measures children’s knowledge and skills necessary to solve problems and reason with numbers. The mathematical skills measured by the ECLS-K battery include, but are not limited to, the understanding of the properties of numbers, mathematical operations (e.g., addition) and problemsolving. They also include understanding the patterns and relationships of numbers, formulating conjectures and identifying solutions.

General knowledge represents children’s breadth and depth of understanding of the social and physical environment (i.e., the social, physical and natural world) and their ability to draw inferences and comprehend implications. Dimensions of knowledge measured by the ECLS-K battery include factual information from the physical, earth, biological and social sciences. The skills children need to establish relationships between and among objects, events or people and to make inferences and to comprehend the implications of verbal and pictorial concepts, are also measured. It addresses such topical areas as history, geography and science.

The ECLS-K assessed children directly to measure their skills in reading, mathematics and their knowledge and understanding of the social and physical environments. Each child was individually assessed, using computer-assisted technology. Trained assessors presented the items using an easel and entered responses into a computer.

Given the longitudinal objectives of the study and the need to measure children’s performance in each of the three areas within a limited amount of time, a two-stage adaptive assessment, tailored to the child’s present level of performance, was used. Each assessment area (reading, mathematics, general knowledge) included a routing test (the first stage) which determined each child’s approximate skill level. Upon completion of the routing test, the child was administered a second-stage form consisting of items tailored to his or her ability level. Both reading and mathematics have three second-stage forms. General knowledge has two second-stage forms.

The children take different routing tests for reading, mathematics and general knowledge. A child’s test level in one domain is independent of his/her performance in either of the other two domains.

Thus, it is possible for a child to take, for example, a low-level reading test but a high-level mathematics test.

About 9 percent of first-time kindergartners are language minority children—children whose primary language in the home is not English. The core ECLS-K direct assessment battery was designed to be administered in English. To determine whether language minority children could be validly and reliably assessed using the core battery, the Oral Language Development Scale (OLDS), a measure of basic English proficiency, was first administered.

The OLDS is a subset of the PreLAS 2000 (Duncan and DeAvila 1998) measuring receptive and expressive language in English. The scales appraise children's ability to follow oral directions, express oral vocabulary and produce complete sentences by retelling a simple story using picture cues, skills required by the ECLS-K battery. Assessors administered the English-language OLDS to all language minority children. Children performing above the cut-off point were administered the core ECLS-K assessment, whereas children who scored below the cut-point were not administered the complete core ECLS-K assessments (see the Methodology and Data Reliability section for more information). Future reports will look at the population of children screened out of the English assessment more closely. In this report, 19 percent of the Asian population and 29 percent of the Hispanic population were excluded from the English cognitive battery. Consequently, the racial/ethnic differences on the cognitive skills and knowledge should be interpreted in context.

Assessment Battery Scores. To describe the variability of first-time kindergartners' performance in reading, mathematics and general knowledge, scores from each assessment domain were converted into both normative and criterion-referenced proficiency scores. To compare the performance of first-time kindergartners, their reading, mathematics and general knowledge scores were converted to *t-scores* with a mean score equal to 50 and a standard deviation of 10. To further explore the differences in children's scores, we divided the *t-scores* into quartiles. Children in the lowest quartile (0–25 percent) scored with the lowest 25 percent of children. Children in the highest quartile (76–100 percent) scored with the highest 25 percent of children.

In addition to normative interpretations of scores, the ECLS-K battery scores are converted into criterion-referenced proficiency scores. Criterion-referenced scores can be used to evaluate performance on specific sets of skills within each domain. The clustering of items was empirically based, with each cluster representing skills necessary to successfully complete the typical item located at points along the

scale. Children who pass a particular level have generally mastered the preceding levels. The ECLS-K reading assessment domain includes the following five criterion-referenced proficiency levels:

- First level measures recognition of upper and lower case letters of the alphabet;
- Second and third levels assess phonological sensitivity at the subword level (e.g., knowledge of letter and sound relationships at the beginning and at the end of words);
- Fourth level measures the ability to read common words; and
- Fifth level measures comprehension of written text.

In addition to understanding that words in print have meaning and recognizing that letters have distinct forms and can be related to word sounds, beginning to read involves understanding how words are represented in print—conventions of print or writing. As children recognize words in print, they also become familiar with the rules and conventions of reading (e.g., words are printed in discrete units, bound by spaces and sequenced from left to right) and the terms used to talk about reading (e.g., top of the page, first sentence). Children learn these concepts of print conventions as they begin learning the relationships between printed letters and sounds in spoken words and in analyzing words. The measure of children's familiarity with the conventions of print in the ECLS-K was comprised of a cluster of three items: directionality at both the word and sentence levels and where a reading passage ends.

The mathematics assessment consisted of measures of children's skills and knowledge of the properties and functions of numbers and geometric shapes, operations and applications. There are five mathematics proficiency levels at the kindergarten level, each level representing a higher level of skill and knowledge.

- Level one refers to a cluster of items that measures reading numerals, recognizing shapes and counting to 10.
- Level two includes items that measure reading numerals, counting beyond 10, sequencing patterns and using nonstandard units of length to compare objects.
- Level three items measure number sequence, reading two-digit numerals, identification of the ordinal position of an object and solving a word problem.
- Level four includes calculating sums up to 10 and relationships of numbers in sequence.
- Level five measures problemsolving using multiplication and division and number patterns.

Assessors read the items to the child. Items were presented with graphics and manipulatives. Children could use counting blocks and paper and pencil to solve the problems. This assessment battery is intended for use with both kindergarten and first-grade children. Therefore, when looking at the proficiency scores of beginning kindergartners, it is not out of the ordinary for the majority of children to be scoring in the lower proficiency levels (e.g., letter recognition, beginning sounds, number and shape recognition and relative size).

Key Findings: Cognitive Skills and Knowledge

Norm-referenced scores

- In reading, girls slightly outperform boys. A larger number of girls than boys score in the highest quartile in reading (table 1). Girls and boys perform similarly in mathematics and general knowledge (tables 2 and 3). A similar proportion of boys and girls score in the highest quartile in mathematics and general knowledge.

- In reading, mathematics and general knowledge, older kindergartners (born in 1992) outperform the younger kindergartners (born September through December 1993). The older kindergartners are more likely to score in the highest quartile of the distribution of scores than the younger kindergartners. However, some of the youngest children, those just turning 5, also score in the highest quartile (16 percent in reading, 12 percent in mathematics and 12 percent in general knowledge).

- Children's performance in reading, mathematics and general knowledge increases with the level of their mothers' education. Kindergartners whose mothers have more education are more likely to score in the highest quartile in reading, mathematics and general knowledge. However, some children whose mothers have less than a high school education also score in the highest quartile (6 percent in reading, 7 percent in mathematics and 5 percent in general knowledge).

- Children's reading, mathematics and general knowledge performances differ by their family type: kindergartners from two-parent families are more likely to score in the highest quartile in reading, mathematics and general knowledge than children from single-mother families. However, some children with single mothers also score in the highest quartile (14 percent in reading, 14 percent in mathematics and 12 percent in general knowledge).

- In reading, mathematics and general knowledge, children's performances differ by the primary language spoken in the home: more kindergartners in homes where the primary language is English score in the highest quartile in reading, mathematics and general knowledge than those in homes where the primary language is not English.

- Children who are white are more likely to score in the highest quartile than black or Hispanic children in reading, mathematics and general knowledge. However, that is not to say that minorities are not achieving above the average. In reading, some black (15 percent) and Hispanic (15 percent) children score in the highest quartile.

Key Findings: Cognitive Skills and Knowledge

Criterion-referenced scores: Reading

- Print familiarity skills such as knowing that print reads left to right, knowing where to go when a line of print ends and knowing where the story ends are important; 18 percent of first-time kindergartners cannot do any of these three skills; 21 percent can do one of these three skills; 24 percent can do two of these three skills; and 37 percent can do all three of these skills (table 4).

- As children enter kindergarten for the first time, 66 percent pass reading proficiency level one (recognizing their letters); 29 percent pass level two (beginning sounds); 17 percent pass level three (ending sounds); 2 percent pass level four (sight words); and 1 percent pass level five (words in context) (table 5).

- More girls than boys pass reading proficiency levels one (recognizing their letters), two (beginning sounds) and three (ending sounds).

- Older first-time kindergartners (born in 1992) are more likely to pass levels one through four than younger first-time kindergartners (born September through December 1993). Older first-time kindergartners are also more likely to have all three print familiarity skills than younger first-time kindergartners.

- Children with few risk factors are more likely to pass various reading proficiencies than children at risk. For example, children whose mothers have higher levels of education passed the first three reading proficiency levels at higher rates than kindergartners whose mothers have less education. Plus, children from families who do not receive welfare services are more likely to pass reading proficiency levels one (letter recognition), two (beginning sounds) and three (ending sounds) than kindergartners from families who did receive public assistance. The same pattern is true for print familiarity. Children whose mothers have higher levels of education are more likely than children whose mothers have less education and children whose families did not receive public assistance are more likely than children whose families received public assistance, to have all three print familiarity skills.

- Children's reading proficiency and print familiarity also differ by family type. Children from families with two parents pass reading proficiency levels one through four more often than kindergartners with single mothers and are more likely to have all three print familiarity skills.

- Children who are white are more likely to pass levels one (letter recognition), two (beginning sounds) and three (ending sounds) than children who are black or Hispanic. Children who are Asian are also more likely to pass levels one through three than white, black or Hispanic children.

Key Findings: Cognitive Skills and Knowledge

Criterion-referenced scores: Mathematics

- When they enter kindergarten, 94 percent of first-time kindergartners pass mathematics proficiency level one (reading numerals, recognizing shapes and counting to 10); 58 percent pass level two (reading numerals, counting beyond 10, sequencing patterns and using nonstandard units of length to compare objects); 20 percent pass level three (number sequence, reading two digit numerals, identification of the ordinal position of an object and solving a word problem); 4 percent pass level four (includes calculating sums up to 10 and relationships of numbers in sequence); and under 1 percent pass level five (problemsolving using multiplication and division and number patterns) (table 6).

- The older first-time kindergartners (born 1992) are more likely than the younger first-time kindergartners (born September through December 1993) to pass levels one through four (reading numerals, recognizing shapes and counting to 10; reading numerals, counting beyond 10, sequencing patterns and using nonstandard units of length to compare objects; number sequence, reading two digit numerals, identification of the ordinal position of an object and solving a word problem; calculating sums up to 10 and relationships of numbers in sequence).

- Kindergartners whose mothers have higher levels of education are more likely to pass levels one through four than kindergartners with mothers who have a lower levels of education.

- Kindergartners from families with two parents are more likely to pass levels one through four than kindergartners with single mothers.

- First-time kindergartners whose families have not received or are not receiving welfare services are more likely than kindergartners from families with receipt of welfare to pass levels one through four.

- Similar to reading, there are racial/ethnic differences in the mathematics proficiencies of beginning kindergartners. White and Asian children are more likely to pass levels one through four than black or Hispanic children.

Table 2.—Mean reading t-scores of first-time kindergartners, and percentage distribution of quartile scores, by child and family characteristics: Fall 1998

Characteristic	Mean t-score	0-25 percent	26-50 percent	51-75 percent	76-100 percent
Total	50	25	25	25	25
Child's sex					
Male	49	29	25	24	22
Female	51	21	25	26	28
Child's age at entry					
Born Jan. – Aug. 1992	53	15	25	26	34
Born Sep. – Dec. 1992	52	19	22	27	32
Born Jan. – Apr. 1993	51	24	24	25	27
Born May – Aug. 1993	48	30	27	23	20
Born Sep. – Dec. 1993	47	33	28	23	16
Mother's education					
Less than high school	43	52	26	16	6
High school diploma or equivalent	48	32	28	24	16
Some college, including vocational/technical	51	21	27	26	26
Bachelor's degree or higher	56	8	18	28	46
Family type					
Single mother	47	36	29	21	14
Single father	48	31	31	22	16
Two parent	51	22	24	26	28
Welfare receipt					
Utilized AFDC	44	49	27	16	8
Never utilized AFDC	50	22	25	26	27
Primary language spoken in home					
Non-English	46	44	22	18	16
English	50	25	25	25	25
Child's race/ethnicity					
White, non-Hispanic	52	18	24	28	30
Black, non-Hispanic	47	34	30	21	15
Asian	55	13	24	24	39
Hispanic	46	42	24	19	15
Hawaiian Native/Pacific Islander	48	33	28	17	22
American Indian/Alaska Native	42	57	23	11	9
More than one race, non-Hispanic	49	31	23	23	23
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	53	16	24	29	31
Black, non-Hispanic	48	30	30	22	18
Asian	56	11	21	25	43
Hispanic	48	35	24	22	19
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	45	43	28	21	8
Black, non-Hispanic	43	52	28	16	4
Asian	48	28	41	19	12
Hispanic	41	64	22	10	4

NOTE: Estimates based on first-time kindergartners who were assessed in English (approximately 19 percent of Asian children and approximately 30 percent of Hispanic children were not assessed). Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 3.—Mean mathematics t-scores of first-time kindergartners, and percentage distribution of quartile scores, by child and family characteristics: Fall 1998

Characteristic	Mean t-score	0-25 percent	26-50 percent	51-75 percent	76-100 percent
Total	50	25	25	25	25
Child's sex					
Male	50	26	24	24	26
Female	50	24	26	26	24
Child's age at entry					
Born Jan. – Aug. 1992	55	13	18	23	46
Born Sep. – Dec. 1992	53	17	22	26	35
Born Jan. – Apr. 1993	51	22	26	26	26
Born May – Aug. 1993	48	32	27	24	17
Born Sep. – Dec. 1993	46	41	27	20	12
Mother's education					
Less than high school	43	53	25	15	7
High school diploma or equivalent	48	32	28	23	17
Some college, including vocational/technical	51	21	27	28	24
Bachelor's degree or higher	56	18	18	19	45
Family type					
Single mother	46	37	28	21	14
Single father	48	31	29	19	21
Two parent	51	21	24	26	29
Welfare receipt					
Utilized AFDC	44	50	27	16	7
Never utilized AFDC	51	22	25	26	27
Primary language spoken in home					
Non-English	47	38	26	19	17
English	50	25	25	25	25
Child's race/ethnicity					
White, non-Hispanic	52	18	23	27	32
Black, non-Hispanic	46	39	30	21	10
Asian	54	13	25	24	38
Hispanic	47	40	26	20	14
Hawaiian Native/Pacific Islander	47	34	27	27	12
American Indian/Alaska Native	43	50	26	15	9
More than one race, non-Hispanic	49	31	24	25	20
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	53	16	23	28	33
Black, non-Hispanic	47	36	30	22	12
Asian	55	12	24	23	41
Hispanic	48	32	27	24	17
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	45	45	25	19	11
Black, non-Hispanic	42	56	27	13	4
Asian	50	18	36	28	18
Hispanic	42	60	24	11	5

NOTE: Estimates based on first-time kindergartners who were assessed in English (approximately 19 percent of Asian children and approximately 30 percent of Hispanic children were not assessed). Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 4.—Mean general knowledge t-scores of first-time kindergartners, and percentage distribution of quartile scores, by child and family characteristics: Fall 1998

Characteristic	Mean t-score	0-25 percent	26-50 percent	51-75 percent	76-100 percent
Total	50	25	25	25	25
Child's sex					
Male	50	25	24	25	26
Female	50	25	26	25	24
Child's age at entry					
Born Jan. – Aug. 1992	56	11	16	26	47
Born Sep. – Dec. 1992	53	16	22	26	36
Born Jan. – Apr. 1993	51	23	25	27	25
Born May – Aug. 1993	48	32	27	24	17
Born Sep. – Dec. 1993	46	42	27	19	12
Mother's education					
Less than high school	43	52	29	14	5
High school diploma or equivalent	48	31	28	25	16
Some college, including vocational/technical	51	21	26	29	24
Bachelor's degree or higher	56	10	16	26	48
Family type					
Single mother	46	40	27	21	12
Single father	48	25	35	26	14
Two parent	52	20	24	26	30
Welfare receipt					
Utilized AFDC	43	51	28	15	6
Never utilized AFDC	51	22	25	26	27
Primary language spoken in home					
Non-English	43	53	28	13	6
English	51	24	25	25	26
Child's race/ethnicity					
White, non-Hispanic	53	14	23	29	34
Black, non-Hispanic	44	51	28	15	6
Asian	48	34	27	20	19
Hispanic	46	41	28	19	12
Hawaiian Native/Pacific Islander	45	47	29	16	8
American Indian/Alaska Native	44	49	25	18	7
More than one race, non-Hispanic	50	23	26	30	21
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	54	12	23	29	36
Black, non-Hispanic	44	48	28	17	7
Asian	49	30	26	22	22
Hispanic	48	35	28	22	15
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	47	34	34	23	9
Black, non-Hispanic	40	66	25	8	1
Asian	41	60	29	6	5
Hispanic	42	63	27	8	2

NOTE: Estimates based on first-time kindergartners who were assessed in English (approximately 19 percent of Asian children and approximately 30 percent of Hispanic children were not assessed). Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 5.—Percentage distribution of first-time kindergartners by print familiarity scores, by child and family characteristics: Fall 1998

Characteristic	0 skills	1 skill	2 skills	3 skills
Total	18	21	24	37
Child's sex				
Male	20	20	23	37
Female	17	21	25	38
Child's age at entry				
Born Jan. – Aug. 1992	11	17	22	50
Born Sep. – Dec. 1992	13	18	24	45
Born Jan. – Apr. 1993	17	20	24	38
Born May – Aug. 1993	22	22	24	32
Born Sep. – Dec. 1993	27	25	22	26
Mother's education				
Less than high school	32	28	24	17
High school diploma or equivalent	23	23	24	30
Some college, including vocational/technical	17	20	24	39
Bachelor’s degree or higher	8	14	23	56
Family type				
Single mother	26	24	24	25
Single father	22	25	24	29
Two parent	16	19	24	41
Welfare receipt				
Utilized AFDC	32	27	22	19
Never utilized AFDC	17	19	24	40
Primary language spoken in home				
Non-English	26	22	24	28
English	18	20	24	38
Child's race/ethnicity				
White, non-Hispanic	14	18	24	45
Black, non-Hispanic	29	26	24	21
Asian	15	19	22	43
Hispanic	24	23	26	27
Hawaiian Native/Pacific Islander	30	27	19	23
American Indian/Alaska Native	38	27	18	17
More than one race, non-Hispanic	18	23	24	35
Child’s race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	12	17	24	47
Black, non-Hispanic	27	25	25	23
Asian	14	17	22	46
Hispanic	22	22	25	31
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	26	26	25	22
Black, non-Hispanic	40	30	20	11
Asian	22	36	23	19
Hispanic	32	26	27	15

NOTE: Estimates based on first-time kindergartners who were assessed in English (approximately 19 percent of Asian children and approximately 30 percent of Hispanic children were not assessed). Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 6.—Percentage of first-time kindergartners passing each reading proficiency level, by child and family characteristics: Fall 1998

Characteristic	Letter recognition	Beginning sounds	Ending sounds	Sight words	Words in context
Total	66	29	17	2	1
Child's sex					
Male	62	26	15	3	1
Female	70	32	19	2	1
Child's age at entry					
Born Jan. – Aug. 1992	76	38	24	5	2
Born Sep. – Dec. 1992	73	36	22	4	2
Born Jan. – Apr. 1993	67	31	17	2	1
Born May – Aug. 1993	60	23	13	1	1
Born Sep. – Dec. 1993	56	20	11	1	1
Mother's education					
Less than high school	38	9	4	(*)	(*)
High school diploma or equivalent	57	20	11	1	(*)
Some college, including vocational/technical	69	30	17	2	1
Bachelor's degree or higher	86	50	32	6	2
Family type					
Single mother	53	18	10	1	(*)
Single father	58	21	11	2	1
Two parent	70	33	19	3	1
Welfare receipt					
Utilized AFDC	41	11	5	1	(*)
Never utilized AFDC	69	31	18	4	1
Primary language spoken in home					
Non-English	49	20	12	3	2
English	67	30	17	2	1
Child's race/ethnicity					
White, non-Hispanic	73	34	20	3	1
Black, non-Hispanic	55	19	10	1	(*)
Asian	79	43	29	9	5
Hispanic	49	19	10	1	1
Hawaiian Native/Pacific Islander	55	24	14	2	1
American Indian/Alaska Native	34	11	6	(*)	(*)
More than one race, non-Hispanic	61	27	16	4	2
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	75	36	21	3	1
Black, non-Hispanic	59	22	12	1	1
Asian	82	47	32	10	5
Hispanic	55	23	13	1	1
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	47	12	6	(*)	(*)
Black, non-Hispanic	37	7	3	(*)	(*)
Asian	60	20	9	1	1
Hispanic	29	6	3	(*)	(*)

* less than .5 percent.
NOTE: Estimates based on first-time kindergartners who were assessed in English (approximately 19 percent of Asian children and approximately 30 percent of Hispanic children were not assessed). Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 7.—Percentage of first-time kindergartners passing each mathematics proficiency level, by child and family characteristics: Fall 1998

Characteristic	Number & shape	Relative size	Ordinal sequence	Add/ subtract	Multiply/ divide
Total	94	58	20	4	(*)
Child's sex					
Male	93	57	21	5	1
Female	95	59	20	4	(*)
Child's age at entry					
Born Jan. – Aug. 1992	97	74	37	10	2
Born Sep. – Dec. 1992	96	67	29	7	1
Born Jan. – Apr. 1993	95	60	21	4	(*)
Born May – Aug. 1993	92	51	14	2	(*)
Born Sep. – Dec. 1993	89	42	10	2	(*)
Mother's education					
Less than high school	84	32	6	1	(*)
High school diploma or equivalent	92	50	13	2	(*)
Some college, including vocational/technical	96	61	20	4	(*)
Bachelor's degree or higher	99	79	37	9	1
Family type					
Single mother	90	44	11	2	(*)
Single father	91	51	16	3	(*)
Two parent	95	63	23	5	(*)
Welfare receipt					
Utilized AFDC	85	33	6	1	(*)
Never utilized AFDC	95	61	22	5	1
Primary language spoken in home					
Non-English	89	45	13	3	(*)
English	94	59	21	4	(*)
Child's race/ethnicity					
White, non-Hispanic	96	66	26	5	(*)
Black, non-Hispanic	90	42	9	1	(*)
Asian	98	70	31	9	1
Hispanic	90	44	12	2	(*)
Hawaiian Native/Pacific Islander	91	48	11	2	(*)
American Indian/Alaska Native	80	34	8	1	(*)
More than one race, non-Hispanic	94	54	17	4	(*)
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	97	68	27	6	(*)
Black, non-Hispanic	91	45	10	1	(*)
Asian	97	73	34	10	2
Hispanic	93	49	14	2	(*)
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	87	40	9	1	(*)
Black, non-Hispanic	83	27	4	(*)	(*)
Asian	94	58	16	4	1
Hispanic	82	27	5	1	(*)

* less than .5 percent.

NOTE: Estimates based on first-time kindergartners who were assessed in English (approximately 19 percent of Asian children and approximately 30 percent of Hispanic children were not assessed). Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Social Skills

Social skills are an important part of children's development. A primary goal of early childhood education is the socialization of children (Meisels et al. 1996; Vinovskis 1992). The ability to make and keep friends and maintain relationships with peers and adults (such as teachers) form the social foundation of school. Children's social skills may be related to their later academic achievement (Swartz and Walker 1984). And their experiences with peers will likely influence their attitudes toward school and learning (Kagan et al. 1995).

Children's social skills may be conceptualized along two lines—prosocial and problem behaviors (Meece 1997). Prosocial behavior includes positive behaviors that facilitate successful social interaction. Children act in ways to help others without necessarily experiencing gain for themselves. As children expand their social worlds and cognitive understanding of self and others, they are more able to empathize and share with others. Prosocial skills in young children can be as simple as the abilitiy to accept peer ideas in play or to form friendships. Conversely, problem behaviors are those that tend to impede social interaction. Children who exhibit problematic behavior (e.g., fighting, arguing) may not be liked by peers or may be seen as disruptive by adults. Both the positive and negative behaviors that children exhibit frame their learning environment by affecting the social dynamics within this environment.

Several discrete behaviors serve as indicators of children's social skills, either prosocial or problematic in nature. Children may exhibit different behaviors at home and school. Thus, it is important to frame children's social skills in the context of the home and in the context of the school. Therefore, parents and teachers of each sampled child answered questions on the frequency with which the child acts in certain ways (e.g., joins others in play, makes friends, argues with others, fights with others). The frequency of these behaviors is categorized as *never/sometimes* and *often/very often*.

Prosocial Behavior. Children with prosocial skills may experience an easier time adjusting to the school setting. The ability to make friends and a sensitivity to others may contribute to a positive atmosphere in which learning can occur. In this report, children's prosocial behavior is examined by three single item indicators. Parents rated how frequently their child easily joins others in play, makes and keeps friends and comforts or helps others (table 7). Similarly, teachers noted how often a child accepts peers' ideas for group activities, forms and maintains friendships and comforts or helps other children (table 8).

Key Findings: Prosocial Behavior

- From parent ratings, at least 80 percent of children join others, make friends or comfort others often or very often.
- From teacher ratings, about three-quarters of first-time kindergartners are adept at forming friendships and accepting peer ideas, engaging in these behaviors often or very often. Additionally, half of kindergartners comfort other children in school.
- Both parents and teachers rate girls as more likely than boys to comfort others often or very often. Teachers also rate kindergarten girls as more likely to accept peer ideas and form friendships. Parents of kindergartners do not see large differences in how often boys and girls join others, but parents do report that girls make friends slightly more often than boys.
- From the perspective of the kindergarten teacher, the older children (born September to December 1992) are more likely than the younger children (born September through December 1993) to accept the ideas of others and to comfort others. Parents' perceptions reflect these age differences for joining others.
- Also, from the perspective of kindergarten teachers, children with some characteristics of risk for school difficulty (those whose mothers have lower education, are single mothers or whose families have received or are receiving public assistance) are less likely than children whose mothers have higher levels of education, who come from two-parent families and whose families have never utilized public assistance to accept peer ideas and form friendships. Parent reports concerning joining others and making friends reflect most of these differences.
- Based on the reports of their parents and teachers, children whose home language is one other than English are less likely to engage in the three prosocial behaviors examined here than children whose primary home language is English.

Table 8.—Percentage distribution of first-time kindergartners by the frequency with which parents say they engage in prosocial behavior, by child and family characteristics: Fall 1998

Characteristic	Join others		Make friends		Comfort others	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	14	86	11	89	18	82
Child's sex						
Male	14	86	13	87	22	78
Female	15	85	10	90	14	86
Child's age at entry						
Born Jan. – Aug. 1992	14	86	11	89	18	82
Born Sep. – Dec. 1992	13	87	11	89	18	82
Born Jan. – Apr. 1993	14	86	11	89	18	82
Born May – Aug. 1993	14	86	12	88	18	82
Born Sep. – Dec. 1993	18	82	14	86	20	80
Mother's education						
Less than high school	21	79	20	80	29	71
High school diploma or equivalent	15	85	12	88	18	82
Some college, including vocational/technical	13	87	9	91	15	85
Bachelor's degree or higher	12	88	9	91	15	85
Family type						
Single mother	16	84	13	87	19	81
Single father	12	88	11	89	19	81
Two parent	14	86	11	89	18	82
Welfare receipt						
Utilized AFDC	17	83	15	85	21	79
Never utilized AFDC	14	86	11	89	17	83
Primary language spoken in home						
Non-English	23	77	21	79	30	70
English	13	87	10	90	17	83
Child's race/ethnicity						
White, non-Hispanic	10	90	9	91	15	85
Black, non-Hispanic	16	84	13	87	19	81
Asian	22	78	18	82	28	72
Hispanic	20	80	17	83	24	76
Hawaiian Native/Pacific Islander	40	60	28	72	24	76
American Indian/Alaska Native	15	85	13	87	16	84
More than one race, non-Hispanic	14	86	10	90	14	86
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	10	90	8	92	15	85
Black, non-Hispanic	15	85	12	88	18	82
Asian	21	79	17	83	25	75
Hispanic	18	82	14	86	18	82
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	13	87	15	85	20	80
Black, non-Hispanic	21	79	19	81	25	75
Asian	27	73	25	75	41	59
Hispanic	25	75	22	78	36	64

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 9.—Percentage distribution of first-time kindergartners by the frequency with which teachers say they engage in prosocial behavior, by child and family characteristics: Fall 1998

Characteristic	Accept peer ideas		Form friendships		Comfort others	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	26	74	23	77	49	51
Child's sex						
Male	29	71	27	73	57	43
Female	23	77	20	80	40	60
Child's age at entry						
Born Jan. – Aug. 1992	27	73	25	75	46	54
Born Sep. – Dec. 1992	25	75	20	80	46	54
Born Jan. – Apr. 1993	25	75	22	78	48	52
Born May – Aug. 1993	27	73	26	74	51	49
Born Sep. – Dec. 1993	31	69	26	74	54	46
Mother's education						
Less than high school	31	69	30	70	58	42
High school diploma or equivalent	27	73	25	75	50	50
Some college, including vocational/technical	25	75	22	78	47	53
Bachelor's degree or higher	24	76	19	81	43	57
Family type						
Single mother	31	69	29	71	54	46
Single father	33	67	33	67	59	41
Two parent	24	76	21	79	47	53
Welfare receipt						
Utilized AFDC	33	67	33	69	57	43
Never utilized AFDC	25	75	22	78	47	53
Primary language spoken in home						
Non-English	29	71	28	72	56	44
English	26	74	23	77	48	52
Child's race/ethnicity						
White, non-Hispanic	24	76	20	80	45	55
Black, non-Hispanic	32	68	29	71	56	44
Asian	25	75	27	73	50	50
Hispanic	27	73	26	74	55	45
Hawaiian Native/Pacific Islander	26	74	31	69	58	42
American Indian/Alaska Native	30	70	32	68	55	45
More than one race, non-Hispanic	29	71	27	73	47	53
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	23	77	19	81	44	56
Black, non-Hispanic	32	68	27	73	54	46
Asian	25	75	26	74	50	50
Hispanic	25	75	24	76	53	47
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	29	71	31	69	53	47
Black, non-Hispanic	33	67	35	65	66	34
Asian	24	76	25	75	51	49
Hispanic	31	69	27	73	58	42

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Problem Behavior. Children who exhibit aggressive or antisocial behaviors may have a more difficult time adjusting to school. Children who fight, argue or yell at others are more likely to experience peer rejection, and such rejection has been associated with academic difficulties and increased likelihood for school dropout (Kupersmidt et al. 1990; Parker and Asher 1987). In this report, children's problem behaviors are described by three single item indicators. Parents and teachers (tables 9 and 10, respectively) each rated how often the child argues with others, fights with others, or gets angry easily.

Key Findings: Problem Behavior

- The incidence of problem behavior is relatively infrequent in first-time kindergartners. Teachers report that 10 to 11 percent of first-time kindergartners argue or fight with others or get angry easily often to very often. Children also exhibit few antisocial problems as rated by their parents. However, parents report a somewhat higher incidence of these behaviors. According to their parents, 15 percent of children often or very often fight with others and 33 percent often or very often argue with others.

- The frequency of children's problem behaviors varies by their family type. Single mothers are more likely than respondents from two-parent families to report their children as arguing, fighting or getting angry often or very often. Teachers are less likely to rate children from households with two parents than children from single-mother families as exhibiting problem behavior.

- Reports of children's problem behaviors vary by race/ethnicity. The pattern of these differences and their magnitude depends on who is rating the children's behavior. When teachers rate the children in their classrooms, black children are more likely than white and Asian children to be seen as exhibiting higher levels of problem behaviors (arguing with others, fighting with others, getting angry easily). When parents rate their children, we see fewer differences between black and white children. Instead, we see more differences between Asian children and white, black and Hispanic children. Asian children are less likely than children in these other groups to be seen as arguing or fighting often to very often by their parents.

Table 10.—Percentage distribution of first-time kindergartners by the frequency with which parents say they exhibit antisocial behavior, by child and family characteristics: Fall 1998

Characteristic	Argue with others		Fight with others		Easily get angry	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	67	33	85	15	83	17
Child's sex						
Male	67	33	84	16	81	19
Female	68	32	86	14	85	15
Child's age at entry						
Born Jan. – Aug. 1992	68	32	87	13	84	16
Born Sep. – Dec. 1992	68	32	86	14	84	16
Born Jan. – Apr. 1993	68	32	86	14	84	16
Born May – Aug. 1993	67	33	84	16	82	18
Born Sep. – Dec. 1993	69	31	85	15	81	19
Mother's education						
Less than high school	64	36	79	21	71	29
High school diploma or equivalent	65	35	83	17	82	18
Some college, including vocational/technical	69	31	87	13	86	14
Bachelor's degree or higher	72	28	90	10	88	12
Family type						
Single mother	65	35	82	18	78	22
Single father	68	32	90	10	84	16
Two parent	69	31	86	14	85	15
Welfare receipt						
Utilized AFDC	64	36	79	21	74	26
Never utilized AFDC	68	32	86	14	84	16
Primary language spoken in home						
Non-English	73	27	85	15	79	21
English	67	33	85	15	84	16
Child's race/ethnicity						
White, non-Hispanic	67	33	86	14	85	15
Black, non-Hispanic	67	33	84	16	81	19
Asian	78	22	90	10	84	16
Hispanic	70	30	84	16	79	21
Hawaiian Native/Pacific Islander	71	29	80	20	84	16
American Indian/Alaska Native	66	34	82	18	81	19
More than one race, non-Hispanic	65	35	86	14	80	20
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	68	32	87	13	87	13
Black, non-Hispanic	69	31	86	14	84	16
Asian	77	23	89	11	84	16
Hispanic	70	30	84	16	82	18
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	53	47	73	27	71	29
Black, non-Hispanic	58	42	75	25	67	33
Asian	85	15	96	4	79	21
Hispanic	72	28	83	17	73	27

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 11.—Percentage distribution of first-time kindergartners by the frequency with which teachers say they exhibit antisocial behavior, by child and family characteristics: Fall 1998

Characteristic	Argue with others		Fight with others		Easily get angry	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	89	11	90	10	89	11
Child's sex						
Male	87	13	89	11	86	14
Female	92	8	92	8	91	9
Child's age at entry						
Born Jan. – Aug. 1992	89	11	91	9	89	11
Born Sep. – Dec. 1992	89	11	91	9	90	10
Born Jan. – Apr. 1993	89	11	91	9	89	11
Born May – Aug. 1993	88	12	89	11	88	12
Born Sep. – Dec. 1993	89	11	88	12	86	14
Mother's education						
Less than high school	87	13	86	14	87	13
High school diploma or equivalent	88	12	90	10	88	12
Some college, including vocational/technical	90	10	91	9	89	11
Bachelor's degree or higher	91	9	93	7	90	10
Family type						
Single mother	85	15	87	13	86	14
Single father	82	18	82	18	85	15
Two parent	90	10	91	9	90	10
Welfare receipt						
Utilized AFDC	84	16	85	15	85	15
Never utilized AFDC	90	10	91	9	89	11
Primary language spoken in home						
Non-English	91	9	89	11	88	12
English	89	11	90	10	89	11
Child's race/ethnicity						
White, non-Hispanic	90	10	92	8	90	10
Black, non-Hispanic	83	17	86	14	85	15
Asian	94	6	93	7	91	9
Hispanic	90	10	89	11	88	12
Hawaiian Native/Pacific Islander	86	14	89	11	88	12
American Indian/Alaska Native	86	14	85	15	87	13
More than one race, non-Hispanic	90	10	90	10	88	12
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	91	9	92	8	90	10
Black, non-Hispanic	84	16	87	13	85	15
Asian	94	6	92	8	90	10
Hispanic	90	10	90	10	89	11
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	87	13	88	12	87	13
Black, non-Hispanic	80	20	83	17	85	15
Asian	97	3	97	3	95	5
Hispanic	89	11	86	14	86	14

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Physical Well-Being

When children enter school, their developmental status is based not only upon their previous cognitive development, literacy experiences and social development but also on their physical development. Indeed, children's physical and motor development play a key role in their preparedness for school. Children's physical well-being may frame their learning opportunities—limiting or expanding them. The child with poor fine motor skills will have difficulty holding and using a pencil, which may contribute to difficulties in printing letters and words. Fine motor skills (i.e., visual motor) can predict reading, mathematics and general school achievement, and such perceptual skills may be more predictive than even cognitive skills for later success in reading comprehension (Tramontana et al. 1988).

Children's social interactions and emotional well-being may also be influenced by their physical developmental status. Children who have problems with their health or have lower levels of physical activity may feel lonely and less well liked by their peers (Page et al. 1992). In terms of height, adults and young children alike tend to rate taller boys as more able or more liked than shorter boys, and preschool boys tend to evaluate taller girls as more liked (Eisenberg et al. 1984). In regard to weight, an overweight child may be teased and feel lonely, potentially limiting his or her confidence in joining cooperative learning activities or speaking in class.

Furthermore, children with developmental difficulties (e.g., increased activity levels, attention difficulties, articulation difficulties) may develop feelings of separateness from their peers and adults other than their parents, potentially adversely affecting their school experiences (Kagan et al. 1995; Meisels et al. 1993). The maturational process of growing relates to numerous other physical well-being processes, such as activity level and coordination.

The following section describes a set of key characteristics that represent the domain of physical well-being. Each of these characteristics reflects an aspect of physical health and well-being that potentially influences children’s adaptation to and success in school. The child-specific areas of physical well-being in this report include children’s height and weight (body mass index), fine motor skills (e.g., copying figures, manipulating blocks), gross motor skills (e.g., hopping on one foot, walking backward in a line), general health and developmental limitations. Trained assessors measured each child’s height, weight and motor skills. Parents reported on their child’s general health and potential developmental difficulties.

Height and Weight. Children's height and weight are robust indicators of general health and well-being (Shonkoff 1992). Both serve as markers of children's ability to thrive and reflect the effects of nutrition, the consequences of persistent and chronic illness or environmental conditions. At entry into kindergarten, children's growth is relatively rapid. At this young age, there is a good amount of variation in children's height and weight. On average, first-time kindergarten children are 45 inches tall and weigh 46 pounds, with boys averaging 45 inches, 47 pounds and girls averaging 44 inches, 46 pounds (not shown in tables).

Body Mass Index. Obesity is a significant health problem, with medical and psychological consequences for children (Hammer et al. 1991). Rosner and his colleagues (1998) report that "childhood obesity is the most prevalent and serious nutritional problem in the United States" (p. 211). Because of the concern with effects of childhood obesity, the measurement of the relationship of height to weight has recently been added as an indicator of health (Rosner et al. 1998). Body mass index (BMI), the ratio between height and weight (weight in kilograms/height in meters^2), is used as an index of overweight in children and adolescents. Body mass index guidelines are sex and age specific (Rosner et al. 1998), in that age is a part of the computation and the index is calculated separately for males and females (table 11). A boy, aged 5 who is of average height—45 inches—would need to weigh 53 pounds to be considered at risk for overweight. This is about 13 percent more than the average weight of 47 pounds. A girl, aged 5 who is of average height—44 inches—would need to weigh 51 pounds to be considered at risk for overweight. This is about 11 percent more than the average weight of 46 pounds.

Key Findings: Body Mass Index

- For both boys and girls, percent at risk for overweight varies by level of mother's education. Specifically, boys and girls whose mothers have less than a bachelor's degree are at greater risk for being overweight than boys and girls whose mothers have a bachelor's degree or higher.

- Boys and girls who come from homes where the primary language is not English are at greater risk for being overweight than boys and girls who come from homes where the primary language is English.

- Risk for being overweight also varies by children's race/ethnicity. Hispanic boys are at greater risk than their white and black counterparts for being overweight. White girls are less likely to be at risk for overweight than their black and Hispanic counterparts.

Table 12.—Percentage of first-time male and female kindergartners at risk for overweight, by child and family characteristics: Fall 1998

Characteristic	Males	Females
Total	12	11
Mother's education		
Less than high school	15	12
High school diploma or equivalent	13	13
Some college, including vocational/technical	12	11
Bachelor's degree or higher	9	8
Family type		
Single mother	13	13
Single father	10	9
Two parent	12	11
Welfare receipt		
Utilized AFDC	12	10
Never utilized AFDC	11	10
Primary language spoken in home		
Non-English	19	17
English	11	11
Child's race/ethnicity		
White, non-Hispanic	11	9
Black, non-Hispanic	10	13
Asian	15	9
Hispanic	17	15
Hawaiian Native/Pacific Islander	15	8
American Indian/Alaska Native	18	15
More than one race, non-Hispanic	10	13
Child's race/ethnicity by maternal education		
Maternal education:		
High school diploma/equivalent or more		
White, non-Hispanic	10	9
Black, non-Hispanic	11	13
Asian	15	10
Hispanic	17	15
Maternal education:		
Less than high school diploma or equivalent		
White, non-Hispanic	16	9
Black, non-Hispanic	7	11
Asian	15	6
Hispanic	16	16

NOTE: Estimates based on first-time kindergartners. Age is factored in to the BMI calculation, and therefore is not used as a characteristic. Overweight is defined as BMI at or above the sex- and age-specific guidelines calculated at 12-month age intervals (Rosner et al. 1998).
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Motor Skills. Physical and motor development are important indicators of development in the cognitive and socioemotional areas (Bukatko and Daehler 1995; Meisels et al. 1993). Children's control and coordination of balance and body movements relates to their performance in academic areas in the elementary grades. Specifically, children's visual motor skills (i.e., coordination of eyes and hand movements) are among the best predictors of reading achievement in the first through third grades (Tramontana et al. 1988). Other studies (e.g., Wallbrown et al. 1975) demonstrate that although cognitive measures are more effective predictors of reading vocabulary, perceptual measures are better predictors of reading comprehension.

Children's motor development and neuromotor maturation affect their socioemotional development as well. Problems in motor coordination correlate with peer ratings and loneliness (Doan and Scherman 1987; Hartup 1983; Hops and Finch 1985; Page et al. 1992). For boys in particular, physical prowess is a consideration in the formation of social networks as boys progress through the elementary years. In combination with height and weight, motor assessment gives an indication of the well-being of the child.

The ECLS-K direct measures of fine motor skills involve children constructing forms with wooden blocks, copying basic figures (e.g., circle, square, cross) and drawing a person. The gross motor assessment involves balancing on each foot, hopping on each foot, skipping and walking backward on a line. For comparison purposes, note that the fine motor (maximum nine points) and the gross motor (maximum eight points) scales are not scored the same as each other. On both scales, higher scores indicate higher levels of coordination (tables 12–13). To fully appreciate differences by child and family characteristics in fine and gross motor ability, the scores were empirically divided into approximate thirds. Therefore, comparisons about the characteristics of children scoring in the lower, middle and higher portion of the distribution can be made. The middle group of children is able to perform the fine and gross motor tasks expected for children their age. The lower group of children are scoring about one or more standard deviations below the average. These children are possibly at risk for later developmental difficulties.

Key Findings: Motor Skills

- More girls than boys score in the higher portion of the distribution for both fine and gross motor skills (tables 13 and 14).
- Children's fine and gross motor skills vary with their age. Older kindergartners (born in 1992) are more likely to score in the higher portion of the distribution than the younger kindergartners (born September through December 1993).
- Children whose mothers have higher levels of education are more likely to score in the higher portion of the distribution for both the fine and gross motor skills than children whose mothers have a lower education level.
- In terms of fine motor skills, more children from two-parent families score in the higher portion of the distribution children from single-parent families.
- Children's gross motor skills vary by their race/ethnicity. Black children are more likely to score in the higher portion of the distribution for gross motor skills than white, Asian or Hispanic children.

Table 13.—First-time kindergartners' mean fine motor skills score and percentage distribution of scores, by child and family characteristics: Fall 1998

Characteristic	Mean fine motor	Lower	Middle	Higher
Total	6	29	36	35
Child's sex				
Male	6	31	37	33
Female	6	26	36	38
Child's age at entry				
Born Jan. – Aug. 1992	6	20	36	44
Born Sep. – Dec. 1992	6	20	36	44
Born Jan. – Apr. 1993	6	25	37	38
Born May – Aug. 1993	5	34	37	29
Born Sep. – Dec. 1993	5	45	33	22
Mother's education				
Less than high school	5	42	35	22
High school diploma or equivalent	5	33	36	31
Some college, including vocational/technical	6	25	37	39
Bachelor's degree or higher	6	18	36	46
Family type				
Single mother	5	37	35	28
Single father	6	31	41	28
Two parent	6	26	37	37
Welfare receipt				
Utilized AFDC	5	44	33	23
Never utilized AFDC	6	26	37	37
Primary language spoken in home				
Non-English	6	31	35	34
English	6	28	36	36
Child's race/ethnicity				
White, non-Hispanic	6	24	37	39
Black, non-Hispanic	5	41	33	26
Asian	7	15	36	49
Hispanic	6	31	36	33
Hawaiian Native/Pacific Islander	6	27	32	41
American Indian/Alaska Native	6	31	39	30
More than one race, non-Hispanic	6	28	41	31
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	6	23	37	40
Black, non-Hispanic	5	39	33	28
Asian	7	14	36	50
Hispanic	6	27	35	38
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	5	44	34	22
Black, non-Hispanic	4	51	34	16
Asian	6	18	33	49
Hispanic	5	39	37	24

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding. Scale 0–9.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 14.—First-time kindergartners' mean gross motor skills score and percentage distribution of scores, by child and family characteristics: Fall 1998

Characteristic	Mean gross motor	Lower	Middle	Higher
Total	6	26	35	39
Child's sex				
Male	6	31	36	33
Female	7	22	34	44
Child's age at entry				
Born Jan. – Aug. 1992	7	21	32	47
Born Sep. – Dec. 1992	7	21	33	46
Born Jan. – Apr. 1993	6	24	35	41
Born May – Aug. 1993	6	31	36	33
Born Sep. – Dec. 1993	6	37	35	28
Mother's education				
Less than high school	6	30	35	35
High school diploma or equivalent	6	28	35	37
Some college, including vocational/technical	6	25	35	40
Bachelor's degree or higher	5	24	34	42
Family type				
Single mother	6	26	33	41
Single father	6	33	33	34
Two parent	6	27	35	38
Welfare receipt				
Utilized AFDC	6	29	32	38
Never utilized AFDC	6	26	35	39
Primary language spoken in home				
Non-English	6	30	34	36
English	6	26	35	39
Child's race/ethnicity				
White, non-Hispanic	6	28	35	37
Black, non-Hispanic	7	21	33	46
Asian	6	26	36	38
Hispanic	6	28	35	37
Hawaiian Native/Pacific Islander	6	26	40	34
American Indian/Alaska Native	6	31	29	40
More than one race, non-Hispanic	6	24	38	38
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	6	27	35	38
Black, non-Hispanic	7	21	33	46
Asian	6	26	35	39
Hispanic	6	28	35	37
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	6	36	34	30
Black, non-Hispanic	7	22	35	43
Asian	6	33	34	33
Hispanic	6	29	36	35

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding. Scale 0–8.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

General Health. Health and physical well-being are both precursors and corollaries to other areas of development. Elementary school teachers report that children's health is critical to their school performance (Heaviside and Farris 1993). At a time when children learn best by doing, strong and healthy children are better able to explore their physical world and are better prepared to put their best foot forward to begin formal schooling. Parents were asked to rate their children's general health from excellent to fair/poor (table 15).

Key Findings: General Health

- A majority of parents of first-time kindergartners report their child's general health to be excellent (51 percent) or very good (32 percent). Only a minority of children are reported as having fair or poor general health (3 percent) (table 15).
- Kindergarten children whose mothers have higher levels of education rate their children's general health better than children whose mothers have lower levels of education.
- Children from two-parent families are more likely to be in excellent health than children from single-mother families.
- Children whose families have never utilized public assistance are more likely to be in excellent general health than children whose families have utilized public assistance.
- Children's general health status varies by their race/ethnicity. White children are more likely than black, Hispanic or Asian children to be in excellent general health.

Table 15.—Percentage distribution of first-time kindergartners by parents' assessment of their general health, by child and family characteristics: Fall 1998

Characteristic	Excellent	Very good	Good	Fair/ poor
Total	51	32	14	3
Child's sex				
Male	49	33	15	3
Female	53	31	14	2
Child's age at entry				
Born Jan. – Aug. 1992	51	34	12	3
Born Sep. – Dec. 1992	53	30	14	3
Born Jan. – Apr. 1993	51	32	14	3
Born May – Aug. 1993	51	32	14	3
Born Sep. – Dec. 1993	47	33	16	4
Mother's education				
Less than high school	35	35	23	7
High school diploma or equivalent	47	34	16	3
Some college, including vocational/technical	54	32	12	2
Bachelor's degree or higher	62	28	9	1
Family type				
Single mother	42	36	17	5
Single father	49	29	19	3
Two parent	54	31	13	2
Welfare receipt				
Utilized AFDC	36	35	22	7
Never utilized AFDC	53	32	13	2
Primary language spoken in home				
Non-English	38	33	25	4
English	52	32	13	3
Child's race/ethnicity				
White, non-Hispanic	57	30	11	2
Black, non-Hispanic	43	34	18	5
Asian	37	38	21	4
Hispanic	41	33	21	5
Hawaiian Native/Pacific Islander	35	48	11	6
American Indian/Alaska Native	41	39	16	4
More than one race, non-Hispanic	53	29	15	3
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	58	30	10	2
Black, non-Hispanic	45	34	17	4
Asian	41	35	21	3
Hispanic	47	32	18	3
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	41	35	20	4
Black, non-Hispanic	35	34	22	9
Asian	25	46	24	5
Hispanic	32	35	26	7

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Developmental Difficulties. Children's health and well-being is broadly defined as the absence of or freedom from disease or chronic symptoms that limit successful engagement in age-appropriate physical, mental and social activities. A healthy youngster is not simply one who is growing well and is free from disease, but one who demonstrates appropriate physical, mental and social competencies for his or her age and the capacity to engage successfully in age-appropriate activities (Shonkoff 1992).

Information about pre-existing and persistent difficulties contributes to a fuller understanding of first-time kindergartners. The developmental difficulties described in this section are important indicators of greater vulnerability for poor school outcomes. However, the presence of a limitation does not in itself indicate a diagnosis or impairment.

The parent-reported developmental difficulties presented in this section include: vision, hearing, activity level, attention, articulation and coordination. Parents were asked to rate their child as compared to other children of the same age.

Teachers and parents of kindergarten children rated a child's ability to sit still and pay attention as essential or very important to his/her being ready to start school (West et al. 1993). Parents were asked about their children's overall activity level and ability to pay attention. Risk for developmental difficulties pertaining to activity level was indicated if the parent responded their child was *a lot more* active than children the same age. Risk for developmental difficulties pertaining to ability to pay attention was indicated if the parent responded their child paid attention *less well* or *much less well* than other children the same age (table 16).

Children's coordination also relates to their chances for school success. If children possess a marked lack of basic coordination (such as movement of arms and legs), this lack of coordination may impact how they relate to others. Similarly, a difficulty in articulation may detrimentally affect how children relate to others. Parents were asked to rate their child's coordination and ability to pronounce words and communicate effectively. Risk for developmental difficulty was indicated if the parent felt their child's coordination and word pronunciation was *slightly less* or *much less* than other children the same age (table 16).

Key Findings: Developmental Difficulties

- Only a small percentage of first-time kindergartners are experiencing vision (6 percent) and hearing problems (3 percent).[7]

- Almost 20 percent of first-time kindergartners are reported as being a lot more active than their age-mates. This indicator of risk for developmental difficulty in terms of hyperactivity varies by child's sex, mother's education, welfare receipt and race/ethnicity. More boys than girls are reported as a lot more active. Children with some characteristics of risk for school difficulty (low maternal education, single mothers or receipt of welfare) are more frequently reported as being a lot more active than children not at risk. Black children are more frequently reported as a lot more active than white, Asian and Hispanic children.

- Thirteen percent of parents report their children encounter difficulties in paying attention. Difficulty in paying attention varies by children's sex, mother's education, welfare receipt and race/ethnicity. Boys seem to pay attention less well or much less well to a greater extent than girls. Children whose mothers have lower levels of education report attention difficulties more frequently than children whose mothers have higher levels of education. Children who come from single mother-families and families who have utilized welfare services are at greater risk for this outcome than children from two-parent families and from families who have never utilized welfare services. Asian children are less likely to experience attention difficulties than white or black children.

- Articulation of words and ability to communicate varies by children's sex. Boys are more likely than girls to have difficulties in this area. Children whose mothers have higher levels of education are less likely that children whose mothers have lower levels of education to have difficulties with articulation.

[7] Due to the limited percentage of children with vision and hearing difficulties, these estimates are not presented in a table, and are not reported by child and family characteristics.

Table 16.—Percentage of first-time kindergartners whose parents reported developmental difficulty in terms of activity level, attention, coordination and pronunciation of words: Fall 1998

Characteristic	Activity level	Attention	Coordination	Articulation
Total	18	13	4	11
Child's sex				
Male	20	18	5	14
Female	16	9	3	7
Child's age at entry				
Born Jan. – Aug. 1992	20	18	8	18
Born Sep. – Dec. 1992	19	13	4	10
Born Jan. – Apr. 1993	18	12	3	10
Born May – Aug. 1993	18	15	4	11
Born Sep. – Dec. 1993	17	14	4	11
Mother's education				
Less than high school	24	17	4	14
High school diploma or equivalent	19	14	4	12
Some college, including vocational/technical	18	14	4	10
Bachelor's degree or higher	14	10	5	8
Family type				
Single mother	25	16	4	11
Single father	22	15	4	10
Two parent	16	12	4	10
Welfare receipt				
Utilized AFDC	26	19	4	15
Never utilized AFDC	17	13	4	10
Primary language spoken in home				
Non-English	17	9	2	10
English	19	14	4	11
Child's race/ethnicity				
White, non-Hispanic	16	13	5	11
Black, non-Hispanic	30	17	3	11
Asian	16	9	3	12
Hispanic	17	11	3	10
Hawaiian Native/Pacific Islander	15	12	5	12
American Indian/Alaska Native	25	15	5	10
More than one race, non-Hispanic	20	17	2	12
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	15	13	5	10
Black, non-Hispanic	28	15	3	9
Asian	17	9	3	11
Hispanic	17	12	3	10
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	28	23	5	17
Black, non-Hispanic	36	25	5	19
Asian	12	7	3	16
Hispanic	16	10	3	9

NOTE: Estimates based on first-time kindergartners. Developmental difficulties are defined as: activity level a lot more active than children the same age and attention, articulation and coordination are less well or much less well than children the same age.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Approaches to Learning

To understand more fully the variations among kindergartners, it is important to look at their task specific performance skills and experiences, which in part reflects the myriad of ways that they become involved in learning (Crinic and Lamberty 1994; Meisels 1999; Prince 1992). The ways in which children approach learning frames the very essence of how they think and act in learning situations (Kagan et al. 1995). Consequently, it is important to examine behavioral inclinations or dispositions such as independence, task persistence, eagerness to learn and creativity (Kopp 1982).

The term approaches to learning represents a broad array of behaviors that influence learning. Certain characteristics related to children's approach to learning may influence how prepared they are for learning in a formal school setting. Children who are able to work undisturbed and persist at tasks and who are attentive are more likely to have a successful experience in the school setting. Kindergartners' ability to sustain their attention, for example, has been shown to predict later achievement in reading and mathematics (Tramontana et al. 1988) and to contribute to an easier adjustment to school. Children who are rated by teachers as able to complete tasks, follow directions and the like tend to also be rated higher in their academic achievement in general and in reading and mathematics in particular (Clark et al. 1985). Consequently, we examine children's learning styles in terms of their task persistence, eagerness to learn new things, creativity and ability to focus attention.

Parents and teachers provided information on children's learning approaches. Parents were asked to rate how frequently their child persists at tasks, seems eager to learn new things and demonstrates creativity. Teachers were asked similar questions, rating how frequently the child persists at tasks, seems eager to learn new things and pays attention.[8] Parent and teacher responses were categorized as either *never/sometimes* or *often/very often*.

[8] The construct of paying attention is also addressed in the developmental difficulties section of the previous chapter. In the Physical Well-Being chapter, we presented parent ratings of concern for their children's ability to pay attention. Here, we present teacher ratings of how often the child pays attention in the classroom. Therefore, depending on the context of the question, the construct of paying attention can be conceptualized as both a potential risk for developmental difficulty and as an integral part of a child's approach to learning.

Key Findings: Approaches to Learning

- Parents and teachers have similar views of children's task persistence. Parents report that about 73 percent of children persist at tasks (table 17), and teachers report that about 71 percent of children persist at tasks often or very often (table 18).

- Both parents and teachers attribute task persistence more often to girls than boys, to the oldest (born in 1992) than the youngest (born September through December 1993) and to children not at risk than children at risk for school difficulty (low maternal education, single mother and receipt of public assistance), except on the basis of home language.

- Both parents and teachers were less likely to rate black children as often or very often persistent at tasks than white and Asian children.

- Teachers are less likely than parents to identify the children as often or very often eager to learn. Parents report that 92 percent of children behave in this way; teachers report that 75 percent children seem eager to learn.

- Teachers perceive differences by child and family characteristics in children's eagerness to learn. For example, girls are more likely than boys to be seen as eager to learn, and older children (born in 1992) are more likely rated as eager to learn than younger children (born September through December 1993). Children with some characteristics of risk (low maternal education, single-mother household and receipt of public assistance) are less likely to be seen as eager to learn than children not at risk. White and Asian children are more likely to be seen as eager to learn by their teachers than black or Hispanic children.

- Parent ratings of children's eagerness to learn differ by mother's education and receipt of public assistance. Children whose mothers have lower levels of education and those who have received public assistance are less likely to be seen by their parents as eager to learn in comparison with children whose mothers have higher levels of education or whose family had not received public assistance.

- About 85 percent of children are seen by their parents as demonstrating creativity in work or play often to very often. Children whose mothers have not completed high school are less often seen as creative by their parents than children whose mothers have a high school diploma or greater. White children are more often seen as creative by their parents than black, Asian or Hispanic children.

- A majority of children's teachers (66 percent) state that first-time kindergartners are able to pay attention most of the time (often to very often). Girls are more likely than boys and older kindergartners are more likely than younger kindergartners to be seen as having this ability. According to teachers, children with some characteristics of risk are less likely than other children to be able to pay attention. Their teachers view black children as less likely than white, Asian or Hispanic children to be able to pay attention.

Table 17.—Percentage distribution of first-time kindergartners by the frequency with which parents say they persist at a task, are eager to learn new things and are creative in work or play, by child and family characteristics: Fall 1998

Characteristic	Persist		Eager to learn		Creative	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	27	73	8	92	15	85
Child's sex						
Male	31	69	9	91	17	83
Female	23	77	7	93	13	87
Child's age at entry						
Born Jan. – Aug. 1992	24	76	8	92	14	86
Born Sep. – Dec. 1992	26	74	7	93	14	86
Born Jan. – Apr. 1993	27	73	8	92	15	85
Born May – Aug. 1993	28	72	8	92	16	84
Born Sep. – Dec. 1993	31	69	10	90	20	80
Mother's education						
Less than high school	35	65	15	85	27	73
High school diploma or equivalent	30	70	9	91	17	83
Some college, including vocational/technical	26	74	6	94	12	88
Bachelor's degree or higher	19	81	5	95	11	89
Family type						
Single mother	32	68	10	90	18	82
Single father	30	70	9	91	15	85
Two parent	25	75	7	93	14	86
Welfare receipt						
Utilized AFDC	35	65	11	89	20	80
Never utilized AFDC	26	74	8	92	15	85
Primary language spoken in home						
Non-English	29	71	13	87	23	77
English	27	73	8	92	15	85
Child's race/ethnicity						
White, non-Hispanic	25	75	7	93	11	89
Black, non-Hispanic	32	68	10	90	20	80
Asian	24	76	12	88	24	76
Hispanic	29	71	10	90	21	79
Hawaiian Native/Pacific Islander	38	62	19	81	29	71
American Indian/Alaska Native	30	70	10	90	23	77
More than one race, non-Hispanic	31	69	8	92	13	87
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	24	76	6	94	11	89
Black, non-Hispanic	30	70	8	92	19	81
Asian	21	79	8	92	20	80
Hispanic	28	72	7	93	17	83
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	34	66	10	90	21	79
Black, non-Hispanic	41	59	17	83	27	73
Asian	32	68	27	73	37	63
Hispanic	33	67	15	85	30	70

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 18.—Percentage distribution of first-time kindergartners by the frequency with which teachers say they persist at a task, are eager to learn new things and pay attention well, by child and family characteristics: Fall 1998

Characteristic	Persist		Eager to learn		Attention	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	29	71	25	75	34	66
Child's sex						
Male	35	65	29	71	42	58
Female	22	78	22	78	26	74
Child's age at entry						
Born Jan. – Aug. 1992	21	79	21	79	30	70
Born Sep. – Dec. 1992	22	78	20	80	27	73
Born Jan. – Apr. 1993	27	73	23	77	32	68
Born May – Aug. 1993	34	66	30	70	39	61
Born Sep. – Dec. 1993	37	63	34	66	43	57
Mother's education						
Less than high school	39	61	38	62	45	55
High school diploma or equivalent	30	70	28	72	36	64
Some college, including vocational/technical	27	73	22	78	32	68
Bachelor's degree or higher	21	79	17	83	25	75
Family type						
Single mother	37	63	33	67	44	56
Single father	39	61	33	67	45	55
Two parent	26	74	23	77	31	69
Welfare receipt						
Utilized AFDC	41	59	38	62	47	53
Never utilized AFDC	27	73	24	76	32	68
Primary language spoken in home						
Non-English	31	69	32	68	37	63
English	28	72	25	75	34	66
Child's race/ethnicity						
White, non-Hispanic	25	75	22	78	30	70
Black, non-Hispanic	38	62	34	66	45	55
Asian	19	81	20	80	29	71
Hispanic	33	67	30	70	38	62
Hawaiian Native/Pacific Islander	36	64	32	68	41	59
American Indian/Alaska Native	36	64	28	72	48	52
More than one race, non-Hispanic	27	73	28	72	33	67
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	23	77	20	80	28	72
Black, non-Hispanic	36	64	31	69	42	58
Asian	18	82	18	82	28	72
Hispanic	31	69	27	73	36	64
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	39	61	35	65	44	56
Black, non-Hispanic	50	50	47	53	58	42
Asian	18	82	23	77	32	68
Hispanic	35	65	36	64	41	59

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

The Child and the Family

Families are the primary context of children's development (Bronfenbrenner 1979) and strongly influence their developmental outcomes. The variability of children's knowledge, skills and behaviors at entry to kindergarten can be attributed to the variety of the educational opportunities in the home. Parents play a central role in young children's socialization and learning (Maccoby 1992). To a large extent, young children learn by interacting with others. Young children thrive when they can actively participate in and construct their knowledge (Ginsburg and Opper 1988). They learn through both direct experience and vicarious experience (Bandura 1986). It is extremely important for young children to directly experience activities such as reading, constructing projects, playing with puzzles and playing sports. Children gain invaluable experience and knowledge through actively *doing*. Also, children learn through observation. When parents or family members read stories, tell stories and sing songs, children construct knowledge and learn skills by modeling the behavior. Additionally, parents serve as mentors who can effectively bridge children's skills to the next level; this too is an invaluable part of the learning process (Wertsch 1985).

Furthermore, child care experiences may be associated with the variance in skills children demonstrate as they enter kindergarten. In the mid-1990s, approximately 60 percent of preschool children under the age of 6 experienced some type of nonparental care and education (West et al. 1995); approximately 40 percent of kindergartners received nonparental care before or after school (Brimhall et al. 1999). High quality programs with experienced, well-trained staff provide an enriched setting that may serve as a foundation for the transition to school. Quality early care and education programs provide opportunities to explore social and cognitive tasks that better prepare children for success in school. For example, children who have participated in group care may have an easier time interacting with a large group of unfamiliar peers and adults. They may also be better acclimated to the school setting and to learning experiences and tasks. Once in kindergarten, the care and education children experience before and after school may serve to further support or enrich what is taught in the classroom (Brimhall et al. 1999).

Literacy Environment and Family Interactions. The extent to which parents and families in the United States interact with young children in the home is of particular interest. Specifically, policymakers, researchers, educators and parents take an interest in suggested practices (Bredekamp and Copple 1997) such as the frequency with which parents read, tell stories, sing and play with their children. Moreover, information about the literacy environment in the home may shed light on children's cognitive skills as they enter kindergarten.

A strong indicator of the literacy environment in the home may be the number of child-oriented resources (e.g., books, tapes and CDs). A literacy rich environment contributes to children's language and literacy development, which in turn plays a role in their chances for school success (Snow et al. 1991). Similarly, the opportunities for children to interact with their family in educational activities may enhance their chances for school success. Experiences such as reading with children, singing songs with children and playing with children serve a dual purpose. These activities not only enrich their language and literacy experiences but also potentially transmit information and knowledge about people, places and things. Research suggests that these types of activities are on the rise (Wright et al. 1994). Moreover, we need to consider not only the literacy environment and home educational activities but also how the literacy environment and home educational activities differ by child and family characteristics (National Center for Education Statistics 1998).

Key Findings:
Literacy Environment and Family Interactions

- The majority of parents report having more than 25 children's books in the home (table 19). More than half of parents report having more than five children's records, audiotapes or CDs in the home.

- The number of children's books in the home varies by maternal education and family receipt of welfare. Mothers with lower education and families reporting receipt of welfare were more likely to report having fewer books in the home (0–25 books) than mothers with higher education and families with no reported welfare receipt. This pattern is also found for the number of children's records, audiotapes or CDs in the home.

- Nearly half of parents report reading to their child (table 20) and singing songs to their child (table 21) every day (45 percent). Thirty-eight percent of parents report playing games with their kindergartners three to six times a week (table 22). Nearly half (44 to 47 percent) of families engage in telling stories, doing arts and crafts and playing sports or exercise once or twice a week or less.

- Activities such as reading and singing songs vary by maternal education, family type, welfare receipt and race/ethnicity. Children whose mothers have lower levels of education, single mothers, families reporting receipt of welfare services and black parents are less likely to be read to every day than those with mothers with higher levels of education, two-parent families, families without welfare support and white, Hispanic and Asian parents (respectively). A different pattern emerges with an activity like singing songs. Children with single mothers, families with receipt of welfare services and black parents are more likely to be sung to every day than those with two parents, families with no receipt of welfare services and white, Hispanic and Asian parents (respectively).

Table 19.—Percentage distribution of first-time kindergartners by numbers of books and children's records, audiotapes or CDs in the home, by child and family characteristics: Fall 1998

Characteristic	Number of children's books in child's home				Number of children's records, audio tapes, or CDs in child's home				
	Less than 26	26-50	51-100	101 +	None	1-5	6-10	11-20	21 +
Total	26	28	29	17	13	24	22	21	20
Child's sex									
Male	27	28	28	16	14	25	22	20	19
Female	25	28	29	17	12	24	21	23	21
Child's age at entry									
Born Jan. – Aug. 1992	18	25	33	24	11	18	24	21	26
Born Sep. – Dec. 1992	25	28	29	18	13	24	21	22	21
Born Jan. – Apr. 1993	26	28	29	17	12	24	22	21	20
Born May – Aug. 1993	27	29	28	17	13	24	22	21	19
Born Sep. – Dec. 1993	30	28	27	15	14	26	21	21	18
Mother's education									
Less than high school	62	24	10	4	35	33	15	9	8
High school diploma or equivalent	31	32	26	11	15	29	22	19	16
Some college, including vocational/technical	17	31	33	19	8	24	25	23	22
Bachelor's degree or higher	7	22	40	31	3	12	22	31	32
Family type									
Single mother	40	30	21	10	19	29	20	17	15
Single father	37	30	22	10	18	27	18	20	18
Two parent	21	28	32	19	11	23	22	23	22
Welfare receipt									
Utilized AFDC	52	27	14	7	26	32	17	14	11
Never utilized AFDC	23	28	31	18	11	23	22	22	21
Primary language spoken in home									
Non-English	65	25	7	3	25	38	16	12	9
English	20	29	32	19	11	22	22	23	22
Child's race/ethnicity									
White, non-Hispanic	9	28	38	25	7	19	23	26	25
Black, non-Hispanic	50	31	15	4	22	29	21	15	13
Asian	46	26	20	8	14	22	20	22	21
Hispanic	52	27	16	6	22	36	18	13	11
Hawaiian Native/Pacific Islander	34	41	16	9	15	29	20	17	20
American Indian/Alaska Native	51	22	16	11	29	30	13	14	14
More than one race, non-Hispanic	20	36	28	16	11	26	21	21	21
Child's race/ethnicity by maternal education									
Maternal education:									
High school diploma/equivalent or more									
White, non-Hispanic	7	27	39	26	5	18	24	27	26
Black, non-Hispanic	46	32	17	5	17	30	22	16	14
Asian	39	29	22	10	9	21	21	25	25
Hispanic	38	32	21	9	13	34	22	17	14
Maternal education:									
Less than high school diploma or equivalent									
White, non-Hispanic	30	38	22	10	25	27	20	14	13
Black, non-Hispanic	69	23	6	2	39	27	16	10	8
Asian	72	16	12	(*)	41	29	14	10	7
Hispanic	77	17	5	1	38	40	12	6	4

* less than .5 percent.

NOTE: Estimates based on first-time kindergartners who were assessed in English. Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 20.—Percentage distribution of first-time kindergartners by the number of times each week family members read books and tell stories to them, by child and family characteristics: Fall 1998

Characteristic	Reading				Tell stories			
	Not at all	1 –2	3-6	Every day	Not at all	1 –2	3-6	Every day
Total	1	19	35	45	8	36	30	25
Child's sex								
Male	1	21	35	43	9	36	30	25
Female	1	17	35	47	7	37	31	26
Child's age at entry								
Born Jan. – Aug. 1992	1	16	40	44	8	32	34	25
Born Sep. – Dec. 1992	1	19	37	42	8	38	31	24
Born Jan. – Apr. 1993	1	19	35	45	8	37	30	26
Born May – Aug. 1993	1	19	35	45	8	37	31	25
Born Sep. – Dec. 1993	1	18	31	49	8	33	30	29
Mother's education								
Less than high school	4	34	27	36	10	42	25	23
High school diploma or equivalent	1	24	36	39	9	39	29	23
Some college, including vocational/technical	(*)	15	40	45	7	35	32	26
Bachelor's degree or higher	(*)	7	34	59	5	31	35	29
Family type								
Single mother	2	27	32	39	9	38	28	25
Single father	(*)	22	35	40	12	34	28	26
Two parent	1	16	36	47	7	36	31	26
Welfare receipt								
Utilized AFDC	3	32	28	38	8	39	26	26
Never utilized AFDC	1	17	36	46	8	36	31	25
Primary language spoken in home								
Non-English	4	28	30	38	10	37	27	26
English	1	17	36	46	7	36	31	25
Child's race/ethnicity								
White, non-Hispanic	1	13	37	49	7	35	33	25
Black, non-Hispanic	2	31	33	35	10	40	26	24
Asian	1	23	29	47	7	37	28	28
Hispanic	3	27	31	39	9	39	27	25
Hawaiian Native/Pacific Islander	(*)	19	35	45	3	29	36	33
American Indian/Alaska Native	3	33	25	40	6	41	22	30
More than one race, non-Hispanic	(*)	15	42	43	8	29	36	28
Child's race/ethnicity by maternal education								
Maternal education:								
High school diploma/equivalent or more								
White, non-Hispanic	(*)	12	38	50	7	34	34	25
Black, non-Hispanic	1	29	35	35	9	39	28	24
Asian	1	21	29	49	5	36	28	30
Hispanic	2	22	34	42	8	37	28	27
Maternal education:								
Less than high school diploma or equivalent								
White, non-Hispanic	3	25	30	43	8	38	25	28
Black, non-Hispanic	4	41	23	32	13	45	21	21
Asian	4	35	26	34	16	39	28	17
Hispanic	5	36	26	33	11	43	24	22

* less than .5 percent.
NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 21.—Percentage distribution of first-time kindergartners by the number of times each week family members sing songs and do arts and crafts with them, by child and family characteristics: Fall 1998

Characteristic	Sing songs				Arts and crafts			
	Not at all	1 –2	3-6	Every day	Not at all	1 –2	3-6	Every day
Total	5	23	27	45	7	40	32	20
Child's sex								
Male	7	27	27	40	8	42	32	18
Female	4	19	27	50	7	38	33	23
Child's age at entry								
Born Jan. – Aug. 1992	5	26	27	42	6	44	32	18
Born Sep. – Dec. 1992	6	24	26	44	8	41	31	19
Born Jan. – Apr. 1993	6	23	27	45	7	40	32	21
Born May – Aug. 1993	5	22	27	46	8	39	33	21
Born Sep. – Dec. 1993	5	21	27	47	7	37	33	23
Mother's education								
Less than high school	12	27	19	43	14	41	22	23
High school diploma or equivalent	6	24	25	46	9	41	30	20
Some college, including vocational/technical	4	21	29	47	5	39	35	20
Bachelor's degree or higher	3	21	32	44	3	38	39	20
Family type								
Single mother	6	21	22	51	10	40	29	21
Single father	12	28	25	36	9	43	22	26
Two parent	5	23	28	44	6	40	34	20
Welfare receipt								
Utilized AFDC	7	22	21	49	11	40	26	24
Never utilized AFDC	5	23	28	44	7	40	33	20
Primary language spoken in home								
Non-English	11	28	23	38	15	38	25	23
English	4	22	27	46	6	40	34	20
Child's race/ethnicity								
White, non-Hispanic	4	23	29	44	5	40	36	19
Black, non-Hispanic	4	20	21	54	11	39	26	23
Asian	14	30	22	35	8	35	28	29
Hispanic	9	25	24	41	13	41	26	20
Hawaiian Native/Pacific Islander	4	20	37	39	8	39	36	17
American Indian/Alaska Native	10	25	18	47	9	48	27	24
More than one race, non-Hispanic	4	21	26	49	5	39	34	22
Child's race/ethnicity by maternal education								
Maternal education:								
High school diploma/equivalent or more								
White, non-Hispanic	4	22	30	44	4	40	37	19
Black, non-Hispanic	3	20	22	55	10	41	27	22
Asian	9	29	24	37	7	34	31	29
Hispanic	6	22	27	45	11	39	30	21
Maternal education:								
Less than high school diploma or equivalent								
White, non-Hispanic	7	25	17	51	9	42	27	23
Black, non-Hispanic	7	22	19	52	13	35	21	31
Asian	37	28	13	22	13	41	16	30
Hispanic	15	30	19	35	18	43	20	19

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 22.—Percentage distribution of first-time kindergartners by the number of times each week family members play sports or exercise and play games with them, by child and family characteristics: Fall 1998

Characteristic	Play sports or exercise				Games			
	Not at all	1 –2	3-6	Every day	Not at all	1 –2	3-6	Every day
Total	10	36	33	22	4	35	38	22
Child's sex								
Male	8	34	34	24	5	34	38	24
Female	11	38	31	19	4	36	39	21
Child's age at entry								
Born Jan. – Aug. 1992	7	35	33	25	3	35	41	21
Born Sep. – Dec. 1992	9	36	33	22	4	36	38	22
Born Jan. – Apr. 1993	10	35	33	21	5	35	39	21
Born May – Aug. 1993	10	36	32	22	4	34	38	23
Born Sep. – Dec. 1993	10	37	30	23	5	32	37	25
Mother's education								
Less than high school	17	33	23	27	10	39	27	24
High school diploma or equivalent	11	36	30	23	5	37	35	23
Some college, including vocational/technical	8	36	35	21	3	34	42	22
Bachelor's degree or higher	7	37	39	18	2	30	47	21
Family type								
Single mother	13	35	27	24	6	37	33	23
Single father	7	32	31	29	5	30	34	32
Two parent	9	36	34	21	4	34	40	22
Welfare receipt								
Utilized AFDC	12	33	26	29	7	36	30	28
Never utilized AFDC	9	36	34	21	4	35	40	22
Primary language spoken in home								
Non-English	16	40	25	20	9	40	28	23
English	9	35	34	22	3	34	39	24
Child's race/ethnicity								
White, non-Hispanic	7	35	37	20	3	34	43	21
Black, non-Hispanic	12	34	26	29	5	36	31	28
Asian	12	45	26	18	6	38	33	23
Hispanic	16	37	26	21	9	38	31	22
Hawaiian Native/Pacific Islander	6	27	31	36	1	40	34	25
American Indian/Alaska Native	10	33	27	31	4	34	34	28
More than one race, non-Hispanic	8	38	32	22	5	33	36	27
Child's race/ethnicity by maternal education								
Maternal education:								
High school diploma/equivalent or more								
White, non-Hispanic	7	36	38	19	2	33	44	20
Black, non-Hispanic	11	35	27	27	5	35	33	27
Asian	10	45	26	19	5	38	35	22
Hispanic	13	39	28	20	6	36	35	23
Maternal education:								
Less than high school diploma or equivalent								
White, non-Hispanic	11	31	27	31	6	37	32	25
Black, non-Hispanic	15	30	21	34	7	39	25	29
Asian	20	50	18	13	12	36	28	24
Hispanic	20	36	23	21	13	42	24	21

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding. Totals may not be within range of subgroup values due to missing cases.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Care Experience. A child's social world is influenced by many different groups, the closest being the family. Upon entering kindergarten, a child's world expands to include the school and larger community. For many children, however, another vital influence is the nonparental care and education they receive. These settings can provide educational opportunities similar to those provided in the home and the school. Their influence on children can be as essential as that of the parents, teachers and schools.

With the number of children receiving care from persons other than their parents, their participation in nonparental care and education is of concern. High quality care and education programs have positive influences on children's social-emotional and cognitive development, and can provide children with the opportunity to develop more advanced social and language skills, a more positive disposition, and increase the complexity of their play and cooperativeness (Love et al. 1996). Attendance in a preschool program may account for variance in children's cognitive skills at kindergarten entry (Gullo and Burton 1992). In particular, the type of care children receive (e.g., center-based, relative care) relates to differences in their social-emotional and cognitive development, as well as their school performance (Miller and Marx 1990; Pierce et al. 1999; Vandell and Corasaniti 1988). Children's participation in care and education then is important to document because it can influence who they are at kindergarten entry and who they will become as the school year continues.

Key Findings: Child Care

- About four out of five first-time kindergartners (81 percent) receive care on a regular basis from someone other than their parents the year prior to starting kindergarten (table 23). This care is most often provided in a center-based setting (69 percent), followed by care by a relative in a private home (24 percent) and care by a nonrelative in a private home (15 percent).

- Prior to kindergarten of the children in nonparental care, children whose mothers have higher levels of education are more likely to be in center-based care than children whose mothers have less education.

- Prior to kindergarten, children from homes where English is not the primary language are less likely to have attended a center-based program the year before starting kindergarten.

- Once children enter kindergarten for the first time, about 50 percent of these children receive care before and/or after school from someone other than their parents (table 24).

- As children enter kindergarten, before- and/or after-school care is most often provided in a private home by a relative of the child. Center-based care is the second most frequent type of before- and after-school care setting followed by nonrelative care.

- At kindergarten entry, children whose mothers have less than a high school education are more likely to receive before- and/or after-school care from a relative than from a nonrelative or center-based provider. In contrast, kindergartners whose mothers have a college education are more likely to receive care in a center-based setting than in either of the two home-based settings.

- At kindergarten entry, black children are more likely than white, Asian or Hispanic children to receive before- and/or after-school care.

Table 23.—Percentage distribution of first-time kindergartners by participation in nonparental care arrangements the year prior to starting kindergarten, by type of arrangement and child and family characteristics: Fall 1998

Characteristic	Total	Nonparental care arrangement			No nonparental care
		Relative care	Nonrelative care	Center-based care	
Total	81	24	15	69	19
Child's sex					
Male	81	24	15	69	19
Female	82	24	16	69	18
Child's age at entry					
Born Jan. – Aug. 1992	81	22	15	70	19
Born Sep. – Dec. 1992	81	22	15	70	19
Born Jan. – Apr. 1993	82	24	15	70	18
Born May – Aug. 1993	82	24	16	69	18
Born Sep. – Dec. 1993	78	27	14	64	22
Mother's education					
Less than high school	65	23	7	52	35
High school diploma or equivalent	79	28	13	64	21
Some college, including vocational/technical	85	25	17	73	15
Bachelor's degree or higher	90	15	21	82	10
Family type					
Single mother	86	37	14	71	14
Single father	88	36	19	69	12
Two parent	80	19	16	68	20
Welfare receipt					
Utilized AFDC	78	30	11	69	22
Never utilized AFDC	82	18	19	74	18
Primary language spoken in home					
Non-English	69	26	9	54	31
English	83	24	16	71	17
Child's race/ethnicity					
White, non-Hispanic	83	19	18	72	17
Black, non-Hispanic	88	36	8	78	12
Asian	79	27	8	65	21
Hispanic	72	26	13	56	28
Hawaiian Native/Pacific Islander	50	21	5	35	50
American Indian/Alaska Native	84	36	10	70	16
More than one race, non-Hispanic	86	26	18	70	14
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	85	19	19	73	15
Black, non-Hispanic	89	36	10	80	11
Asian	82	29	9	67	18
Hispanic	79	29	15	62	21
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	63	19	6	50	37
Black, non-Hispanic	80	37	4	69	20
Asian	71	19	3	59	29
Hispanic	59	19	8	45	41

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding. Categories of non-parental care arrangement are not mutually exclusive.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 24.—Percentage distribution of first-time kindergartners by participation during kindergarten in before and after care, by type of arrangement and child and family characteristics: Fall 1998

Characteristic	Total	Nonparental care arrangement			No nonparental care
		Relative care	Nonrelative care	Center-based care	
Total	50	23	13	19	50
Child's sex					
Male	50	23	12	20	50
Female	50	24	13	19	50
Child's age at entry					
Born Jan. – Aug. 1992	46	22	13	19	54
Born Sep. – Dec. 1992	48	22	13	19	52
Born Jan. – Apr. 1993	50	24	13	20	50
Born May – Aug. 1993	51	24	13	20	50
Born Sep. – Dec. 1993	52	26	12	20	48
Mother's education					
Less than high school	35	24	8	7	65
High school diploma or equivalent	50	28	11	16	50
Some college, including vocational/technical	54	25	14	23	46
Bachelor's degree or higher	52	13	16	28	48
Family type					
Single mother	69	41	14	25	31
Single father	74	43	19	22	26
Two parent	44	18	13	18	56
Welfare receipt					
Utilized AFDC	48	30	11	14	52
Never utilized AFDC	50	17	15	24	50
Primary language spoken in home					
Non-English	53	33	9	16	47
English	50	23	13	21	50
Child's race/ethnicity					
White, non-Hispanic	49	18	15	21	51
Black, non-Hispanic	61	38	8	23	40
Asian	47	28	6	17	53
Hispanic	46	26	12	13	54
Hawaiian Native/Pacific Islander	39	26	7	12	61
American Indian/Alaska Native	48	35	7	7	52
More than one race, non-Hispanic	53	26	14	22	47
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	49	17	15	22	51
Black, non-Hispanic	63	37	9	25	37
Asian	51	29	7	20	49
Hispanic	53	29	13	17	47
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	33	21	8	6	67
Black, non-Hispanic	48	38	4	13	52
Asian	28	23	2	3	72
Hispanic	32	21	10	5	68

NOTE: Estimates based on first-time kindergartners. Percentages may not sum to 100 due to rounding. Categories of non-parental care arrangement are not mutually exclusive.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Relationships Within and Across Areas of Development

The purpose of this report is to present a description of children as they enter kindergarten—to explore the similarities and differences in the knowledge, skills and experiences they possess. The preceding chapters addressed each area of development (cognitive, social, physical, approaches to learning and family) separately to show the unique nature of each area of development. However, as we bring this description of children to a close, we note that the areas of children's development are both unique and at the same time inextricably linked.

Consequently, below, we engage in a brief presentation of the basic relationships that exist between children's cognitive skills and knowledge, social skills, physical well-being, approaches to learning and family experiences as they enter kindergarten for the first time. This is just a brief look at these rich and complex relationships. Future reports will analyze the nature of these relationships more closely. Though some of these constructs do not bear direct relationships to each other, in more complex analysis of the data they may play a role in explaining or mediating existing relationships within and across areas of development.

Key Findings: Relationships Within and Across Areas of Development

- The children who do well in reading are also likely to do well in mathematics and general knowledge. As children enter kindergarten, their reading and mathematics skills and knowledge are moderately[9] related (r = .79), as are their reading skills and general knowledge (r=.60) and their mathematics skills and general knowledge (r = .65).

- Both parents and teachers in the ECLS-K provided information on children's social skills. Parent perceptions of children's social skills are not directly related to their cognitive skills and knowledge. However, there is a small correlation between teacher perceptions of how easily children make and keep friends and children's reading (r = .20), mathematics (r = .22) and general knowledge (r = .21) t-scores. Teacher perceptions of children's other social skills (i.e., accepts peer ideas, comforts others, argues, fights and gets angry easily) are only slightly related to children's cognitive t-scores (correlations below .17). Neither parent nor teacher perceptions of children's social skills as assessed by their ratings of children's prosocial and problem behaviors are directly related to children's fine or gross motor scores, their literacy environment, their home educational activity experiences or their child care history.

[9] (Hinkle et al. 1994) This statistical text states that correlations .5–.7 are moderate, .3–.5 are low and 0–.3 are little.

Key Findings—continued:
Relationships Within and Across Areas of Development

- Children's fine motor skills relate to their cognitive skills and knowledge (reading, r = .41; mathematics, r = .48; general knowledge, r = .39). Children's gross motor skills relate to mathematics (r = .22), but are not directly related to their reading and general knowledge. Neither fine nor gross motor skills are directly related to their home literacy environment, their home educational activity experiences or their child care history.

- Children's approaches to learning were described by both their parents and their teachers. Parents' perceptions of children's approaches to learning (i.e., task persistence, eagerness to learn and creativity) do not directly relate to children's cognitive t-scores. Teacher perceptions of children's approaches to learning (i.e. task persistence, eagerness to learn and attention) are related to children's reading, mathematics and general knowledge t-scores. Eagerness to learn relates to reading (r = .31), mathematics (r = .32) and general knowledge (r = .28). Task persistence relates to reading (r = .32), mathematics (r = .34) and general knowledge (r = .27). And attention relates to reading (r = .32), mathematics (r = .34) and general knowledge (r = .29). Children's approaches to learning are not directly related to their home literacy environment, their home educational activity experiences or their child care history.

- There are small relationships of children's home literacy environment and home educational experiences to their reading, mathematics and general knowledge t-scores. The number of children's books in the home relates to children's general knowledge (r = .21) but not directly to their reading or mathematics knowledge and skills. And how frequently a family member reads to the child relates to children's reading (r = .20) and general knowledge (r = .21), but not directly to their mathematics knowledge and skills. Children's literacy environment and home educational experiences do not directly relate to their child care history.

Future Directions

This report presents a snapshot of the children in United States kindergarten classrooms. We can see both similarities and differences in children. For example, the majority of first-time kindergartners, regardless of their individual characteristics, are familiar with print and can recognize letters, numbers and shapes. Most children engage in prosocial types of behavior and are unlikely to exhibit problem behaviors. And most children are in very good to excellent health. At the same time, there are differences in the knowledge and skills children bring with them to school. For example, children's age relates to differences in their cognitive skills and knowledge, their social skills (both prosocial and problem behavior), their physical well-being (especially their motor skills) and the way in which they approach learning. Though, at this young age, some of these differences may be attributed to natural developmental variation; however, we need to consider the possible experiential differences of older kindergartners versus the younger ones. In this report, we also demonstrate that risk factors such as having a mother with less than a high school diploma, being from a single-mother family, welfare receipt and a non-English primary language relate to the differences in children's knowledge, skills and health at school entry.

The findings in this report suggest some areas for further investigation. To name a few—first, in this report, we looked at children's knowledge and skills by a specific set of child and family characteristics (e.g., child's sex, age at entry, race/ethnicity, maternal education). Future reports can take a different perspective, and analyze children's knowledge and skills in terms of additional family characteristics and school characteristics. For example, the data can be analyzed in terms of pre-school attendance, kindergarten program type (i.e., full day/part day) and school type (e.g., public/nonpublic). Furthermore, the data can be analyzed in terms of the possible cumulative effects of risk factors (e.g., low maternal education, minority status, receipt of welfare services) and the interaction of these risk factors (e.g., maternal education with race/ethnicity) with other child and program characteristics. These types of analysis may have important policy implications.

Second, we presented a picture of the differences in parent and teacher perceptions of children's prosocial skills, problem behaviors and approaches to learning. Primarily, we presented the data by looking at parent perceptions in relation to child and family characteristics and teacher perceptions in relation to child and family characteristics. However, future analysis can compare the similarities and the differences in parent and teacher perceptions of the same child. For example, in terms of approaches to learning—specifically children's eagerness to learn, the racial/ethnic differences seem much greater in the teacher ratings than in the parent ratings in the aggregate.

And third, some interesting patterns emerge across domains. For example, black children are more likely to score in the higher group of children in gross motor skills than any racial/ethnic group. At the same time, black children are also being rated by their teachers as demonstrating higher frequencies of problematic behaviors (e.g., arguing, fighting) than other racial/ethnic groups and are also being rated by their parents as being much more active than other children their age. Together, these findings present an interesting picture that warrants consideration.

As we have seen in this report, children entering kindergarten for the first time have a wide range of skills, knowledge and experiences. While they are similar in many ways, differences exist in relation to children's background and experiences. As we mentioned, kindergarten is a critical period in children's early school careers—this experience sets children on a path that influences their subsequent learning and school achievement. This report and future data from the ECLS-K will help to inform researchers, practitioners, educators, parents and policymakers on issues concerning young children's education and aid in a deeper understanding of the connection between children's early school experiences and later school success.

Methodology and Data Reliability

Survey Methodology

The Early Childhood Longitudinal Study Kindergarten Class of 1998–99 (ECLS-K) is being conducted by Westat for the U.S. Department of Education, National Center for Education Statistics (NCES). It is designed to provide detailed information on children's early school experiences. The study 99 school year. The children participating in the ECLS-K will be followed longitudinally through the fifth grade.

Sample Design. A nationally representative sample of 22,625 children enrolled in 1,277 kindergarten programs during the 1998–99-school year were sampled to participate in the ECLS-K. The children attended both public and private kindergartens that offered full-day and part-day programs. The sample included children from different racial/ethnic and socioeconomic backgrounds and included oversamples of Asian children, private kindergartens and private school kindergartners. This study supports separate estimates of public and private school kindergartners; black, Hispanic, white and Asian children; and children from different socioeconomic backgrounds.

Sampling for the ECLS-K involved a dual-frame, multistage sampling design. The first stage of sampling involved the selection of 100 primary sampling units (PSU) from a national sample of PSUs. The PSUs were counties and county groups. Public and private schools were then selected within the PSUs, and students were sampled from the selected schools. Public schools were selected from the Common Core of Data, a public school frame, and private schools were selected from a private school frame developed from the Private School Survey.[10] Approximately 23 kindergartners were selected on average within each of the sampled schools.

Fall kindergarten data were obtained from September to December 1998. Data were collected from the child, the child's parents/guardians and teachers in the following ways.

Child Assessments. Children were asked to participate in various activities designed to measure important cognitive (e.g., general knowledge, literacy and quantitative skills) and noncognitive (e.g., motor skills) skills. All measures were obtained through an untimed one-on-one assessment of the child.

[10] During the spring of 1998, Westat identified new schools that were not found on either frame. A sample of these schools was included in the ECLS-K school sample.

Each child was assessed using a computer-assisted personal interview (CAPI), administered one-on-one from the assessor to child. The assessment consists of three cognitive domains (reading, mathematics and general knowledge); a psychomotor assessment, including fine and gross motor skills; and height and weight measurements. The cognitive assessment included a two-stage battery, where the first stage in each domain contained a routing test that determined a child's approximate skills. According to the child's performance on the routing test, the child was administered the appropriate skill level assessment for that domain (the second stage). The reading and mathematics assessments had three skill levels, while the general knowledge domain had two skill levels.

To be sensitive to the needs and capabilities of the children in the sample, an English language proficiency screener, called the Oral Language Development Scale (OLDS), was administered if the school records indicated that the child's home language was not English. The child had to demonstrate a certain level of English proficiency to be administered the cognitive assessment in English. If a child was not sufficiently proficient in English, but spoke Spanish at home, the child was administered a Spanish version of the OLDS. If the child was proficient in Spanish then they were administered the mathematics and psychomotor assessments in Spanish, as well as the height and weight measures. Children from other non-English home language backgrounds who were not sufficiently proficient in English were excluded from the direct assessment, with the exception of height and weight measures. In terms of first-time kindergartners, about 93 percent were assessed in English. Of the 7 percent of children excluded from the assessment, 18 percent were Asian and 80 percent were Hispanic. The children excluded from the English assessment represents 19 percent of the Asian children and 29 percent of the Hispanic children.

Parent Interview. Parents/guardians were asked to provide key information about their children on subjects such as family demographics (e.g., age, relation to child, race/ethnicity), family structure (household members and composition), parent involvement, home educational activities, child care experience, child health, parental education and employment status and child's social skills and behaviors. Most of the data were collected through a computer-assisted telephone interviewing (CATI), though some of the interviews were collected through a computer-assisted personal interviewing (CAPI) when respondents did not have a telephone or were reluctant to be interviewed by telephone.

Teacher Questionnaires. All kindergarten teachers with sampled children were asked to fill out three self-administered questionnaires. The first two pertained to their own educational backgrounds, teaching practices, experiences and the classroom settings where they taught. For each of the sampled

children they taught, the teachers also completed a child-specific questionnaire that collected information on the child's social skills and approaches to learning. This report only uses data from the child-specific questionnaire.

Response Rates

Overall, 74 percent of the 1,277 schools agreed to participate in the study.[11] More schools participated during the spring of the base year (n=940) than during the fall (n=880). Due to the lower than expected cooperation rate for public schools in the fall of the base year, 73 additional public schools were included in the sample as substitutes for schools not participating in the fall. These schools were included in order to meet the target sample sizes for students. Substitute schools are not included in the school response rate calculations.

The ECLS-K school response rates are comparable to or exceed those of past NCES longitudinal surveys. In the National Education Longitudinal Study of 1988 (NELS:88), 69.7 percent of the originally sampled schools agreed to participate in the base year.

Of the sampled children, 19,173 participated in the fall kindergarten child assessment for an 89.8 cooperation rate or a response rate of 66.4 percent (74% X 89.8%). There were no large differences in cooperation rates for subgroups of children: 89.5 percent of sampled boys participated, and 90.4 percent of sampled girls participated. Asians had the lowest cooperation rates at 88.6 percent while American Indians or Alaskan Natives had the highest response rate of 93.4 percent. There were 18,101 parent interviews completed during the fall of the school year for a cooperation rate of 85.3 percent or a 63 percent response rate (74% X 85.3%). About 91 percent of the children had child-specific data reported by their teacher in the fall of kindergarten (74% X 91.2 = 67.5%). These numbers are also comparable to the completion rates obtained in NELS:88. There, about 90 percent of the students participated in the eighth grade student tests, and 87.5 percent of the parents completed parent questionnaires. Teachers in NELS:88 completed individual student ratings for about 89.6 percent of the students. Thus overall, the ECLS-K child, parent, teacher and school cooperation rates are comparable to other school-based longitudinal studies conducted at NCES.

[11] All response rates specified are the weighted rates.

A nonresponse bias analysis is being conducted to determine if substantial bias is introduced due to school nonresponse. Five different approaches are being used to examine the possibility of bias in the ECLS-K sample. First, weighted and unweighted response rates for schools, children, parents, teachers and school administrators are being examined to find large response rate differences by characteristics of schools (e.g., urbanicity, region, school size, percent minority and grade range) and children (e.g., sex, age, race-ethnicity). Second, estimates based on the ECLS-K respondents are being compared to estimates based on the full sample. The distributions of schools by school type, urbanicity, region and the distributions of enrollment by kindergarten type (public versus private), race-ethnicity, urbanicity, region and eligibility for free and reduced-price lunch are being compared for the responding schools and all the schools on the sampling frame. Third, estimates from the ECLS-K are being compared with estimates from other data sources (e.g., Current Population Survey, National Household Education Survey, Survey of Income and Program Participation). Fourth, estimates using the ECLS-K unadjusted weights are being compared with estimates using the ECLS-K weights adjusted for nonresponse. Large differences in the estimates produced with these two different weights would indicate the potential for bias. Fifth, and last, simulations of nonresponse are being conducted.

All of the above analyses are underway and some have been completed. The results of these analyses will be summarized in the ECLS-K User's Manual and reported in detail in the ECLS-K Methodology Report. Preliminary findings from these analyses suggest that there is not a bias due to school nonresponse. In particular, there is no evidence of a bias in the types of estimates found in this report.

Data Reliability

Estimates produced using data from the ECLS-K are subject to two types of error, sampling and nonsampling errors. Nonsampling errors are errors made in the collection and processing of data. Sampling errors occur because the data are collected from a sample rather than a census of the population.

Nonsampling Errors. Nonsampling error is the term used to describe variations in the estimates that may be caused by population coverage limitations, as well as data collection, processing and reporting procedures. The sources of nonsampling errors are typically problems like unit and item nonresponse, the differences in respondents' interpretations of the meaning of the questions, response differences related to the particular time the survey was conducted and mistakes in data preparation.

In general, it is difficult to identify and estimate either the amount of nonsampling error or the bias caused by this error. In the ECLS-K efforts were made to prevent such errors from occurring and to compensate for them where possible. For instance, during the survey design phase, focus groups and cognitive laboratory interviews were conducted for the purpose of assessing respondent knowledge topics, comprehension of questions and terms and the sensitivity of items. The design phase also entailed testing for the CAPI instrument and a field test that evaluated the implementation of the survey.

By designing the child assessment to be both individually administered and untimed both coverage error and bias were reduced. Individual administration decreases problems associated with group administration such as children slowing down and not staying with the group or simply getting distracted. The advantage of having untimed exams was that the study was able to include most children with learning disabilities, hearing aids, etc. The only children who were excluded from the study were those who were blind, deaf, those whose Individual Education Program (IEP) clearly stated that they were not to be tested and non-English speaking children who were determined to lack adequate English or Spanish to meaningfully participate in the ECLS-K battery. Exclusion from the direct child assessment did not exclude children from all other parts (e.g., teacher questionnaire, parent interview).

Another potential source of nonsampling error is respondent bias which occurs when respondents systematically misreport (intentionally or unintentionally) information in a study. One potential source of respondent bias in this survey is social desirability bias. If there are no systematic differences among specific groups under study in their tendency to give socially desirable responses, then comparisons of the different groups will accurately reflect *differences* among the groups. An associated error occurs when respondents give unduly positive assessments about those close to them. For example, parents may give rosier assessments about their children's school experiences than might be obtained from school records or from the teachers.

Response bias may also potentially be introduced in the responses of the teachers about each individual student. Each teacher filled out a survey for each of the sampled children they taught in which they answered questions on the child's socioemotional development. Since the survey was conducted in the fall it is possible that the teachers did not have adequate time to observe the children, and thus some of the responses may be influenced by the expectations of the teacher based on which groups (e.g., sex, racial, linguistic, disability) the children belonged to. In order to minimize bias, all items were subjected to multiple cognitive interviews, field tests and actual teachers were involved in the design of the cognitive assessment battery and questionnaires. NCES also followed the criteria recommended in a

working paper on the accuracy of teacher judgments of students' academic performances (Perry and Meisels 1996).

Readers should be aware that respondent bias may be present in this survey as in any survey. It is not possible to state precisely how such bias may affect the results. NCES has tried to minimize some of these biases by conducting one on one, untimed assessments and by asking some of the same questions about the sampled child of both teachers and parents.

Sampling Errors and Weighting. The sample of kindergarten children from the class of 1998–99 was just one of many possible samples that could have been selected. Therefore, estimates produced from the ECLS-K sample may differ from estimates that would have been produced from other samples. This type of variability is called sampling error because it arises from using a sample of children attending kindergarten in 1998–99, rather than all children attending kindergarten that year.

The standard error is a measure of the variability due to sampling when estimating a statistic. Standard errors for estimates presented in this report were computed using a jackknife replication method. Standard errors can be used as a measure for the precision expected from a particular sample. The probability that a complete census count would differ from the sample estimate by less than 1 standard error is 68 percent. The chance that the difference would be less than 1.65 standard errors is about 90 percent, and that the difference would be less than 1.96 standard errors, about 95 percent.

Standard errors for all of the estimates are included in appendix A in this report. These standard errors can be used to produce confidence intervals. For example, it is estimated that 51 percent of the parents reported that their children had excellent general health, and this statistic has a standard error of 0.70 percent. Therefore, the estimated 95 percent confidence interval for this statistic is approximately 50 to 52 percent (1.96 X .70 = 1.4; confidence interval = 51 +/- 1.4).

In order to produce national estimates from the ECLS-K data collected during the fall of the 1998-99 school year, the sample data were weighted. Weighting the data adjusts for unequal selection probabilities at the school and child levels and adjusts for school, child, teacher and parent nonresponse. The first stage of the weighting process assigns weights to the sampled primary sampling units (PSUs) equal to the inverse of the PSU probability of selection.[12] The second stage of the weighting process

[12] The approach used to develop weights for the ECLS-K will be described in the ECLS-K User's Manual and the ECLS-K Methodology Report.

assigns weights to the schools sampled within PSUs. The base weight for each sampled school is the PSU weight multiplied by the inverse of the probability of selecting the school. The base weights for eligible schools are adjusted for nonresponse. These adjustments are made separately for public and private schools.

The base weight for each child in the sample is the school nonresponse adjusted weight for the school the child attends multiplied by a post-stratified within school student weight (total number of students in the school divided by the number of students sampled in the school). The parent weight, which is the weight used to produce the estimates found in this report, is the base child weight adjusted for nonresponse to the parent interview. Again, these adjustments are made separately for public and private schools.

In addition to properly weighting the responses, special procedures for estimating the statistical significance of the estimates were employed because the data were collected using a complex sample design. Complex sample designs, like that used in the ECLS-K, result in data that violate the assumptions that are normally required to assess the statistical significance of the results. Frequently, the standard errors of the estimates are larger than would be expected if the sample was a simple random sample and the observations were independent and identically distributed random variables. WesVarPC was used in this analysis to calculate standard errors.

Replication methods of variance estimation were used to reflect the actual sample design used in the ECLS-K. A form of the jackknife replication method (JK2) using 90 replicates was used to compute approximately unbiased estimates of the standard errors of the estimates in the report. The jackknife methods were used to estimate the precision of the estimates of the reported national percentages and means. To test the difference between estimates, Student's *t* statistic was employed, using unbiased estimates of standard errors derived by the replication methods mentioned above. Also, trend tests were used to test statements regarding the relationship between two characteristics (e.g., mother's education and children's performance on the ECLS-K assessment battery).

As the number of comparisons at the same significance levels increases, it becomes more likely that at least one of the estimated differences will be significant merely by chance, that is, it will be erroneously identified as different from zero. Even when there is no statistical difference between the means or percentages being compared, there is a 5 percent chance of getting a significant F or *t* value from sampling error alone. As the number of comparisons increases, the chance of making this type of

error also increases. A Bonferroni adjustment procedure was used to correct significance tests for multiple comparisons. This method adjusts the significance level for the total number of comparisons made with a particular classification variable. For example, the total number of comparisons for the type of family is three (i.e., single father vs. single mother, single father vs. two parents, single mother vs. two parents). Thus the significance criterion for each family type comparison is adjusted to $p = 0.0167$ (i.e., 0.05/3).

Definitions of Variables

Direct Cognitive Assessment. The ECLS Kindergarten cognitive assessment battery consisted of questions in three subject areas: Reading, Mathematics and General Knowledge.

The **Reading** assessment included questions in basic skills (print familiarity, letter recognition, beginning and ending sounds, rhyming sounds, word recognition), vocabulary (picture vocabulary) and comprehension (listening comprehension, close sentences, words in context). Comprehension items were targeted to measure skills in initial understanding, developing interpretation, personal reflection and demonstrating critical stance. The reliability of the estimate of overall reading ability (IRT-based theta) was .90.

About half of the **Mathematics** assessment consisted of questions in number sense and number properties and operations. The remainder of the assessment included questions in measurement; geometry and spatial sense; data analysis, statistics and probability; and patterns, algebra and functions. The assessment items were designed to measure skills in conceptual knowledge, procedural knowledge and problem solving, with the heaviest emphasis on problem solving. The reliability of the estimate of overall mathematics ability (IRT-based theta) was .90.

The **General Knowledge** assessment was a composite of science and social studies material. The science questions assessed conceptual understanding; observing/collecting data/classification; communication; and drawing/testing inferences, in the context of questions based on life science and the physical sciences. Social studies material included questions relating to history/government, culture, geography and economics. The assessment questions drew on children's experiences with their environment and many questions related to more than one of the categories listed. The reliability of the estimate of overall general knowledge and skills (IRT-based theta) was .88.

Standardized Scores (T-Scores): The standardized scores reported in the ECLS-K database are transformations of IRT theta (ability) estimates, rescaled to a mean of 50 and standard deviation of 10 using cross-sectional sample weights for fall kindergarten. For example, a t-score of 55 represents a reading achievement level that is half a standard deviation higher than the mean for the fall kindergarten population represented by the tested sample of ECLS-K participants.

T-scores do not measure mastery of a particular skill or set of skills. They provide only normative information; that is, an estimate of an individual's or a subgroup's achievement level relative to the population as a whole. T-Scores cannot be used to determine whether the population means are high or low, or whether average population gains over time are large or small. They can only provide an indicator of the extent to which an individual or a subgroup ranks higher or lower than the national average and how much this relative ranking changes over time.

Proficiency Level Scores: Proficiency scores provide a means of distinguishing status or gain in specific skills within a content area from the overall achievement measured by the IRT Scale Scores and T-Scores. Clusters of four assessment questions having similar content and difficulty were included at several points along the score scale of the Reading and Mathematics assessments. (No proficiency scores were computed for the General Knowledge assessment, since the questions did not follow a hierarchical pattern.) A student was assumed to have mastered a particular level of proficiency if at least three of the four items in the cluster were answered correctly, and to have failed at this level if two or more items were wrong. Clusters of items provide a more reliable assessment of proficiency than do single items because of the possibility of guessing: it is very unlikely that a student who has not mastered a particular skill would be able to guess enough answers correctly to pass a four item cluster. The proficiency levels were assumed to follow a Guttman model; that is, a student passing a particular skill level was expected to have mastered all lower levels; not passing a particular skill level indicates non-mastery at higher levels. Only a very small percentage of children in fall kindergarten had response patterns that did not follow the Guttman model, that is, a non-passing score at a lower level followed by a passing score at a higher level.

Other Direct Assessments. In addition to cognitive assessments, children's height, weight and psychomotor skills were also directly assessed. The psychomotor assessment consisted of both fine and gross motor skills. For the fine motor skills (scale 0–9) children were asked to manipulate blocks and copy a formation (maximum 2 points), copy basic figures (maximum 5 points) and draw a person

(maximum 2 points). For the gross motor assessments (scale 0–8), children were asked to balance on one foot (maximum 2 points), hop on one foot (maximum 2 points), skip (maximum 2 points) and walk backward on a straight line (maximum 2 points).

Children's Social Skills, Problem Behaviors, Approaches to Learning and Health Status. Parents and teachers were administered items which assessed children's social skills (e.g., frequency with which children make friends and comfort others), problem behaviors (e.g., frequency with which children fight with others and get angry easily) and how children approach learning (e.g., frequency with which children persist at tasks and seem eager to learn). Parents were asked to provide information about children's general health, activity level, ability to pay attention, coordination and articulation. In a large-scale survey setting it is difficult, time-intensive and costly to directly assess young children's social skills, problem behaviors, approaches to learning and health status. Therefore, parents and teachers reported on these constructs. When interpreting this information, we need to take into account that the nature of the data is parent and teacher report and not a direct assessment (for a review see Zill et al. 1995).

Derived Variables. A number of variables used in this report were derived by combining information from one or more questions in the ECLS-K. The derivation of key variables is described in this section.

Children's age at entry to kindergarten: This variable was constructed using two variables: month and year of birth. These variables were combined to form five categories: children born prior to September 1992, born between September – December 1992, January – April 1993, May – August 1993

: This variable was constructed using the question on the highest grade the mother had completed, and whether the mother had obtained a high school equivalency degree if she did not complete high school. This information was collapsed into four categories: less than high school, high school or equivalent, some college including vocational/technical training and bachelor's degree or higher.

Family type: This variable is a composite that is constructed from the household roster. The following information was used in the construction: whether there was a mother present in the household and her relationship to the child (birth, adoptive, step, foster, partner), whether there was a father present

in the household and his relationship to the child (birth, adoptive, step, foster, partner). This information was used to construct a variable with the following categories: single-mother household, single-father household and two-parent household.

Welfare receipt: Welfare receipt refers to the utilization of Aid for Families with Dependent Children (AFDC) since the child was born or in the past 6 months.

Primary language spoken in home: For this report a dichotomous variable was used to indicate whether English was the primary language spoken at home. This composite was constructed by using responses to three questions in the parent interview: whether another language other than English was regularly spoken at home; if yes, whether English was also spoken at home; and if English and one or more other languages were spoken at home, which of those languages would be considered the primary language spoken at home.

Children's race/ethnicity: The race/ethnicity composite was constructed from two parent-reported variables: ethnicity and race. New Office of Management and Budget guidelines were followed under which a respondent could select more than one race. Thus each respondent had to identify whether the child was Hispanic, and then select one or more race. The following are the seven composite race/ethnicity categories: white non-Hispanic, black non-Hispanic, Hispanic, Asian, Hawaiian Native or Pacific Islander, American Indian or Alaska Native and more than one race specified non-Hispanic. Due to sample size restrictions, this publication only does significance tests for whites, blacks, Hispanics and Asians.

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Appendix
Standard Errors for Estimates

Table 2a.—Standard errors for mean reading t-scores of first-time kindergartners, and percentage distribution of quartile scores, by child and family characteristics: Fall 1998

Characteristic	Mean t-score	0-25 percent	26-50 percent	51-75 percent	76-100 percent
Total	0.2	0.8	0.6	0.5	0.8
Child's sex					
Male	0.2	0.9	0.7	0.6	0.8
Female	0.2	0.9	0.8	0.6	1.0
Child's age at entry					
Born Jan. – Aug. 1992	0.5	1.6	2.2	2.0	2.0
Born Sep. – Dec. 1992	0.3	1.0	0.8	0.7	1.2
Born Jan. – Apr. 1993	0.2	0.9	0.8	0.8	1.0
Born May – Aug. 1993	0.3	1.0	0.9	0.8	0.9
Born Sep. – Dec. 1993	0.3	1.7	1.5	1.3	1.1
Mother's education					
Less than high school	0.3	1.4	1.1	1.2	0.7
High school diploma or equivalent	0.2	1.1	0.9	0.9	0.9
Some college, including vocational/technical	0.5	0.9	0.8	0.6	1.0
Bachelor’s degree or higher	0.2	0.6	0.8	0.3	1.2
Family type					
Single mother	0.3	1.5	1.2	0.8	1.0
Single father	0.7	3.5	3.0	2.3	2.4
Two parent	0.2	0.6	0.6	0.5	0.9
Welfare receipt					
Utilized AFDC	0.2	2.2	1.7	1.0	0.8
Never utilized AFDC	0.2	0.7	0.6	0.5	0.9
Primary language spoken in home	0.5				
Non-English	0.2	1.9	0.6	1.0	1.5
English		0.8	1.4	0.5	0.9
Child's race/ethnicity					
White, non-Hispanic	0.2	0.7	0.7	0.6	1.0
Black, non-Hispanic	0.4	1.6	1.5	1.0	1.4
Asian	0.6	1.5	2.0	1.9	2.4
Hispanic	0.4	1.8	1.0	1.0	1.2
Hawaiian Native/Pacific Islander	1.2	4.3	3.1	2.6	5.0
American Indian/Alaska Native	1.6	6.5	2.0	3.2	3.2
More than one race, non-Hispanic	0.6	2.6	2.2	2.4	2.2
Child’s race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	0.2	0.7	0.8	0.6	1.1
Black, non-Hispanic	0.4	1.5	1.5	1.0	1.5
Asian	0.6	1.4	2.1	2.0	2.4
Hispanic	0.5	2.1	1.2	1.1	1.5
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	0.4	2.0	1.7	2.0	1.3
Black, non-Hispanic	0.5	3.1	2.7	2.6	1.2
Asian	0.8	6.0	11.3	7.2	3.5
Hispanic	0.5	2.3	1.7	1.5	1.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 3a.—Standard errors for mean mathematics t-scores of first-time kindergartners, and percentage distribution of quartile scores, by child and family characteristics: Fall 1998

Characteristic	Mean t-score	0-25 percent	26-50 percent	51-75 percent	76-100 percent
Total	0.2	0.7	0.5	0.5	0.7
Child's sex					
Male	0.2	0.9	0.6	0.5	0.9
Female	0.2	0.8	0.6	0.7	0.8
Child's age at entry					
Born Jan. – Aug. 1992	0.4	1.5	1.7	1.9	2.4
Born Sep. – Dec. 1992	0.3	0.9	0.9	0.7	1.3
Born Jan. – Apr. 1993	0.2	0.9	0.7	0.8	0.8
Born May – Aug. 1993	0.3	1.0	0.8	0.8	0.7
Born Sep. – Dec. 1993	0.3	1.8	1.4	1.3	1.0
Mother's education					
Less than high school	0.3	1.8	1.3	1.0	0.7
High school diploma or equivalent	0.2	1.1	0.8	0.9	0.7
Some college, including vocational/technical	0.5	0.7	0.7	0.7	0.9
Bachelor's degree or higher	0.2	0.6	0.8	0.8	1.2
Family type					
Single mother	0.3	1.3	0.9	0.8	0.9
Single father	0.7	3.0	3.1	2.7	2.7
Two parent	0.2	0.6	0.5	0.5	0.8
Welfare receipt					
Utilized AFDC	0.2	1.7	1.3	1.0	0.8
Never utilized AFDC	0.2	0.7	0.5	0.5	0.8
Primary language spoken in home					
Non-English	0.5	2.2	1.7	1.5	1.5
English	0.2	0.8	0.5	0.5	0.8
Child's race/ethnicity					
White, non-Hispanic	0.2	0.6	0.6	0.6	0.9
Black, non-Hispanic	0.4	1.5	1.0	1.2	1.1
Asian	0.5	1.7	1.6	1.8	0.9
Hispanic	0.3	1.8	1.3	1.2	2.3
Hawaiian Native/Pacific Islander	1.2	4.2	3.4	2.8	4.6
American Indian/Alaska Native	1.5	6.4	2.5	4.3	2.7
More than one race, non-Hispanic	0.7	2.7	2.4	2.7	2.6
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	0.2	0.5	0.7	0.6	0.9
Black, non-Hispanic	0.4	1.7	1.1	1.4	1.1
Asian	0.6	1.7	1.9	1.9	2.5
Hispanic	0.3	1.8	1.3	1.4	1.1
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	0.4	2.3	2.2	1.6	1.2
Black, non-Hispanic	0.5	3.1	2.3	1.8	1.3
Asian	0.8	5.7	9.7	6.7	6.2
Hispanic	0.5	2.9	2.2	1.5	1.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 4a.—Standard errors for mean general knowledge t-scores of first-time kindergartners, and percentage distribution of quartile scores, by child and family characteristics: Fall 1998

Characteristic	Mean t-score	0-25 percent	26-50 percent	51-75 percent	76-100 percent
Total	0.3	1.0	0.4	0.5	0.7
Child's sex					
Male	0.3	1.0	0.6	0.7	0.9
Female	0.3	1.1	0.5	0.6	0.8
Child's age at entry					
Born Jan. – Aug. 1992	0.4	1.4	1.6	1.7	2.1
Born Sep. – Dec. 1992	0.3	1.0	0.8	1.0	1.2
Born Jan. – Apr. 1993	0.3	1.2	0.7	0.7	1.0
Born May – Aug. 1993	0.3	1.4	0.7	0.8	0.8
Born Sep. – Dec. 1993	0.4	1.8	1.4	1.3	1.1
Mother's education					
Less than high school	0.3	1.9	1.2	1.2	0.6
High school diploma or equivalent	0.3	1.4	0.8	0.7	0.7
Some college, including vocational/technical	0.6	1.1	0.7	0.8	0.9
Bachelor’s degree or higher	0.2	0.6	0.8	0.7	1.1
Family type					
Single mother	0.4	1.9	0.9	1.1	0.7
Single father	0.7	3.1	3.7	3.3	2.2
Two parent	0.2	0.7	0.5	0.5	0.8
Welfare receipt					
Utilized AFDC	0.3	2.1	1.3	1.0	0.8
Never utilized AFDC	0.2	0.9	0.5	0.5	0.8
Primary language spoken in home					
Non-English	0.4	2.2	1.8	1.3	0.9
English	0.3	1.0	0.5	0.6	0.8
Child's race/ethnicity					
White, non-Hispanic	0.2	0.6	0.6	0.5	0.9
Black, non-Hispanic	0.5	2.3	1.2	1.1	0.6
Asian	0.6	2.6	2.0	2.1	1.8
Hispanic	0.3	1.6	1.1	1.1	0.9
Hawaiian Native/Pacific Islander	1.2	5.9	4.4	3.0	3.2
American Indian/Alaska Native	1.5	7.8	2.1	4.2	2.4
More than one race, non-Hispanic	0.5	2.6	2.3	2.8	2.2
Child’s race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	0.2	0.6	0.6	0.6	1.0
Black, non-Hispanic	0.5	2.5	1.3	1.3	0.7
Asian	0.6	2.7	1.9	2.0	1.9
Hispanic	0.4	1.9	1.2	1.3	1.2
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	0.3	1.9	1.5	2.0	1.3
Black, non-Hispanic	0.6	2.7	2.3	1.4	0.4
Asian	1.0	5.9	7.0	3.4	2.6
Hispanic	0.4	2.5	2.2	1.5	0.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 5a.—Standard errors for percentage distribution of first-time kindergartners by print familiarity scores, by child and family characteristics: Fall 1998

Characteristic	Percent knowing			
	0 skills	1 skill	2 skills	3 skills
Total	0.9	0.4	0.5	0.9
Child's sex				
Male	0.9	0.6	0.6	0.9
Female	0.9	0.5	0.7	1.0
Child's age at entry				
Born Jan. – Aug. 1992	1.5	1.6	1.8	2.2
Born Sep. – Dec. 1992	0.8	0.7	0.8	1.2
Born Jan. – Apr. 1993	1.0	0.7	0.8	1.1
Born May – Aug. 1993	1.1	0.6	0.8	1.0
Born Sep. – Dec. 1993	1.5	1.3	1.1	1.5
Mother's education				
Less than high school	2.0	1.0	1.4	1.3
High school diploma or equivalent	1.2	0.8	0.8	1.1
Some college, including vocational/technical	0.9	0.6	0.7	1.0
Bachelor's degree or higher	0.5	0.6	0.7	1.1
Family type				
Single mother	1.6	0.9	1.1	1.2
Single father	3.3	3.3	2.6	2.8
Two parent	0.7	0.5	0.5	0.8
Welfare receipt				
Utilized AFDC	1.6	1.1	1.0	1.1
Never utilized AFDC	0.7	0.4	0.5	0.8
Primary language spoken in home				
Non-English	1.8	1.6	1.6	1.8
English	0.9	0.5	0.6	0.9
Child's race/ethnicity				
White, non-Hispanic	0.7	0.5	0.6	0.9
Black, non-Hispanic	2.3	1.2	1.5	1.7
Asian	2.0	1.9	1.8	2.3
Hispanic	1.2	0.8	1.0	1.3
Hawaiian Native/Pacific Islander	3.3	3.2	3.3	3.5
American Indian/Alaska Native	6.9	2.2	2.2	4.4
More than one race, non-Hispanic	2.0	2.6	2.3	2.9
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	0.6	0.5	0.6	0.9
Black, non-Hispanic	2.1	1.2	1.4	1.8
Asian	2.1	2.0	2.0	2.5
Hispanic	1.2	1.0	1.1	1.4
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	2.4	1.5	2.8	2.0
Black, non-Hispanic	4.0	2.5	3.1	1.9
Asian	3.8	6.0	5.9	5.9
Hispanic	2.6	2.2	2.0	2.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 6a.—Standard errors for percentage of first-time kindergartners passing each reading proficiency level, by child and family characteristics: Fall 1998

Characteristic	Letter recognition	Beginning sounds	Ending sounds	Sight words	Words in context
Total	0.8	0.9	0.7	0.2	0.1
Child's sex					
Male	0.8	0.9	0.7	0.2	0.1
Female	0.9	1.1	0.8	0.2	0.1
Child's age at entry					
Born Jan. – Aug. 1992	2.4	2.5	2.0	0.8	0.6
Born Sep. – Dec. 1992	1.1	1.3	1.1	0.3	0.2
Born Jan. – Apr. 1993	1.0	1.0	0.9	0.3	0.1
Born May – Aug. 1993	1.0	1.1	0.7	0.2	0.1
Born Sep. – Dec. 1993	1.7	1.4	1.0	0.4	0.2
Mother's education					
Less than high school	1.5	0.9	0.6	0.1	0.1
High school diploma or equivalent	1.1	1.1	0.8	0.2	0.1
Some college, including vocational/technical	1.0	1.1	0.9	0.3	0.1
Bachelor's degree or higher	0.8	1.2	1.1	0.4	0.2
Family type					
Single mother	1.3	1.2	0.8	0.2	0.1
Single father	3.5	3.0	2.0	0.8	0.8
Two parent	0.7	1.0	0.8	0.2	0.1
Welfare receipt					
Utilized AFDC	1.2	0.9	0.2	0.1	0.1
Never utilized AFDC	0.8	1.1	0.6	0.3	0.1
Primary language spoken in home					
Non-English	1.9	0.9	1.4	0.2	0.1
English	0.8	1.0	0.7	0.8	0.4
Child's race/ethnicity					
White, non-Hispanic	0.9	1.1	0.8	0.2	0.1
Black, non-Hispanic	1.6	1.7	1.2	0.3	0.1
Asian	1.7	1.5	2.2	1.4	0.9
Hispanic	1.7	2.4	1.2	0.3	0.2
Hawaiian Native/Pacific Islander	4.1	4.8	3.6	1.8	0.7
American Indian/Alaska Native	5.3	3.5	1.6	0.3	(*)
More than one race, non-Hispanic	2.5	2.4	2.0	1.0	0.6
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	0.9	1.1	0.8	0.2	0.1
Black, non-Hispanic	1.5	1.9	1.5	0.4	0.2
Asian	2.3	2.3	2.0	1.3	0.8
Hispanic	1.8	1.6	1.3	0.3	0.2
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	2.2	1.3	1.3	0.3	0.1
Black, non-Hispanic	2.7	1.5	1.1	(*)	(*)
Asian	4.5	3.8	2.9	0.5	0.5
Hispanic	2.3	1.8	1.2	0.8	0.8

* less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 7a.—Standard errors for percentage of first-time kindergartners passing each mathematics proficiency level, by child and family characteristics: Fall 1998

Characteristic	Number & shape	Relative size	Ordinal sequence	Add/ subtract	Multiply/ divide
Total	0.3	0.7	0.7	0.2	0.1
Child's sex					
Male	0.5	0.9	0.8	0.3	0.1
Female	0.3	0.9	0.7	0.2	0.1
Child's age at entry					
Born Jan. – Aug. 1992	0.9	1.8	2.0	1.3	0.5
Born Sep. – Dec. 1992	0.3	1.0	1.2	0.5	0.2
Born Jan. – Apr. 1993	0.5	0.9	0.8	0.3	0.1
Born May – Aug. 1993	0.6	1.0	0.7	0.3	0.1
Born Sep. – Dec. 1993	1.2	1.7	1.0	0.3	0.1
Mother's education					
Less than high school	1.0	1.2	0.6	0.3	(*)
High school diploma or equivalent	0.5	0.9	0.7	0.2	(*)
Some college, including vocational/technical	0.4	0.9	0.9	0.3	0.1
Bachelor's degree or higher	0.2	0.9	1.0	0.5	0.2
Family type					
Single mother	0.7	1.3	0.8	0.3	(*)
Single father	2.3	3.4	2.6	1.1	(*)
Two parent	0.3	0.7	0.7	0.3	0.1
Welfare receipt					
Utilized AFDC	0.7	1.0	0.5	0.2	(*)
Never utilized AFDC	0.2	0.7	0.8	0.3	0.1
Primary language spoken in home					
Non-English	1.2	2.1	1.5	0.9	0.2
English	0.3	0.8	0.7	0.2	0.1
Child's race/ethnicity					
White, non-Hispanic	0.2	0.8	0.8	0.3	0.1
Black, non-Hispanic	0.8	1.5	1.0	0.2	(*)
Asian	0.7	1.5	0.9	0.3	0.1
Hispanic	0.7	2.4	2.1	1.2	0.5
Hawaiian Native/Pacific Islander	2.0	4.0	4.2	1.9	1.5
American Indian/Alaska Native	4.2	6.2	2.3	0.3	(*)
More than one race, non-Hispanic	1.5	3.4	2.6	1.3	0.3
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	0.3	0.7	0.8	0.3	0.1
Black, non-Hispanic	0.8	1.6	1.2	0.3	(*)
Asian	1.9	2.9	2.0	1.1	0.5
Hispanic	0.6	1.6	1.1	0.4	0.1
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	1.3	1.8	1.3	0.4	(*)
Black, non-Hispanic	1.5	2.4	1.2	0.7	(*)
Asian	5.4	5.1	2.1	1.4	(*)
Hispanic	1.7	2.0	0.9	0.3	0.8

* less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 8a.—Standard errors for percentage distribution of first-time kindergartners by the frequency with which parents say they engage in prosocial behavior, by child and family characteristics: Fall 1998

Characteristic	Join others		Make friends		Comfort others	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	0.4	0.4	0.3	0.3	0.4	0.4
Child's sex						
Male	0.5	0.5	0.5	0.5	0.6	0.6
Female	0.5	0.5	0.4	0.4	0.5	0.5
Child's age at entry						
Born Jan. – Aug. 1992	1.4	1.4	1.2	1.2	1.8	1.8
Born Sep. – Dec. 1992	0.6	0.6	0.5	0.5	0.7	0.7
Born Jan. – Apr. 1993	0.6	0.6	0.5	0.5	0.6	0.6
Born May – Aug. 1993	0.6	0.6	0.6	0.6	0.6	0.6
Born Sep. – Dec. 1993	1.3	1.3	1.0	1.0	1.2	1.2
Mother's education						
Less than high school	0.9	0.9	0.9	0.9	1.1	1.1
High school diploma or equivalent	0.7	0.7	0.5	0.5	0.7	0.7
Some college, including vocational/technical	0.5	0.5	0.4	0.4	0.5	0.5
Bachelor's degree or higher	0.5	0.5	0.5	0.5	0.7	0.7
Family type						
Single mother	0.8	0.8	0.7	0.7	0.8	0.8
Single father	1.8	1.8	1.9	1.9	3.1	3.1
Two parent	0.4	0.4	0.4	0.4	0.4	0.4
Welfare receipt						
Utilized AFDC	1.0	1.0	0.9	0.9	1.0	1.0
Never utilized AFDC	0.4	0.4	0.3	0.3	0.4	0.4
Primary language spoken in home						
Non-English	1.4	1.4	1.3	1.3	1.5	1.5
English	0.4	0.4	0.3	0.3	0.4	0.4
Child's race/ethnicity						
White, non-Hispanic	0.4	0.4	0.3	0.3	0.5	0.5
Black, non-Hispanic	0.9	0.9	1.0	1.0	1.2	1.2
Asian	1.6	1.6	1.5	1.5	1.9	1.9
Hispanic	0.8	0.8	0.8	0.8	1.0	1.0
Hawaiian Native/Pacific Islander	9.0	9.0	6.8	6.8	4.2	4.2
American Indian/Alaska Native	1.4	1.4	1.4	1.4	1.8	1.8
More than one race, non-Hispanic	1.6	1.6	1.8	1.8	1.9	1.9
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	0.4	0.4	0.3	0.3	0.4	0.4
Black, non-Hispanic	0.9	0.9	1.1	1.1	1.2	1.2
Asian	1.7	1.7	1.4	1.4	1.7	1.7
Hispanic	0.9	0.9	0.9	0.9	0.9	0.9
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	1.6	1.6	1.6	1.6	2.1	2.1
Black, non-Hispanic	2.1	2.1	2.7	2.7	2.6	2.6
Asian	3.5	3.5	6.3	6.3	5.6	5.6
Hispanic	1.5	1.5	1.4	1.4	1.9	1.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 9a.—Standard errors for percentage distribution of first-time kindergartners by the frequency with which teachers say they engage in prosocial behavior, by child and family characteristics: Fall 1998

Characteristic	Accept peer ideas		Form friendships		Comfort others	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	0.5	0.5	0.5	0.5	0.7	0.7
Child's sex						
Male	0.7	0.7	0.6	0.6	0.8	0.8
Female	0.6	0.6	0.5	0.5	0.8	0.8
Child's age at entry						
Born Jan. – Aug. 1992	1.7	1.7	1.8	1.8	2.2	2.2
Born Sep. – Dec. 1992	0.8	0.8	0.8	0.8	1.1	1.1
Born Jan. – Apr. 1993	0.9	0.9	0.7	0.7	0.9	0.9
Born May – Aug. 1993	0.8	0.8	0.8	0.8	0.9	0.9
Born Sep. – Dec. 1993	1.4	1.4	1.2	1.2	1.6	1.6
Mother's education						
Less than high school	1.1	1.1	1.3	1.3	1.2	1.2
High school diploma or equivalent	0.8	0.8	0.6	0.6	1.1	1.1
Some college, including vocational/technical	0.7	0.7	0.7	0.7	0.9	0.9
Bachelor's degree or higher	0.9	0.9	0.8	0.8	1.1	1.1
Family type						
Single mother	0.9	0.9	1.0	1.0	1.1	1.1
Single father	3.3	3.3	3.7	3.7	3.5	3.5
Two parent	0.6	0.6	0.5	0.5	0.7	0.7
Welfare receipt						
Utilized AFDC	1.3	1.3	1.3	1.3	1.4	1.4
Never utilized AFDC	0.5	0.5	0.5	0.5	0.7	0.7
Primary language spoken in home						
Non-English	1.4	1.4	1.4	1.4	1.6	1.6
English	0.6	0.6	0.5	0.5	0.7	0.7
Child's race/ethnicity						
White, non-Hispanic	0.6	0.6	0.6	0.6	0.9	0.9
Black, non-Hispanic	1.3	1.3	1.3	1.3	1.3	1.3
Asian	1.8	1.8	2.2	2.2	2.6	2.6
Hispanic	1.0	1.0	1.0	1.0	1.0	1.0
Hawaiian Native/Pacific Islander	3.0	3.0	3.7	3.7	3.9	3.9
American Indian/Alaska Native	2.7	2.7	2.1	2.1	2.4	2.4
More than one race, non-Hispanic	2.3	2.3	2.4	2.4	2.5	2.5
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	0.7	0.7	0.6	0.6	0.9	0.9
Black, non-Hispanic	1.4	1.4	1.3	1.3	1.3	1.3
Asian	1.9	1.9	2.4	2.4	2.7	2.7
Hispanic	1.1	1.1	1.2	1.2	1.2	1.2
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	1.9	1.9	2.6	2.6	2.5	2.5
Black, non-Hispanic	2.5	2.5	2.1	2.1	2.6	2.6
Asian	4.1	4.1	5.0	5.0	6.0	6.0
Hispanic	1.7	1.7	1.4	1.4	1.7	1.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 10a.—Standard errors for percentage distribution of first-time kindergartners by the frequency with which parents say they exhibit anti-social behavior, by child and family characteristics: Fall 1998

Characteristic	Argue with others		Fight with others		Easily get angry	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	0.5	0.5	0.4	0.4	0.4	0.4
Child's sex						
Male	0.6	0.6	0.5	0.5	0.5	0.5
Female	0.6	0.6	0.4	0.4	0.5	0.5
Child's age at entry						
Born Jan. – Aug. 1992	1.8	1.8	1.3	1.3	1.7	1.7
Born Sep. – Dec. 1992	1.0	1.0	0.8	0.8	0.8	0.8
Born Jan. – Apr. 1993	0.8	0.8	0.6	0.6	0.6	0.6
Born May – Aug. 1993	0.8	0.8	0.6	0.6	0.6	0.6
Born Sep. – Dec. 1993	1.3	1.3	0.8	0.8	1.2	1.2
Mother's education						
Less than high school	1.3	1.3	1.1	1.1	1.1	1.1
High school diploma or equivalent	0.8	0.8	0.7	0.7	0.6	0.6
Some college, including vocational/technical	0.8	0.8	0.5	0.5	0.5	0.5
Bachelor's degree or higher	0.9	0.9	0.6	0.6	0.6	0.6
Family type						
Single mother	0.9	0.9	0.7	0.7	0.9	0.9
Single father	2.8	2.8	2.0	2.0	2.0	2.0
Two parent	0.6	0.6	0.4	0.4	0.3	0.3
Welfare receipt						
Utilized AFDC	1.0	1.0	1.0	1.0	1.3	1.3
Never utilized AFDC	0.5	0.5	0.3	0.3	0.4	0.4
Primary language spoken in home						
Non-English	1.4	1.4	1.0	1.0	1.0	1.0
English	0.5	0.5	0.4	0.4	0.4	0.4
Child's race/ethnicity						
White, non-Hispanic	0.7	0.7	0.4	0.4	0.4	0.4
Black, non-Hispanic	1.1	1.1	0.9	0.9	1.3	1.3
Asian	1.5	1.5	1.2	1.2	1.2	1.2
Hispanic	1.0	1.0	0.7	0.7	1.0	1.0
Hawaiian Native/Pacific Islander	3.0	3.0	3.0	3.0	2.4	2.4
American Indian/Alaska Native	2.3	2.3	1.4	1.4	0.7	0.7
More than one race, non-Hispanic	2.4	2.4	1.9	1.9	2.0	2.0
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	0.8	0.8	0.5	0.5	0.4	0.4
Black, non-Hispanic	1.1	1.1	1.0	1.0	1.2	1.2
Asian	1.4	1.4	1.4	1.4	1.3	1.3
Hispanic	1.1	1.1	0.8	0.8	1.1	1.1
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	2.2	2.2	2.0	2.0	1.4	1.4
Black, non-Hispanic	2.2	2.2	1.9	1.9	2.5	2.5
Asian	5.0	5.0	1.5	1.5	4.7	4.7
Hispanic	1.7	1.7	1.5	1.5	1.5	1.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 11a.—Standard errors for percentage distribution of first-time kindergartners by the frequency with which teachers say they exhibit anti-social behavior, by child and family characteristics: Fall 1998

Characteristic	Argue with others		Fight with others		Easily get angry	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	0.4	0.4	0.4	0.4	0.4	0.4
Child's sex						
Male	0.5	0.5	0.5	0.5	0.5	0.5
Female	0.4	0.4	0.5	0.5	0.4	0.4
Child's age at entry						
Born Jan. – Aug. 1992	1.6	1.6	1.1	1.1	1.6	1.6
Born Sep. – Dec. 1992	0.6	0.6	0.5	0.5	0.5	0.5
Born Jan. – Apr. 1993	0.6	0.6	0.5	0.5	0.6	0.6
Born May – Aug. 1993	0.5	0.5	0.6	0.6	0.6	0.6
Born Sep. – Dec. 1993	0.9	0.9	0.9	0.9	1.0	1.0
Mother's education						
Less than high school	0.9	0.9	1.0	1.0	0.9	0.9
High school diploma or equivalent	0.7	0.7	0.6	0.6	0.6	0.6
Some college, including vocational/technical	0.4	0.4	0.4	0.4	0.5	0.5
Bachelor's degree or higher	0.5	0.5	0.5	0.5	0.6	0.6
Family type						
Single mother	0.7	0.7	0.7	0.7	0.6	0.6
Single father	2.2	2.2	2.3	2.3	2.1	2.1
Two parent	0.4	0.4	0.4	0.4	0.4	0.4
Welfare receipt						
Utilized AFDC	0.9	0.9	1.0	1.0	0.8	0.8
Never utilized AFDC	0.4	0.4	0.4	0.4	0.4	0.4
Primary language spoken in home						
Non-English	0.8	0.8	1.0	1.0	1.0	1.0
English	0.4	0.4	0.4	0.4	0.4	0.4
Child's race/ethnicity						
White, non-Hispanic	0.4	0.4	0.4	0.4	0.5	0.5
Black, non-Hispanic	1.0	1.0	0.8	0.8	0.7	0.7
Asian	0.9	0.9	1.1	1.1	1.0	1.0
Hispanic	0.7	0.7	0.9	0.9	0.8	0.8
Hawaiian Native/Pacific Islander	1.8	1.8	1.2	1.2	2.7	2.7
American Indian/Alaska Native	1.7	1.7	1.9	1.9	1.3	1.3
More than one race, non-Hispanic	1.4	1.4	1.5	1.5	1.7	1.7
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	0.4	0.4	0.4	0.4	0.5	0.5
Black, non-Hispanic	1.1	1.1	0.9	0.9	0.7	0.7
Asian	1.0	1.0	1.3	1.3	1.1	1.1
Hispanic	0.7	0.7	0.9	0.9	0.9	0.9
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	1.8	1.8	1.6	1.6	1.9	1.9
Black, non-Hispanic	1.6	1.6	1.9	1.9	2.0	2.0
Asian	1.8	1.8	1.6	1.6	2.1	2.1
Hispanic	1.2	1.2	1.5	1.5	1.2	1.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 12a.—Standard errors for percentage of first-time male and female kindergartners at risk for overweight, by child and family characteristics: Fall 1998

Characteristic	Males	Females
Total	0.4	0.4
Mother's education		
Less than high school	1.3	1.0
High school diploma or equivalent	0.7	0.7
Some college, including vocational/technical	0.6	0.7
Bachelor's degree or higher	0.7	0.8
Family type		
Single mother	0.9	0.8
Single father	2.6	3.1
Two parent	0.4	0.4
Welfare receipt		
Utilized AFDC	1.7	1.1
Never utilized AFDC	0.5	0.4
Primary language spoken in home		
Non-English	1.6	1.4
English	0.4	0.4
Child's race/ethnicity		
White, non-Hispanic	0.5	0.5
Black, non-Hispanic	0.9	1.2
Asian	2.0	2.0
Hispanic	1.1	0.9
Hawaiian Native/Pacific Islander	3.6	2.9
American Indian/Alaska Native	2.3	3.7
More than one race, non-Hispanic	1.9	2.7
Child's race/ethnicity by maternal education		
Maternal education:		
High school diploma/equivalent or more		
White, non-Hispanic	0.5	0.5
Black, non-Hispanic	1.0	1.4
Asian	2.3	2.3
Hispanic	1.4	1.2
Maternal education:		
Less than high school diploma or equivalent		
White, non-Hispanic	2.7	2.1
Black, non-Hispanic	2.4	1.7
Asian	4.7	2.9
Hispanic	1.9	1.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 13a.—Standard errors for first-time kindergartners' mean fine motor skills score and percentage distribution of scores, by child and family characteristics: Fall 1998

Characteristic	Mean fine motor	Lower	Middle	Higher
Total	(*)	0.6	0.4	0.6
Child's sex				
Male	(*)	0.8	0.6	0.8
Female	(*)	0.6	0.6	0.7
Child's age at entry				
Born Jan. – Aug. 1992	0.1	1.8	2.1	2.0
Born Sep. – Dec. 1992	(*)	0.8	0.8	1.1
Born Jan. – Apr. 1993	(*)	0.8	0.7	0.9
Born May – Aug. 1993	(*)	0.9	0.8	0.8
Born Sep. – Dec. 1993	(*)	1.6	1.3	1.4
Mother's education				
Less than high school	(*)	1.4	1.0	1.0
High school diploma or equivalent	(*)	1.0	0.8	1.0
Some college, including vocational/technical	(*)	0.6	0.8	0.9
Bachelor's degree or higher	(*)	0.8	0.9	1.0
Family type				
Single mother	(*)	1.2	0.8	1.0
Single father	0.1	2.9	2.9	3.1
Two parent	(*)	0.6	0.5	0.7
Welfare receipt				
Utilized AFDC	0.1	1.3	1.4	1.2
Never utilized AFDC	(*)	0.6	0.4	0.6
Primary language spoken in home				
Non-English	(*)	1.6	1.2	1.4
English	0.1	0.7	0.5	0.7
Child's race/ethnicity				
White, non-Hispanic	(*)	0.8	0.6	0.8
Black, non-Hispanic	(*)	1.1	1.0	1.1
Asian	(*)	2.2	2.0	2.3
Hispanic	(*)	1.3	1.0	1.1
Hawaiian Native/Pacific Islander	0.1	3.2	3.2	3.6
American Indian/Alaska Native	0.1	2.5	1.9	2.7
More than one race, non-Hispanic	0.1	2.9	3.2	2.6
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	(*)	0.7	0.7	0.9
Black, non-Hispanic	(*)	1.2	1.2	1.1
Asian	(*)	1.8	2.2	2.4
Hispanic	(*)	1.4	1.3	1.5
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	(*)	2.5	2.1	2.1
Black, non-Hispanic	(*)	2.4	2.6	2.4
Asian	0.1	10.4	8.3	7.6
Hispanic	(*)	2.1	1.7	1.3

* Standard error less than .05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 14a.—Standard errors for first-time kindergartners' mean gross motor skills score and percentage distribution of scores, by child and family characteristics: Fall 1998

Characteristic	Mean gross motor	Lower	Middle	Higher
Total	0.1	0.6	0.4	0.6
Child's sex				
Male	0.1	0.7	0.6	0.7
Female	0.1	0.6	0.6	0.8
Child's age at entry				
Born Jan. – Aug. 1992	0.1	2.0	2.4	2.2
Born Sep. – Dec. 1992	0.1	0.9	0.7	1.0
Born Jan. – Apr. 1993	0.1	0.7	0.8	0.7
Born May – Aug. 1993	0.1	0.8	0.8	1.0
Born Sep. – Dec. 1993	0.1	1.5	1.3	1.4
Mother's education				
Less than high school	0.1	1.4	1.0	1.2
High school diploma or equivalent	0.1	0.8	0.8	1.0
Some college, including vocational/technical	0.1	0.8	0.7	0.9
Bachelor's degree or higher	0.1	0.9	0.8	0.9
Family type				
Single mother	0.1	1.1	0.9	1.0
Single father	0.1	3.2	2.8	3.4
Two parent	0.1	0.6	0.5	0.7
Welfare receipt				
Utilized AFDC	0.1	1.3	1.2	1.6
Never utilized AFDC	0.1	0.6	0.5	0.6
Primary language spoken in home				
Non-English	0.1	2.0	1.4	1.7
English	0.1	0.6	0.4	0.6
	0.1			
Child's race/ethnicity				
White, non-Hispanic	0.1	0.7	0.5	0.7
Black, non-Hispanic	0.1	1.0	1.2	1.3
Asian	0.1	2.2	2.2	2.0
Hispanic	0.1	1.4	1.1	1.5
Hawaiian Native/Pacific Islander	0.1	5.3	4.2	3.3
American Indian/Alaska Native	0.1	2.5	1.7	2.0
More than one race, non-Hispanic	0.1	2.7	2.8	2.8
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	0.1	0.7	0.6	0.7
Black, non-Hispanic	0.1	1.2	1.3	1.6
Asian	0.1	2.1	2.1	2.1
Hispanic	0.1	1.5	1.4	1.6
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	0.1	3.1	1.8	2.3
Black, non-Hispanic	0.1	2.5	2.3	2.6
Asian	0.1	6.0	9.5	7.1
Hispanic	0.1	1.9	1.4	2.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 15a.—Standard errors for percentage distribution of first-time kindergartners by parents' assessment of their general health, by child and family characteristics: Fall 1998

Characteristic	Excellent	Very good	Good	Fair/ poor
Total	0.7	0.5	0.4	0.2
Child's sex				
Male	0.9	0.7	0.5	0.2
Female	0.7	0.6	0.5	0.2
Child's age at entry				
Born Jan. – Aug. 1992	2.0	1.7	1.4	0.8
Born Sep. – Dec. 1992	1.0	0.7	0.7	0.3
Born Jan. – Apr. 1993	0.8	0.7	0.6	0.2
Born May – Aug. 1993	1.1	1.0	0.6	0.3
Born Sep. – Dec. 1993	1.6	1.5	1.2	0.6
Mother's education				
Less than high school	1.2	1.1	1.0	0.7
High school diploma or equivalent	1.0	0.8	0.7	0.3
Some college, including vocational/technical	0.7	0.7	0.5	0.2
Bachelor's degree or higher	1.0	0.9	0.5	0.2
Family type				
Single mother	1.0	0.9	0.6	0.4
Single father	3.2	2.9	2.7	1.0
Two parent	0.7	0.5	0.4	0.2
Welfare receipt				
Utilized AFDC	1.3	1.2	1.0	0.6
Never utilized AFDC	0.7	0.5	0.4	0.1
Primary language spoken in home				
Non-English	1.4	1.2	1.2	0.5
English	0.7	0.5	0.4	0.2
Child's race/ethnicity				
White, non-Hispanic	0.8	0.6	0.4	0.2
Black, non-Hispanic	1.4	1.1	0.9	0.4
Asian	2.1	2.1	1.6	0.8
Hispanic	1.3	1.1	0.9	0.5
Hawaiian Native/Pacific Islander	4.1	5.5	1.8	2.7
American Indian/Alaska Native	2.7	1.8	2.1	0.7
More than one race, non-Hispanic	2.4	2.4	1.5	0.8
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	0.7	0.7	0.4	0.1
Black, non-Hispanic	1.5	1.1	0.9	0.4
Asian	2.4	2.3	1.7	0.8
Hispanic	1.5	1.1	1.0	0.4
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	2.3	1.8	1.4	1.0
Black, non-Hispanic	1.9	2.3	2.4	1.8
Asian	3.7	4.2	3.5	1.4
Hispanic	1.7	1.9	1.7	0.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 16a.—Standard errors for percentage of first-time kindergartners whose parents reported developmental difficulty in terms of activity level, attention, coordination and pronunciation of words: Fall 1998

Characteristic	Activity level	Attention	Coordination	Articulation
Total	0.5	0.3	0.2	0.3
Child's sex				
Male	0.3	0.5	0.3	0.4
Female	0.3	0.4	0.3	0.3
Child's age at entry				
Born Jan. – Aug. 1992	1.7	1.6	1.2	1.6
Born Sep. – Dec. 1992	0.8	0.6	0.3	0.6
Born Jan. – Apr. 1993	0.6	0.5	0.2	0.4
Born May – Aug. 1993	0.7	0.5	0.3	0.5
Born Sep. – Dec. 1993	1.3	1.0	0.6	0.8
Mother's education				
Less than high school	1.3	0.9	0.4	0.9
High school diploma or equivalent	0.7	0.7	0.3	0.5
Some college, including vocational/technical	0.6	0.5	0.3	0.5
Bachelor's degree or higher	0.6	0.6	0.4	0.5
Family type				
Single mother	1.2	0.7	0.3	0.5
Single father	2.8	2.2	1.3	2.1
Two parent	0.4	0.4	0.2	0.3
Welfare receipt				
Utilized AFDC	1.6	1.0	0.5	0.8
Never utilized AFDC	0.4	0.3	0.2	0.3
Primary language spoken in home				
Non-English	1.5	0.7	0.4	0.9
English	0.6	0.3	0.2	0.3
Child's race/ethnicity				
White, non-Hispanic	0.5	0.4	0.3	0.4
Black, non-Hispanic	2.0	0.9	0.3	0.8
Asian	1.5	0.6	0.6	1.2
Hispanic	0.9	1.0	0.3	0.6
Hawaiian Native/Pacific Islander	3.1	3.3	1.4	2.3
American Indian/Alaska Native	2.3	2.0	1.1	1.2
More than one race, non-Hispanic	2.4	1.9	0.7	1.8
Child's race/ethnicity by maternal education				
Maternal education:				
High school diploma/equivalent or more				
White, non-Hispanic	0.4	0.5	0.3	0.4
Black, non-Hispanic	1.6	1.0	0.4	0.7
Asian	1.8	1.0	0.7	1.2
Hispanic	0.9	0.9	0.4	0.7
Maternal education:				
Less than high school diploma or equivalent				
White, non-Hispanic	2.0	1.6	0.8	1.4
Black, non-Hispanic	3.3	1.9	1.0	2.0
Asian	3.9	1.8	1.2	3.9
Hispanic	1.7	1.1	0.6	1.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 17a.—Standard errors for percentage distribution of first-time kindergartners by the frequency with which parents say they persist at a task, are eager to learn new things and are creative in work or play, by child and family characteristics: Fall 1998

Characteristic	Persist		Eager to learn		Creative	
	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	0.4	0.4	0.3	0.3	0.5	0.5
Child's sex						
Male	0.6	0.6	0.4	0.4	0.6	0.6
Female	0.5	0.5	0.3	0.3	0.5	0.5
Child's age at entry						
Born Jan. – Aug. 1992	1.9	1.9	1.0	1.0	1.8	1.8
Born Sep. – Dec. 1992	0.8	0.8	0.5	0.5	0.7	0.7
Born Jan. – Apr. 1993	0.6	0.6	0.4	0.4	0.7	0.7
Born May – Aug. 1993	0.6	0.6	0.5	0.5	0.6	0.6
Born Sep. – Dec. 1993	1.2	1.2	0.9	0.9	1.2	1.2
Mother's education						
Less than high school	1.1	1.1	1.0	1.0	1.2	1.2
High school diploma or equivalent	0.7	0.7	0.6	0.6	0.7	0.7
Some college, including vocational/technical	0.8	0.8	0.4	0.4	0.5	0.5
Bachelor's degree or higher	0.7	0.7	0.4	0.4	0.7	0.7
Family type						
Single mother	0.8	0.8	0.7	0.7	1.0	1.0
Single father	2.8	2.8	1.6	1.6	2.5	2.5
Two parent	0.4	0.4	0.3	0.3	0.4	0.4
Welfare receipt						
Utilized AFDC	1.2	1.2	0.8	0.8	1.2	1.2
Never utilized AFDC	0.4	0.4	0.3	0.3	0.4	0.4
Primary language spoken in home						
Non-English	1.3	1.3	1.2	1.2	2.5	2.5
English	0.4	0.4	0.3	0.3	0.9	0.9
Child's race/ethnicity						
White, non-Hispanic	0.5	0.5	0.3	0.3	0.5	0.5
Black, non-Hispanic	1.0	1.0	0.9	0.9	1.2	1.2
Asian	1.5	1.5	1.4	1.4	1.9	1.9
Hispanic	0.9	0.9	0.7	0.7	0.9	0.9
Hawaiian Native/Pacific Islander	5.0	5.0	4.6	4.6	6.6	6.6
American Indian/Alaska Native	1.6	1.6	1.4	1.4	1.7	1.7
More than one race, non-Hispanic	2.9	2.9	1.3	1.3	1.8	1.8
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	0.5	0.5	0.3	0.3	0.5	0.5
Black, non-Hispanic	0.9	0.9	0.7	0.7	1.0	1.0
Asian	1.7	1.7	1.0	1.0	1.8	1.8
Hispanic	1.1	1.1	0.6	0.6	1.0	1.0
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	1.8	1.8	1.2	1.2	1.6	1.6
Black, non-Hispanic	3.0	3.0	2.4	2.4	2.9	2.9
Asian	4.8	4.8	4.6	4.6	5.9	5.9
Hispanic	1.6	1.6	1.4	1.4	1.7	1.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 18a.—Standard errors for percentage distribution of first-time kindergartners by the frequency with which teachers say they persist at a task, are eager to learn new things and pay attention well, by child and family characteristics: Fall 1998

	Persist		Eager to learn		Attention	
Characteristic	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often	Never/ sometimes	Often/ very often
Total	0.6	0.6	0.5	0.5	0.6	0.6
Child's sex						
Male	0.8	0.8	0.7	0.7	0.8	0.8
Female	0.7	0.7	0.6	0.6	0.6	0.6
Child's age at entry						
Born Jan. – Aug. 1992	1.6	1.6	1.6	1.6	1.9	1.9
Born Sep. – Dec. 1992	0.8	0.8	0.7	0.7	0.8	0.8
Born Jan. – Apr. 1993	0.9	0.9	0.8	0.8	0.8	0.8
Born May – Aug. 1993	0.8	0.8	0.8	0.8	0.9	0.9
Born Sep. – Dec. 1993	1.6	1.6	1.5	1.5	1.5	1.5
Mother's education						
Less than high school	1.4	1.4	1.1	1.1	1.1	1.1
High school diploma or equivalent	1.0	1.0	1.0	1.0	1.0	1.0
Some college, including vocational/technical	0.7	0.7	0.6	0.6	0.8	0.8
Bachelor's degree or higher	0.9	0.9	0.7	0.7	0.9	0.9
Family type						
Single mother	1.1	1.1	1.0	1.0	1.1	1.1
Single father	2.8	2.8	2.8	2.8	3.1	3.1
Two parent	0.6	0.6	0.5	0.5	0.6	0.6
Welfare receipt						
Utilized AFDC	1.3	1.3	1.3	1.3	1.4	1.4
Never utilized AFDC	0.6	0.6	0.6	0.6	0.6	0.6
Primary language spoken in home						
Non-English	1.5	1.5	1.3	1.3	1.3	1.3
English	0.6	0.6	0.6	0.6	0.6	0.6
Child's race/ethnicity						
White, non-Hispanic	0.7	0.7	0.7	0.7	0.7	0.7
Black, non-Hispanic	1.4	1.4	1.3	1.3	1.4	1.4
Asian	1.9	1.9	1.9	1.9	2.3	2.3
Hispanic	1.2	1.2	1.0	1.0	0.9	0.9
Hawaiian Native/Pacific Islander	3.4	3.4	3.3	3.3	2.8	2.8
American Indian/Alaska Native	2.2	2.2	2.1	2.1	2.9	2.9
More than one race, non-Hispanic	2.6	2.6	2.4	2.4	2.3	2.3
Child's race/ethnicity by maternal education						
Maternal education:						
High school diploma/equivalent or more						
White, non-Hispanic	0.7	0.7	0.7	0.7	0.7	0.7
Black, non-Hispanic	1.5	1.5	1.3	1.3	1.5	1.5
Asian	1.8	1.8	1.9	1.9	2.4	2.4
Hispanic	1.3	1.3	1.2	1.2	1.1	1.1
Maternal education:						
Less than high school diploma or equivalent						
White, non-Hispanic	2.8	2.8	2.2	2.2	2.0	2.0
Black, non-Hispanic	2.8	2.8	2.5	2.5	2.1	2.1
Asian	3.7	3.7	3.9	3.9	5.9	5.9
Hispanic	2.0	2.0	1.5	1.5	1.5	1.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 19a.—Standard errors for percentage distribution of first-time kindergartners by numbers of books and children's records, audiotapes or CDs in the home, by child and family characteristics: Fall 1998

Characteristic	Number of children's books in child's home				Number of children's records, audio tapes, or CDs				
	Less than 26	26-50	51-100	101 +	None	1-5	6-10	11-20	21 +
Total	1.0	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.5
Child's sex									
Male	1.1	0.6	0.6	0.7	0.6	0.6	0.5	0.5	0.6
Female	1.0	0.6	0.8	0.7	0.5	0.6	0.5	0.5	0.6
Child's age at entry									
Born Jan. – Aug. 1992	1.8	1.2	1.1	1.2	1.2	0.8	1.6	1.7	1.0
Born Sep. – Dec. 1992	1.3	0.9	0.9	1.0	0.8	0.9	0.9	0.8	1.0
Born Jan. – Apr. 1993	1.1	0.7	1.0	0.8	0.7	0.6	0.6	0.6	0.7
Born May – Aug. 1993	1.2	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.6
Born Sep. – Dec. 1993	1.7	1.2	1.5	1.0	1.0	1.2	1.2	1.2	1.1
Mother's education									
Less than high school	1.7	1.2	0.8	0.5	1.2	1.2	0.9	0.8	0.6
High school diploma or equivalent	1.4	0.9	0.9	0.5	0.7	0.8	0.6	0.6	0.6
Some college, including vocational/technical	0.9	0.7	0.8	0.8	0.5	0.7	0.6	0.6	0.7
Bachelor's degree or higher	0.6	1.0	0.9	1.0	0.3	0.7	0.7	0.7	0.8
Family type									
Single mother	1.8	1.1	1.0	0.7	1.1	0.7	0.7	0.8	0.9
Single father	3.1	2.8	2.9	2.0	2.4	2.8	2.4	2.5	2.3
Two parent	0.8	0.5	0.6	0.6	0.4	0.6	0.4	0.4	0.5
Welfare receipt									
Utilized AFDC	1.6	1.0	0.9	0.6	1.1	0.8	0.9	0.7	0.7
Never utilized AFDC	0.5	0.7	0.6	0.8	0.2	0.5	0.5	0.4	0.6
Primary language spoken in home									
Non-English	1.6	1.4	0.8	0.5	1.7	1.6	1.1	1.1	0.8
English	1.0	0.5	0.6	0.7	0.5	0.5	0.4	0.4	0.5
Child's race/ethnicity									
White, non-Hispanic	0.4	0.6	0.6	0.8	0.3	0.5	0.5	0.5	0.6
Black, non-Hispanic	1.8	1.2	1.0	0.4	1.4	1.0	0.9	0.7	1.0
Asian	2.7	1.6	1.9	1.2	1.8	1.8	1.7	1.6	1.8
Hispanic	1.5	0.9	0.8	0.5	1.1	1.1	0.7	0.7	0.7
Hawaiian Native/Pacific Islander	3.1	3.8	2.3	3.1	2.7	3.9	3.0	3.9	2.6
American Indian/Alaska Native	7.8	2.4	3.0	3.3	4.6	3.0	1.3	2.7	3.9
More than one race, non-Hispanic	2.4	3.0	2.4	1.7	1.4	2.2	2.2	2.0	2.2
Child's race/ethnicity by maternal education									
Maternal education:									
High school diploma/equivalent or more									
White, non-Hispanic	0.4	0.6	0.6	0.8	0.2	0.5	0.5	0.5	0.6
Black, non-Hispanic	1.8	1.3	1.1	0.5	1.2	1.2	1.1	0.8	1.0
Asian	2.7	1.7	2.1	1.5	1.2	1.9	1.6	1.8	2.2
Hispanic	1.6	1.3	1.0	0.8	0.9	1.4	1.0	0.8	1.0
Maternal education:									
Less than high school diploma or equivalent									
White, non-Hispanic	2.2	1.9	1.7	1.3	2.2	2.1	1.9	1.6	1.4
Black, non-Hispanic	2.5	2.3	1.2	0.6	2.5	2.4	2.0	1.4	1.4
Asian	7.3	4.1	5.5	0.1	7.0	4.8	5.5	2.1	2.1
Hispanic	1.9	1.5	0.9	0.3	1.9	1.8	1.1	0.8	0.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 20a.—Standard errors for percentage distribution of first-time kindergartners by the number of times each week family members read books and tell stories to them, by child and family characteristics: Fall 1998

	Reading				Tell stories			
Characteristic	Not at all	1 –2	3-6	Every day	Not at all	1 –2	3-6	Every day
Total	0.1	0.6	0.5	0.6	0.3	0.5	0.5	0.4
Child's sex								
Male	0.2	0.8	0.6	0.8	0.4	0.6	0.7	0.5
Female	0.1	0.6	0.6	0.7	0.3	0.8	0.6	0.6
Child's age at entry								
Born Jan. – Aug. 1992	0.5	0.2	0.1	0.2	1.0	0.6	0.5	0.4
Born Sep. – Dec. 1992	0.2	1.0	1.0	1.0	0.6	1.1	0.9	0.9
Born Jan. – Apr. 1993	0.1	0.8	0.7	0.9	0.5	0.8	0.8	0.7
Born May – Aug. 1993	0.2	0.9	0.8	0.8	0.4	0.8	0.7	0.7
Born Sep. – Dec. 1993	0.3	0.3	1.1	1.7	0.7	1.5	1.3	1.2
Mother's education								
Less than high school	0.5	1.1	1.1	1.1	0.6	1.3	1.2	0.9
High school diploma or equivalent	0.2	0.9	0.8	0.7	0.5	0.9	0.8	0.8
Some college, including vocational/technical	0.1	0.7	0.8	0.8	0.4	0.8	0.7	0.8
Bachelor's degree or higher	0.1	0.6	0.9	1.0	0.5	0.8	0.9	0.8
Family type								
Single mother	0.3	1.0	0.8	1.1	0.5	1.0	0.9	1.0
Single father	1.1	2.4	2.6	2.7	2.6	3.1	2.9	2.7
Two parent	0.1	0.6	0.6	0.6	0.3	0.6	0.5	0.5
Welfare receipt								
Utilized AFDC	0.5	1.6	1.2	1.4	0.8	1.4	1.2	1.0
Never utilized AFDC	0.1	0.6	0.5	0.7	0.3	0.6	0.5	0.5
Primary language spoken in home								
Non-English	0.5	1.3	1.4	1.5	0.9	1.5	1.2	1.4
English	0.1	0.7	0.5	0.7	0.3	0.6	0.5	0.5
Child's race/ethnicity								
White, non-Hispanic	0.1	0.5	0.5	0.7	0.4	0.7	0.6	0.5
Black, non-Hispanic	0.4	1.2	1.3	1.2	0.7	1.4	1.1	1.2
Asian	0.3	1.9	1.8	2.4	1.0	2.1	1.9	1.8
Hispanic	0.3	1.0	0.9	0.9	0.6	1.1	1.0	0.8
Hawaiian Native/Pacific Islander	0.1	2.5	3.0	2.9	0.9	3.8	3.6	2.5
American Indian/Alaska Native	0.6	3.0	2.7	2.1	1.0	2.3	1.5	2.3
More than one race, non-Hispanic	0.1	1.8	2.9	2.7	1.4	2.8	2.9	2.3
Child's race/ethnicity by maternal education								
Maternal education:								
High school diploma/equivalent or more								
White, non-Hispanic	0.1	0.4	0.6	0.8	0.3	0.7	0.6	0.6
Black, non-Hispanic	0.3	1.4	1.3	1.3	0.7	1.6	1.2	1.3
Asian	0.2	2.1	1.9	2.7	0.9	2.5	2.0	2.0
Hispanic	0.3	1.1	1.1	1.0	0.7	1.4	1.2	1.0
Maternal education:								
Less than high school diploma or equivalent								
White, non-Hispanic	0.6	2.4	2.2	2.0	1.1	2.7	2.6	1.5
Black, non-Hispanic	1.5	2.3	2.1	2.2	1.7	2.5	2.2	1.8
Asian	1.5	6.0	4.6	5.4	4.2	4.2	6.6	4.6
Hispanic	0.7	1.8	1.4	1.8	0.9	1.7	1.6	1.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 21a.—Standard errors for percentage distribution of first-time kindergartners by the number of times each week family members sing songs and do arts and crafts with them, by child and family characteristics: Fall 1998

	Sing songs				Arts and crafts			
Characteristic	Not at all	1 –2	3-6	Every day	Not at all	1 –2	3-6	Every day
Total	0.3	0.4	0.5	0.6	0.3	0.4	0.5	0.4
Child's sex								
Male	0.4	0.5	0.6	0.6	0.4	0.6	0.6	0.5
Female	0.3	0.5	0.6	0.8	0.4	0.5	0.5	0.5
Child's age at entry								
Born Jan. – Aug. 1992	1.1	2.1	2.0	1.8	0.9	2.2	1.7	1.3
Born Sep. – Dec. 1992	0.4	0.7	0.8	0.9	0.5	0.8	0.8	0.7
Born Jan. – Apr. 1993	0.4	0.5	0.7	0.9	0.4	0.8	0.7	0.6
Born May – Aug. 1993	0.4	0.7	0.8	0.9	0.4	0.7	0.8	0.6
Born Sep. – Dec. 1993	0.6	1.1	1.3	1.5	0.8	1.4	1.5	1.0
Mother's education								
Less than high school	0.9	1.2	1.0	1.4	0.9	1.2	1.0	1.0
High school diploma or equivalent	0.4	0.7	0.7	1.0	0.5	0.8	0.8	0.6
Some college, including vocational/technical	0.3	0.7	0.7	0.8	0.4	0.8	0.8	0.5
Bachelor's degree or higher	0.3	0.7	0.9	1.0	0.4	0.9	0.8	0.8
Family type								
Single mother	0.4	0.7	0.8	1.0	0.6	0.9	0.8	0.8
Single father	1.9	3.0	2.5	2.8	1.7	3.5	2.5	2.3
Two parent	0.3	0.5	0.5	0.7	0.3	0.5	0.5	0.4
Welfare receipt								
Utilized AFDC	1.0	0.9	1.0	1.5	0.9	1.2	1.0	1.1
Never utilized AFDC	0.3	0.4	0.5	0.6	0.3	0.4	0.5	0.4
Primary language spoken in home								
Non-English	1.0	1.5	1.2	1.9	1.0	1.4	1.2	1.1
English	0.3	0.4	0.5	0.6	0.3	0.4	0.5	0.4
Child's race/ethnicity								
White, non-Hispanic	0.3	0.5	0.6	0.7	0.3	0.6	0.6	0.5
Black, non-Hispanic	0.5	1.0	1.1	1.2	0.7	1.2	1.4	0.8
Asian	1.7	1.8	1.6	2.0	1.1	1.2	2.0	1.6
Hispanic	0.7	1.0	0.9	1.1	0.7	0.9	0.8	0.8
Hawaiian Native/Pacific Islander	1.6	2.2	4.0	3.4	1.9	3.9	2.7	2.9
American Indian/Alaska Native	1.9	2.0	1.5	3.6	1.0	1.6	2.2	1.4
More than one race, non-Hispanic	1.1	2.1	2.1	2.7	1.2	2.4	2.3	2.3
Child's race/ethnicity by maternal education								
Maternal education:								
High school diploma/equivalent or more								
White, non-Hispanic	0.2	0.5	0.6	0.7	0.2	0.6	0.6	0.5
Black, non-Hispanic	0.5	1.0	1.2	1.1	0.9	1.3	1.6	0.9
Asian	1.2	2.0	1.9	2.0	1.2	2.1	2.2	1.8
Hispanic	0.6	1.2	1.0	1.4	0.8	1.2	1.1	0.9
Maternal education:								
Less than high school diploma or equivalent								
White, non-Hispanic	1.2	2.1	1.7	2.4	1.2	2.0	2.0	1.8
Black, non-Hispanic	1.6	2.8	2.1	3.5	1.7	2.5	2.0	2.2
Asian	7.2	4.2	3.6	4.9	3.1	5.0	2.8	5.6
Hispanic	1.4	1.6	1.4	1.7	1.5	2.0	1.2	1.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 22a.—Standard errors for percentage distribution of first-time kindergartners by the number of times each week family members play sports or exercise and play games with them, by child and family characteristics: Fall 1998

Characteristic	Play sports or exercise				Games			
	Not at all	1 –2	3-6	Every day	Not at all	1 –2	3-6	Every day
Total	0.3	0.4	0.5	0.5	0.2	0.4	0.5	0.5
Child's sex								
Male	0.4	0.6	0.6	0.5	0.3	0.6	0.7	0.6
Female	0.4	0.6	0.7	0.6	0.3	0.6	0.6	0.6
Child's age at entry								
Born Jan. – Aug. 1992	1.0	1.9	1.9	2.0	0.8	2.0	2.0	1.9
Born Sep. – Dec. 1992	0.6	1.0	1.0	1.3	0.7	1.1	1.0	1.0
Born Jan. – Apr. 1993	0.4	0.7	0.8	0.6	0.4	0.7	0.7	0.6
Born May – Aug. 1993	0.5	0.7	0.8	0.7	0.3	0.6	0.8	0.8
Born Sep. – Dec. 1993	0.9	1.5	1.4	1.2	0.7	1.4	1.5	1.2
Mother's education								
Less than high school	0.8	1.0	1.0	1.3	0.7	1.1	1.0	1.0
High school diploma or equivalent	0.5	0.7	0.7	0.7	0.4	0.9	0.9	0.8
Some college, including vocational/technical	0.4	0.8	1.0	0.6	0.2	0.8	0.8	0.7
Bachelor's degree or higher	0.5	0.8	0.8	0.6	0.2	0.7	0.8	0.7
Family type								
Single mother	0.7	0.9	0.9	0.9	0.5	0.9	1.0	0.9
Single father	1.6	2.9	2.8	3.3	1.4	2.8	2.6	3.0
Two parent	0.4	0.5	0.5	0.4	0.2	0.5	0.6	0.5
Welfare receipt								
Utilized AFDC	0.9	1.1	1.3	1.3	0.7	1.1	0.9	1.2
Never utilized AFDC	0.3	0.5	0.5	0.5	0.2	0.5	0.6	0.5
Primary language spoken in home								
Non-English	1.1	1.4	1.2	1.1	0.9	0.5	0.2	0.5
English	0.3	0.5	0.5	0.5	0.2	0.4	0.5	0.5
Child's race/ethnicity								
White, non-Hispanic	0.3	0.6	0.5	0.5	0.2	0.5	0.5	0.5
Black, non-Hispanic	0.8	0.9	1.5	1.5	1.5	1.2	1.3	1.2
Asian	1.3	2.0	2.0	1.5	0.9	2.1	2.3	1.8
Hispanic	0.8	0.9	0.9	1.0	0.6	1.2	1.0	1.0
Hawaiian Native/Pacific Islander	1.7	4.4	3.0	6.2	0.7	5.3	2.9	5.4
American Indian/Alaska Native	4.5	1.8	2.2	3.5	1.8	1.7	1.7	2.4
More than one race, non-Hispanic	1.0	3.1	2.7	2.2	1.2	2.4	2.4	2.2
Child's race/ethnicity by maternal education								
Maternal education:								
High school diploma/equivalent or more								
White, non-Hispanic	0.3	0.7	0.6	0.5	0.2	0.5	0.5	0.5
Black, non-Hispanic	0.9	1.1	1.6	1.6	0.5	1.4	1.6	1.3
Asian	1.2	2.2	1.9	1.9	0.9	2.2	2.2	1.8
Hispanic	0.8	1.2	1.1	1.2	0.7	1.3	1.4	1.0
Maternal education:								
Less than high school diploma or equivalent								
White, non-Hispanic	1.2	1.7	1.5	2.1	1.2	2.2	2.6	2.1
Black, non-Hispanic	1.6	2.6	2.3	2.6	1.3	2.4	2.4	2.0
Asian	3.5	5.4	5.2	3.1	3.0	5.4	6.1	6.2
Hispanic	1.5	1.5	1.6	1.6	1.1	1.8	1.4	1.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 23a.—Standard errors for percentage distribution of first-time kindergartners by participation in nonparental care arrangements the year prior to starting kindergarten, by type of arrangement and child and family characteristics: Fall 1998

Characteristic	Total	Nonparental care arrangement			No non-parental care
		Relative care	Nonrelative care	Center-based care	
Total	0.5	0.6	0.5	0.8	0.5
Child's sex					
Male	0.6	0.7	0.7	0.8	0.6
Female	0.6	0.8	0.5	0.9	0.6
Child's age at entry					
Born Jan. – Aug. 1992	1.7	1.2	1.1	1.3	1.7
Born Sep. – Dec. 1992	0.9	1.0	0.9	1.1	0.9
Born Jan. – Apr. 1993	0.7	0.9	0.7	1.0	0.7
Born May – Aug. 1993	0.6	0.8	0.6	0.9	0.6
Born Sep. – Dec. 1993	1.6	1.3	1.2	1.9	1.6
Mother's education					
Less than high school	1.2	1.3	0.5	1.2	1.2
High school diploma or equivalent	0.9	0.9	0.7	1.2	0.9
Some college, including vocational/technical	0.7	0.9	0.7	1.0	0.7
Bachelor's degree or higher	0.6	0.7	1.0	0.7	0.6
Family type					
Single mother	0.9	1.2	0.9	1.2	0.9
Single father	2.4	3.0	2.3	3.0	2.4
Two parent	0.6	05	0.6	0.9	0.6
Welfare receipt					
Utilized AFDC	1.3	1.1	0.6	1.1	1.3
Never utilized AFDC	0.5	0.6	0.8	0.9	0.5
Primary language spoken in home					
Non-English	1.7	1.3	0.8	1.9	1.7
English	0.5	1.7	0.6	0.8	05
Child's race/ethnicity					
White, non-Hispanic	0.6	0.6	0.7	0.9	0.6
Black, non-Hispanic	1.1	1.6	0.9	1.6	1.1
Asian	1.6	2.1	1.0	2.2	1.6
Hispanic	1.1	0.9	0.8	1.3	1.1
Hawaiian Native/Pacific Islander	6.6	3.8	1.7	5.9	6.6
American Indian/Alaska Native	1.1	2.4	1.9	1.9	1.1
More than one race, non-Hispanic	1.6	2.4	2.3	2.4	1.6
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	0.5	0.6	0.7	0.8	0.5
Black, non-Hispanic	1.0	1.7	1.1	1.4	1.0
Asian	1.8	2.1	1.2	2.5	1.8
Hispanic	1.2	1.4	1.0	1.4	1.2
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	2.4	2.0	1.1	1.9	2.4
Black, non-Hispanic	3.2	2.6	1.1	3.7	3.2
Asian	3.9	6.0	1.5	6.8	3.9
Hispanic	1.8	1.5	0.9	1.8	1.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.

Table 24a.—Standard errors for percentage distribution of first-time kindergartners by participation during kindergarten in before and after care, by type of arrangement and child and family characteristics: Fall 1998

Characteristic	Total	Nonparental care arrangement			No nonparental care
		Relative care	Nonrelative care	Center-based care	
Total	0.6	0.6	0.5	0.7	0.6
Child's sex					
Male	0.8	0.6	0.6	0.9	0.8
Female	0.8	0.7	0.5	0.7	0.8
Child's age at entry					
Born Jan. – Aug. 1992	2.0	1.5	1.3	1.5	2.0
Born Sep. – Dec. 1992	1.0	1.0	0.7	1.0	1.0
Born Jan. – Apr. 1993	0.9	0.8	0.6	0.8	0.9
Born May – Aug. 1993	0.9	0.8	0.5	0.9	0.9
Born Sep. – Dec. 1993	1.6	1.4	1.2	1.5	1.6
Mother's education					
Less than high school	1.4	1.3	0.9	0.8	1.4
High school diploma or equivalent	0.9	0.8	0.6	0.8	0.9
Some college, including vocational/technical	0.9	0.9	0.7	0.9	0.9
Bachelor's degree or higher	1.2	0.7	0.9	1.2	1.2
Family type					
Single mother	1.2	1.3	0.9	1.3	1.2
Single father	2.7	3.2	2.4	2.8	2.7
Two parent	0.7	0.5	0.5	0.7	0.7
Welfare receipt					
Utilized AFDC	1.4	1.0	0.7	1.0	1.4
Never utilized AFDC	0.7	0.8	0.7	0.9	0.7
Primary language spoken in home					
Non-English	1.5	1.3	0.9	1.0	1.5
English	0.7	0.7	0.5	0.8	0.7
Child's race/ethnicity					
White, non-Hispanic	0.8	0.5	0.6	0.8	0.8
Black, non-Hispanic	1.5	1.6	0.9	2.0	1.5
Asian	2.0	1.9	1.0	1.8	2.0
Hispanic	1.0	0.9	0.8	1.0	1.0
Hawaiian Native/Pacific Islander	3.1	4.4	1.9	3.2	3.1
American Indian/Alaska Native	2.0	3.1	2.1	2.9	2.0
More than one race, non-Hispanic	2.9	2.6	1.9	2.0	2.9
Child's race/ethnicity by maternal education					
Maternal education:					
High school diploma/equivalent or more					
White, non-Hispanic	0.9	0.6	0.7	0.9	0.9
Black, non-Hispanic	1.6	1.6	1.0	2.2	1.6
Asian	2.1	2.0	1.1	2.1	2.1
Hispanic	1.4	1.2	1.0	1.3	1.4
Maternal education:					
Less than high school diploma or equivalent					
White, non-Hispanic	2.3	1.7	1.2	1.2	2.3
Black, non-Hispanic	2.7	2.7	1.1	2.3	2.7
Asian	6.1	6.4	1.1	1.5	6.1
Hispanic	1.7	1.6	0.9	0.8	1.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998–99, Fall 1998.