CHAPTER 16

Beyond Family and Peers

Key Themes in Media, Computers, Schools, and Neighborhoods

- **Sociocultural Influence**   How does the sociocultural context influence the child's experiences with media, computers, schools, and the neighborhood?

- **Child's Active Role**   How does the child play an active role in experiences with media, computers, schools, and the neighborhood?

- **Interaction Among Domains**   How do the child's experiences with media, computers, schools, and the neighborhood interact with development in other domains?

Jeremy slammed the door behind him, flicked the lock, and headed to the refrigerator. It was his regular routine after school. Come home, get a snack, and turn on the television to watch cartoons. He wasn't allowed to go out to play; too dangerous, his mother claimed. If he had already seen the cartoons, he might play a video game for awhile. But because he couldn't have anyone over until his mother returned from work, that wasn't much fun, either. He dreamed of living in a house with a big yard, maybe even a swimming pool in the back and a park nearby. But that wasn't the neighborhood he was living in.

Children grow up in many different contexts. In contrast to Jeremy, some go to soccer practice or music lessons after school or stay at the school until a parent picks them up an hour or two later. Some spend their time chatting on the computer with their friends. Some, like Jeremy, watch a lot of television.

Historically, of course, parents and peers have played a major role in socializing children and helping them build their cognitive skills, and they continue to serve this function in contemporary society. Nevertheless, formal education in the schools and, in more recent decades, computers and the information highway, along with television, videocassette and digital recorders, and computer activities have begun to play a significant part in these processes as well.

A host of questions have sprung up concerning television, computers, and other recent technological marvels and their effects on children. What are children learning from these increasingly ubiquitous sources of information? Do they get "hooked" on television and computer games? What aspects of cognitive or social development might these cultural innovations be affecting? In addition, schools have both pedagogical and social effects on development. Questions about academic and social success and their relationship to the programs that schools offer, as well as the role of teachers in these processes, continue to be of concern to parents and educators. Finally, neighborhoods offer a means of further exploring potential influences of the broader context in which children live.

Television

American children watch a great deal of television. Babies as young as six months of age attend to television and on average are exposed to more than one hour per day (Hollenbeck & Slaby, 1979). As Figure 16.1 shows, the time children spend attending to television increases dramatically during the preschool years, especially after age two-and-a-half, peaks between ages ten to twelve, and declines during adolescence, when radio listening increases (D. R. Anderson et al., 1986; Brown et al., 1990; Calvert et al., 1982). Children, at least in the United States, spend
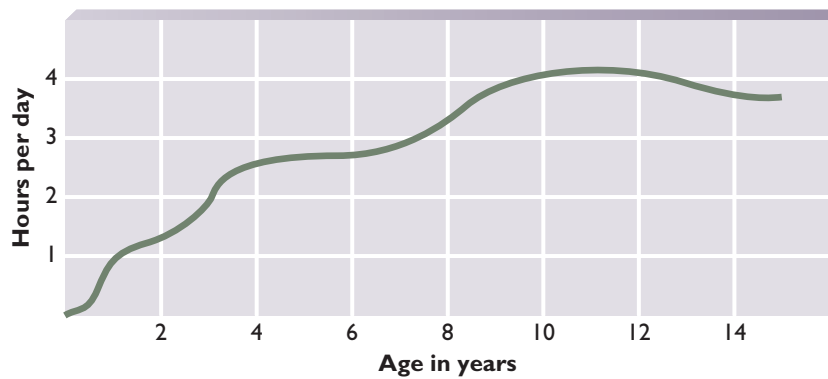
SEE FOR YOURSELF
psychology.college.hmco.com
Children and Media

568

FIGURE 16.1

Hours of TV Watching as a Function of Children's Age

The amount of time children spend watching television increases throughout early childhood, peaks at about age ten or twelve years, and then declines in adolescence.

Source: Adapted from Liebert & Sprafkin, 1988.

more time watching television than at any other activity except sleep (Roberts et al., 1999). In fact, by high school graduation, three years will, on average, have been given to watching television (Strasburger, 1993). Moreover, with the advent of cable television, videocassette recorders (VCR), and digital games, children have more opportunities than ever to spend time in front of a television screen.

Television viewing among children shows large individual differences. Some three- to five-year-olds watch very little television; others watch as much as seventy-five hours per week. Individual patterns of TV viewing remain stable over the years. Thus the television-viewing habits children acquire in early childhood can be relatively long lasting (Huston & Wright, 1998).

As they grow older, children also show changes in the types of programs they prefer to watch. Preschoolers are more likely to view educational programs designed for children, such as *Sesame Street* or *Mister Rogers' Neighborhood,* and cartoons. Interest in child-centered educational programs is relatively greater among younger preschoolers than older children (Wright et al., 2001). By ages five to seven, children begin to watch comedies and entertainment shows aimed at general audiences, shows that make increasing demands on their ability to comprehend plots and themes (Huston et al., 1990). Boys tend to watch more television than girls (Huston & Wright, 1998) and African American children more than European American children (Comstock, 1991). Children from lower socioeconomic levels are more frequent viewers than children from higher-income backgrounds (Greenberg, 1986).

Children's Comprehension of Television Programs

Contrary to popular belief, television viewing is usually not a passive process in which a mesmerized child sits gazing at the screen. The fact that preferences for shows change with age is just one example of the ways children actively control their TV viewing. Daniel Anderson and his colleagues have conducted numerous studies demonstrating that children's selection of television programs is influenced by their ability to comprehend content (Anderson & Burns, 1991). Certain formal, or structural, features of television serve to draw the viewer in, particularly such sound effects as laughter, music, and children's and women's voices. Other features, such as visual cuts, motion, and special sound effects, hold the child's attention (Alwitt et al., 1980; Schmitt, Anderson, & Collins, 1999). But the formal features of television programs are not the sole determinants of what children watch.

When preschoolers watch segments of *Sesame Street* in which the comprehensibility of the program has been altered, that is, presented in a foreign language or played backward, attention declines even though the formal features remain constant (Anderson et al., 1981). In other words, children actively direct their attention to

KEY THEME
Child's Active Role

Young children in most families spend many hours watching television. As a consequence, television can have a powerful influence on their development. According to some estimates, as much as one-third of a child's waking life will have been spent watching television, and a good portion of the programming young children see will be cartoons.

those portions of the show that they most readily understand; they are not influenced by sound effects or visual cuts alone. Many television shows have complex plots and use subtle cues that require inferences about characters' motives, intentions, and feelings. In addition, most programs contain changes of scene that require viewers to integrate information across several scenes. Research indicates that clear developmental differences exist in children's ability to understand information from television shows, differences that accompany changes in cognitive processing.

KEY THEME
Interaction Among Domains

   Preschoolers can understand short story segments and remember the most central elements of each story (Lorch, Bellack, & Augsbach, 1987). When the plots and themes of television shows thicken, however, young children have difficulties. More specifically, when they watch programs designed for general audiences, younger children are less likely than older children to remember the *explicit* content, that is, the discrete scenes that are essential to understanding the plot. Even when they do remember explicit information, younger children frequently fail to grasp the *implicit* content communicated by relationships among scenes (Collins et al., 1978). For example, young children may fail to understand a character's motive for aggression if the message is communicated in two scenes separated by several other sequences (Collins, 1983).

   Children's general knowledge and previous experiences can affect their comprehension of the programs they watch. Suppose, for example, that children are asked to retell the content of a show about a murder and the suspect's eventual capture. Children frequently mention *script-based* knowledge (see the chapter titled "Cognition: Information Processing"), drawing from their general storehouse of information on the events that surround the relationships between police and criminals. Older chil-

dren are more likely than younger children, however, to describe content specific to the program they watched, such as the fact that some police officers in the show did not wear uniforms (Collins, 1983). As children's general knowledge about the world grows, their comprehension of more detailed, specific information in television programs expands as well.

Other research has shown that children's growing verbal competency underlies their ability to understand TV programs. When five-year-olds were given standardized IQ tests and tested on their memory of the central and incidental events in a thirty-five-minute television program, their scores on the verbal subscales of the tests correlated significantly with their ability to comprehend the show's central events (Jacobvitz, Wood, & Albin, 1989).

One other important developmental change is in children's ability to recognize that most television programming is fictional. Children under four years of age often have difficulty distinguishing the boundaries between events that occur on television and those that take place in the real world (Flavell et al., 1990; Jaglom & Gardner, 1981). For example, preschoolers may think that *Sesame Street* is a place where others live, that individuals portrayed on television can see and hear their viewers, and that the things seen on TV exist inside it (Nikken & Peeters, 1988). Nevertheless, not until they are older than two years of age do children seem to realize that information presented on television can help them solve a problem such as finding a toy in a room after having just seen someone on television hiding it in that room (Schmitt & Anderson, 2002; Troseth & DeLoache, 1998).

Many five- and six-year-olds do not fully understand that television characters are actually actors playing roles; not until age eight and older do the majority of children grasp this concept. However, even kindergartners realize that cartoons are fantasy. They are also quite accurate about deciding whether their favorite programs occur as part of real life or just on television. In fact, they tend to be biased in assuming that most television programming does not occur in real life (Wright et al., 1994). Thus the developmental course seems to progress from failing to make a distinction between events on television and events in the real world to a belief that few events depicted on television occur in the real world to, finally, a more complete understanding of which events occurring on television are fictional and which are not (Wright et al., 1994).

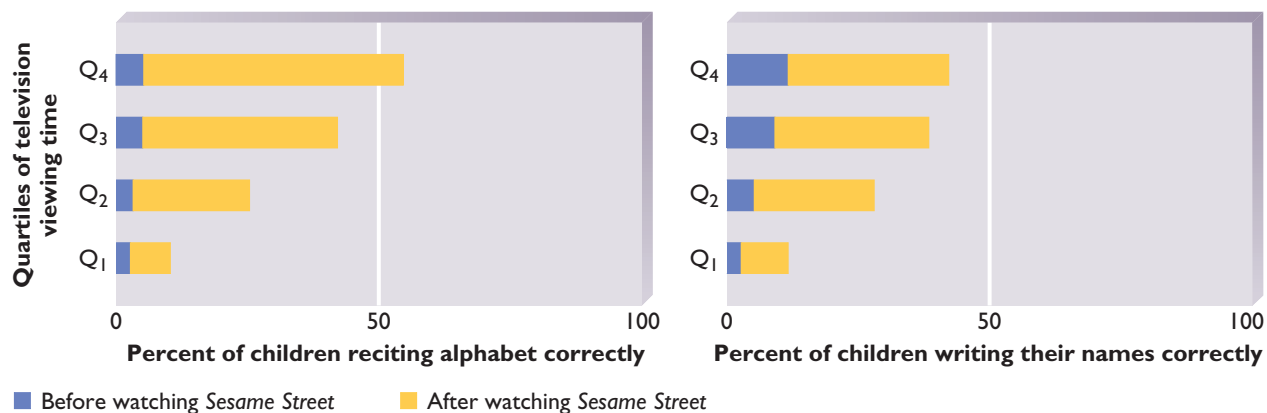## Television's Influence on Cognitive and Language Development

Today many preschoolers in the United States and most Western countries have ready access to programs specifically designed to teach cognitive skills to preschool children. But they also learn a lot more, according to research on educational television. Evaluations of the effects of such shows as *Sesame Street* demonstrate that television can teach children a range of problem-solving, mathematical, reading, and language skills (Huston & Wright, 1998).

● **Cognition** *Sesame Street* was specifically designed to provide entertaining ways to teach children, especially those who might be underprepared for school, the letters of the alphabet, counting, vocabulary, and similar school-readiness skills. The programs also deliberately include both male and female characters from many racial and ethnic backgrounds. Preschoolers, many from disadvantaged backgrounds, who watched the show most frequently were found to show the greatest gains on several skills, including writing their names and knowing letters, numbers, and forms (see Figure 16.2). Frequent viewers also obtained higher scores on a standardized vocabulary test, adapted better to school, and had more positive attitudes toward school and people of other races than nonwatchers (Bogatz & Ball, 1972; Rice et al., 1990). Thus the show had effects not only on children's cognitive skills but also on their prosocial attitudes.

Not only does educational programming have immediate effects on children's cognitive abilities, but evidence is also accumulating to indicate that these effects can

Percent of children reciting alphabet correctly

Percent of children writing their names correctly

Quartiles of television viewing time

■ Before watching *Sesame Street*   ■ After watching *Sesame Street*

Source: Adapted from Liebert & Sprafkin, 1988.

FIGURE 16.2
Television and Enhancement of Language Skills

Preschoolers who watched *Sesame Street* showed gains in a number of prereading skills, including the ability to recite the alphabet and write their names. The graph indicates that children who watched the show the most displayed the greatest gains in performance. (Children in quartile 1 rarely watched the show; those in quartile 2 watched two to three times per week; those in quartile 3 watched four to five times per week; and those in quartile 4 watched more than five times per week.)

be long lasting. For example, children in low-income families who spent relatively greater amounts of time watching *Sesame Street* and other television shows geared to educational goals at two and three years of age did well on measures of reading, math, language abilities, and other indicators of school readiness three years later (Wright et al., 2001). This effect may, in part, stem from their increased interest in continuing to watch informative television as they become older. Moreover, a recent longitudinal study carried out on high schoolers in working- and middle-class families for whom television viewing habits had been recorded as preschoolers suggests a positive impact of having watched informative educational programming more than a decade earlier. Compared with those who watched more violent or entertainment-oriented shows as preschoolers, those who watched more educational programming had higher grades in English, math, and science, read more books, and were more achievement oriented as teenagers (D. R. Anderson et al., 2001). This relationship was somewhat greater for males than females, although a similar pattern was found for both sexes. Because the data on long-term effects of television viewing are correlational in nature, it is not possible to completely rule out other factors that could account for the positive relationships that were observed in the longitudinal study. For example, either individual differences or parental encouragement of educational and achievement goals throughout childhood may help to explain these findings. Nevertheless, the results considerably blunt many of the strong objections that have been raised about television's negative influence on development, especially if children are observing programming designed to be educationally informative.

It is not uncommon to read criticisms in the popular press arguing that television viewing contributes to an inability to maintain a long attention span, difficulty in concentrating, lower task perseverance, and a reduced capacity to think (Mielke, 1994). How sound are these criticisms? Although many gaps continue to exist in our knowledge about this matter, meta-analyses and major reviews of the research further suggest that television viewing, at least when done in moderation, is not such an undesirable activity (Anderson & Collins, 1988; Neuman, 1991). However, those who watch television a great deal of time do poorly on academic achievement tests. Thus there may be a curvilinear relationship between television viewing and academic achievement; a moderate level of television viewing, especially if it consists primarily of educational programming, may be beneficial. A great deal of TV viewing, especially when it involves a lot of programming that contains violence, may be harmful.

● **Language**   Language skills may also be influenced by television. Mabel Rice and her colleagues (1990) suggest that television promotes children's language development. Many programs targeted for children include simplified speech, repetitions, recasts, and elaboration on the meanings of words. As we saw in the chapter titled "Language," these devices can enhance the child's acquisition of vocabulary and syn-

tax (Rice, 1983). Parents also sometimes use television as a "video picture book" in which events portrayed on the show stimulate verbal exchanges and language learning. For example, when mothers watch television with their preschoolers, they frequently identify objects, repeat new words, ask questions, or relate the content of the show to the child's own experiences (Lemish & Rice, 1986).

Is there direct evidence that television can function as a vehicle for vocabulary acquisition? Investigators exposed three- and five-year-olds to twenty new words in a fifteen-minute animated television story and found that both age groups showed gains in comprehension after only two viewings. Three-year-olds learned an average of one to two new words, and five-year-olds learned four to five words (Rice & Woodsmall, 1988). These findings are all the more impressive considering the brevity of the children's exposure to new vocabulary items and the limited efforts of the experimenters to highlight or exaggerate the new words.

## Television's Influence on Social Development

Whipping a towel over his shoulders, a seven-year-old jumps off the couch after watching the movie *Superman* on television. A brother and sister brandish toy swords, the brother mimicking the action of a favorite cartoon character. These common scenes in American households illustrate the power of television to influence children's behavior by providing models for direct imitation. Sometimes the messages are more subtle: a male announcer's authoritative voice decrees that this toy is the one all your friends want or that a sugary cereal is fortified with vitamins. When mostly men's voices appear in television commercials, the indirect message is that males more than females have the knowledge and authority to make such definitive statements. Whether by directly providing models for children to imitate or by indirectly offering messages about social categories, television can promote behaviors as diverse as aggression and sex typing. Psychologists and social policymakers have been particularly concerned about how television affects the child's social behavior and understanding, for better or worse.

These photos, taken from Bandura's classic experiments, illustrate with stark clarity the power of imitation in influencing children's aggression. In the top row, an adult model displays various aggressive actions against a "Bobo doll." The middle and bottom rows depict the sequence of imitative aggression shown by a male and female participant in the experiment. Their behaviors closely mimic the specific actions they had previously seen the adult perform.

FIGURE 16.3
The Effect of Watching Modeled Aggression

After children saw a live, filmed, or live dressed-up "cartoon" model behave aggressively in the laboratory (bottom three bars), they were much more likely to imitate the model's aggression than were children who had seen no model at all or viewed a model behaving nonaggressively.

Mean number of aggressive responses
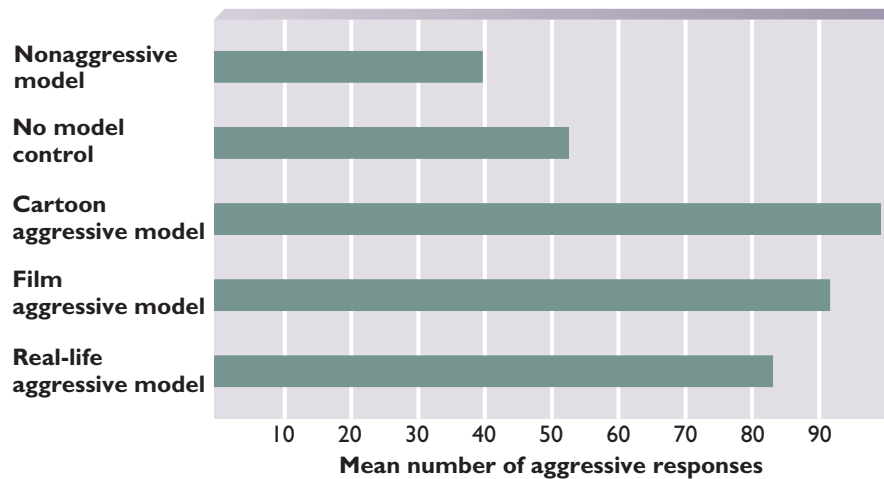
Source: Adapted from Bandura & Walters, 1963.

● **Aggression**   Any child who turns on the television in the United States has an extraordinarily good chance of encountering a portrayal of violence. Approximately 60 percent of the programming shown between 6:00 A.M. and 11:00 P.M. contains violent scenes (and sometimes many of them). Moreover, that rate is even higher in children's programming, especially cartoons (Center for Communication and Social Policy, 1998). As a consequence, children will see an average of 10,000 acts of violence every year (Federman, 1996, 1997, 1998). Does this heavy dose of televised violence viewing produce aggression in children? Hundreds of research studies have examined this issue, and the consensus is clearly yes; meta-analyses of the large number of studies investigating the relationship arrive at the same conclusion: A small but consistent causal relationship exists between viewing aggression on TV and aggressive behavior in children (Comstock & Scharrer, 1999; Huston, Watkins, & Kunkel, 1989; Wood, Wong, & Chachere, 1991).

In keeping with the principles of social learning theory, a regular diet of viewing aggressive models may suggest to the child that physical attacks are acceptable in a person's repertoire of behaviors. Two processes could be operating. First, children can learn new acts of aggression from the models they observe. Second, aggressive behaviors already in the child's repertoire may be disinhibited (Bandura, 1969). Albert Bandura and his colleagues (Bandura, Ross, & Ross, 1963a, 1963b) designed a number of laboratory studies to explore the effects of viewing aggression. For example, nursery school children in one experiment were randomly assigned to one of five experimental conditions. The first group watched from behind a one-way mirror as a model in the next room performed a series of unusual acts of physical and verbal aggression on a plastic, inflated Bobo doll. For example, the model hit the doll with a hammer, kicked it, and said, "Hit the Bobo doll!" and "Kick the Bobo doll!" A second group of children watched a model perform the same actions, but the presentation was on film. A third group watched an adult disguised as a cartoon figure behave like the models in the previous two conditions. A fourth group observed an adult model behaving in a nonaggressive manner, sitting quietly and ignoring the Bobo doll and the toys associated with aggressive behavior. The last group of children saw no model at all.

Figure 16.3 shows the mean number of aggressive responses displayed by children in each condition. Children who had seen an aggressive model performed a large number of imitative aggressive acts, copying even the subtle details of the model's behaviors. In addition, they frequently added their own forms of physical and verbal aggression. Moreover, the performance of children in the film-model group was no different from that of children who saw the real-life model. Models on film were just as powerful as "live" models in eliciting aggression.

Field experiments and large-scale correlational studies add to the evidence connecting violence on television with aggression. Lynette Friedrich and Aletha Stein (1973) found that preschool children who viewed violent cartoons declined on several measures of self-control, including the ability to tolerate delays, obedience to school rules, and task perseverance. At the same time, children who saw prosocial programs displayed higher tolerance for delays, more rule obedience, and greater task perseverance than control children. One study of almost one thousand children showed that aggression and televised violence are actually linked in a reciprocal way (Huesmann, Lagerspetz, & Eron, 1984). The investigators asked each child's peers to rate how aggressive the child was, and they also noted how much television violence each child watched. The number of violent TV shows children watched at the start of the study predicted how aggressive they were three years later. In turn, aggression also influenced TV viewing. Children who were aggressive at the start of the study watched more violent shows three years later than they did initially. The findings are consistent with a bidirectional model of influence: children become more aggressive after a diet of violent television, and their aggression seems to stimulate even more viewing of violent shows. The tendency to view high amounts of violence as preschoolers correlates not only with more aggression in adolescence but also with poorer academic success (D. R. Anderson et al., 2001).

KEY THEME
Interaction Among Domains

Can parents do anything to mitigate the potentially harmful consequences of certain television shows on their children's behavior? One obvious tactic is to limit the amount of time children are permitted to watch violent programs. Another is to suggest prosocial methods of conflict resolution when violence is displayed (Dorr, 1986). In a school-based intervention program, 170 children who frequently watched violent programs were divided into an experimental and a control group. During a period of six to eight weeks, children in the experimental group participated in regular training sessions in which they were taught, after watching high-action, "superhero" shows, that (1) the behaviors of aggressive TV characters are not representative of the way most people act, (2) aggressive scenes on TV are not real but are staged by means of special effects and camera techniques, and (3) the average person uses more positive strategies to resolve interpersonal problems than those shown on violent TV programs. During the same time period, control participants saw nonviolent shows and engaged in neutral discussions. By the end of the study, children in the experimental group were significantly less aggressive than the control children, demonstrating that the real-life behaviors of children can be modified by effecting changes in their attitudes about television (Huesmann et al., 1983).

● **Prosocial Behavior**   Just as television can encourage negative social behaviors, it can foster prosocial development. Friedrich and Stein (1973) found that children who watched *Mister Rogers' Neighborhood* for a four-week period showed increases in prosocial interpersonal behaviors. Other researchers have also found that programs that contain messages about cooperation, altruism, and sharing promote these behaviors in children (Sprafkin, Liebert, & Poulos, 1975). A meta-analysis of 190 studies of prosocial television indicates that such programs can have powerful effects. In fact, the statistical findings indicated that the effects of prosocial programming are even greater than the effects of antisocial programming on children's behavior (Hearold, 1986).

● **Gender Stereotypes**   Television does occasionally portray males and females in nontraditional roles: Fathers cook and care for their children, and women are employed outside the home. These programs, however, are not standard fare on commercial television. Working women, when they are shown, are likely to be employed in gender-typical roles (e.g., as secretaries and nurses); if they occupy positions of authority, they are often cast as villains (Huston & Alvarez, 1990). Consistent with stereotypes of female behavior, girls and women on television act nurturantly, passively, or emotionally. In contrast, males are more frequently the central characters of

television shows, and they act forcefully, have more power and authority than women, and display reason rather than emotion (Lovdal, 1989; Signorielli, 1989). Portrayal of these gender stereotypes may be declining, but they continue to exist in much of television programming. Moreover, the greatest stereotyping tends to be found in programs aimed at children (Comstock, 1991; Signorielli, 1993).

Children's attention to these stereotypes very likely depends on other developmental changes children undergo. For example, five-year-old boys who demonstrate gender constancy (see the chapter titled "Gender") are more likely to watch male characters on television and prefer programs that contain a greater proportion of males than five-year-old boys who do not display gender constancy (Luecke-Aleksa et al., 1995). In addition, gender-constant boys are more likely to watch shows created for adult entertainment, particularly sports and action shows, than their counterparts who still do not exhibit gender constancy. This difference in viewing preferences does not seem to be linked to earlier maturity in other cognitive abilities.

In contrast, gender constancy in five-year-old girls has relatively little effect on their television preferences or viewing habits. Perhaps this sex difference reflects the greater attractiveness of male roles on much of television and, therefore, accounts for such programs' increased interest value for boys who have gained gender constancy. Alternatively, perhaps this sex difference reflects a lessened need on the part of girls to exploit television as a basis for gender-role differentiation.

● **Ethnic Considerations**   The characters on American television are predominantly white. African Americans are occasionally shown, but Hispanic, Asian, and Native American individuals are rarely seen (Greenberg & Brand, 1994). Unfortunately, this portrait applies even more strongly to commercial *entertainment* programs for children, although in both commercial and public *educational* programming for children about one-fourth to more than one-third of the characters are minorities, and minorities are becoming represented in increasing numbers on American television (Calvert, 1999). Relatively little research has been carried out to determine how important the representation of ethnic minorities may be to young children. However, African American young people tend to prefer to watch and identify with African American characters (Greenberg & Brand, 1994). The extent to which they do so has been found to be positively related to self-esteem (McDermott & Greenberg, 1984) and, in some cases, although not consistently, to positive attitudes about their own race (Graves, 1993).

● **Consumer Behavior**   Because of their tremendous spending power, either directly or through their parents, children are the targets of a significant number of television commercials. Of concern to many child advocates is the proliferation of television shows linked to specific toys (e.g., cartoon shows that portray the same characters as toys) and product endorsements for expensive items, such as athletic shoes, by popular sports figures and other celebrities, all of which put pressure on children to spend money.

Children do respond to the messages of commercials. For one thing, they frequently request the cereals and other foods they see advertised (Taras et al., 1989). By age three, children distinguish commercials from other programming, but they do not always recognize commercials as messages specifically intended to influence their behavior; four- and five-year-olds, for example, believe "commercials are to help and entertain you" (Ward, Reale, & Levinson, 1972). Young children are especially likely to confuse programs with commercials if toys or cartoon characters appear in both (Wilson & Weiss, 1992). It is usually not until children are eight years of age or older that they understand that commercials are intended to influence viewers' buying habits (Ward et al., 1972). Because young children are not able to critically evaluate the information presented to them in commercials, they may pressure their parents to purchase expensive toys and clothes, heavily sugared foods, and other products (Kunkel & Roberts, 1991).

In more recent years, controversy has swirled around the introduction of Channel One in public schools. This program consists of ten minutes of news and two minutes of commercials for products of interest to young people. If a school agrees to air these broadcasts to students, free televisions are provided. It has become a popular idea in American school systems; approximately 12,000 schools and an estimated 40 percent of children in grades six through twelve were viewing the program in 1995 (Wartella, 1995). In general, students seem to learn about current events from such programming, and it is liked by teachers and principals (Johnston, Brzezinski, & Anderman, 1994). But the commercials also are reported to be effective as well; students more positively evaluate and express greater interest in buying the products that are advertised (Brand & Greenberg, 1994). Other companies are providing school computer labs with free equipment in which the advertising is available on a small part of the screen continuously. In addition, based on information provided when the student logs on, these companies are collecting information about the age and gender of children working with the computer, as well as the kinds of Web sites they visit. Although schools are being provided with state-of-the-art computer facilities, critics worry about the potential invasion of privacy and the consequences of what could be interpreted as school-sanctioned commercialism from these kinds of arrangements.

RESEARCH APPLIED TO PARENTING

Encouraging Critical Skills in Television Viewing

Jeremy *finished his homework just before his mother came home. Fortunately, there still was enough daylight for his best friend, Aaron, to come over for a visit. As soon as he arrived, the conversation turned to the afternoon's television fare. "Hey, did you see that movie on Channel 5? That car chase was awesome." "Yeah," Aaron replied. "But I really liked the way he jumped off the bridge before it blew up. He was lucky there weren't any alligators in the river!" "Huh? That was the least of his worries. There must have been twenty crooks trying to shoot him to get the money. I sure didn't think he was going to get away," Jeremy replied.*

As we have seen, television holds enormous promise to enhance children's intellectual and social functioning. However, there is also clear evidence of potential dangers, especially when television viewing takes up much of a child's time or is directed at programs that are age inappropriate. Apart from the option not to have a television set available in the home (an alternative that relatively few parents defend), what steps might parents take to promote positive benefits from this medium? Any recommendations will, of course, depend on the maturity of the child, as well as the values caregivers wish to promote. However, developmental psychologists and others concerned about the influence of television on children generally agree with the following guidelines:

1. *Be aware of how much time is being spent watching television and what is being watched.* Parents may not always realize how much of the day their children spend in front of the television set, what they are watching, or how the program is affecting them. Continuous supervision may not be possible when parents are busy with other household duties or away at work. However, knowing what children are watching, and for how long, is the first step in understanding what they might be learning from television.

2. *Decide what is acceptable to watch.* Even very young children may be attracted to programming that is frightening or inappropriate, not because they necessarily enjoy it but because the rapid pace of events or some other convention of the programming is attracting their attention. Parents have the responsibility to determine which programs are permissible and ensure that children limit their television viewing to those programs. Recognize, however, that as children become older and more

The effects of television viewing on children's development probably depend on the types of programs watched, as well as how much time is spent in front of the television set. When parents view television programs along with their children, opportunities become available for parents to promote a variety of critical skills in their children's thinking.

independent, parental monitoring will be more difficult (Cantor & Wilson, 1988). Older children must learn to take increasing responsibility for their own television viewing.

3. *Establish acceptable times for watching television.*   Family members need to know when they can watch television. For example, can the television be on during the dinner hour? Is watching television permitted if homework, chores, or other obligations are not yet finished? How late in the evening is television viewing allowed?

4. *Watch television with children whenever possible.*   When jointly watching programs with their children, parents have the opportunity to discuss such things as what is real and what is fantasy, how conflict might be resolved other than through violence, the stereotypes being portrayed, the goals of advertising, and many other issues presented through this medium that are valued or not approved within the household. In addition, by commenting on the material, parents can stimulate vocabulary development and provide different perspectives that may promote cognitive and social skills. Unfortunately, coviewing involving active discussion of television content appears to be infrequent in most families (Huston & Wright, 1998).

HAVE PC AT HOME

HAVE IN OWN ROOM
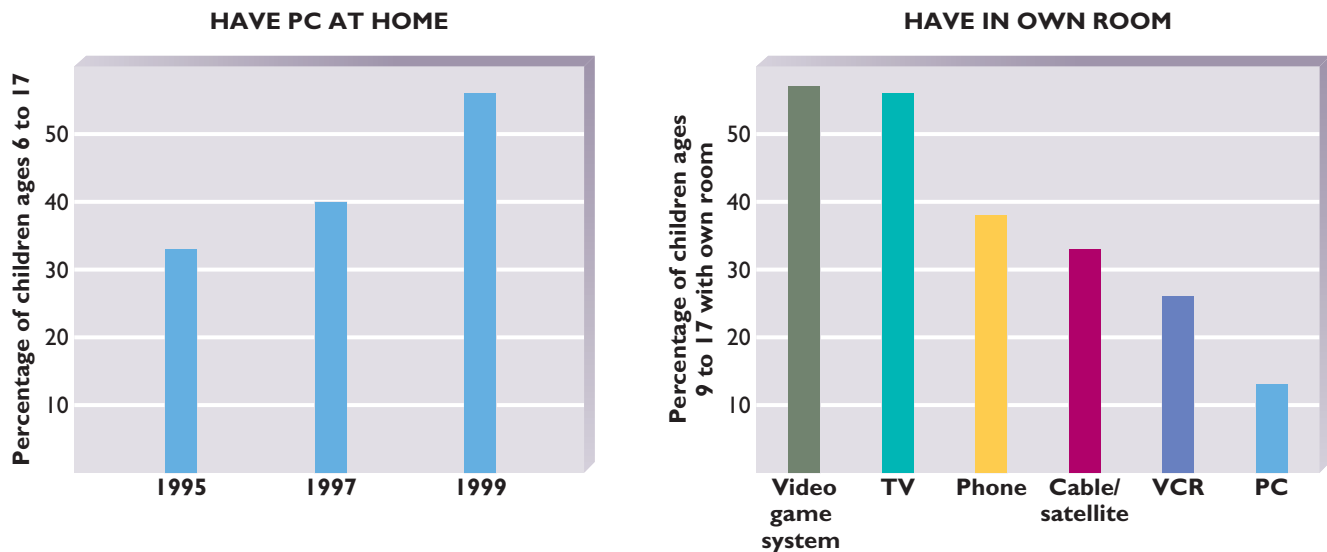
FOR YOUR REVIEW

- How much time do children of different ages spend viewing television? What kinds of programs are they attending to, and how are they watching them?

- What do children comprehend about television programming?

- How are cognitive and language development influenced by viewing television?

- What influences does television viewing have on social development?

- How might caregivers influence television viewing for their children?

Computers

Perhaps there is no more visible symbol of the technological age than the computer. Just as most adults in many countries are now likely to encounter computers in their daily experiences, so are children. For example, within the United States approximately 80 percent of children between the ages of six and eight years work with a computer in school. Furthermore, as can be seen in Figure 16.4, the availability of computers in the homes of school-age children in the United States has increased dramatically within the last few years (Nickelodeon/Yankelovich, 1999). The number of young people who have computers in their own rooms, compared with many other types of modern electronic equipment, remains relatively low (see Figure 16.4). Nevertheless, more than one-fourth of all children under age eighteen in the United States currently operate a home computer for educational and entertainment purposes, as well as for communicating with others. These percentages may not be too different for children in some other countries (Light, 1997). Nearly three-fourths of nine- to seventeen-year-olds who have computers in their homes use them for playing games (Nickelodeon/Yankelovich, 1999), and children spend the largest proportion of time on the computer in this activity (Roberts et al., 1999).

What is the effect of computers on children's development? Does experience with computers influence the ways children tackle problem solving and other cognitive tasks? Are young "keyboard junkies" who spend long hours glued to the video screen

FIGURE 16.4
Availability of Personal Computers and Other Technologies

The availability of personal computers to school-age children in the United States has increased dramatically over the past few years. Now more than half of American children between six and seventeen years of age have computers at home (see graph on left). Of the 80% of nine- to seventeen-year-olds who have their own rooms, many have computers in them, although they are still more likely to have other electronic equipment, such as a television, video game system, or telephone in their rooms (see graph on right).

The introduction of computers into the classroom may have some surprising benefits. For example, when children use computers in school, they often do so in small groups. Thus computers can provide opportunities for collaborative learning and may also promote socialization skills.

missing other critical experiences, particularly the social interactions crucial to their socioemotional development? The pervasive presence of computers in today's world makes these questions well worth exploring. The emerging answer is clear: there is no such thing as an "effect of computers" per se on child development. What matters, rather, is the way children use them (Behrman, 2000).

Academic Mastery and Cognition

The first relatively widespread use of computers in education began in the 1960s, when **computer-assisted instruction (CAI)** was touted as a valuable, efficient educational tool. CAI programs serve primarily to supplement classroom instruction, providing highly structured tutorial information along with drill-and-practice exercises in content areas such as mathematics and reading. Several principles are presumed to make CAI programs effective teaching tools. First, the child can work through a lesson at her own pace, reviewing topics if necessary. CAI thus provides an individually paced learning experience in which the content can be tailored to the specific needs of the student. Second, the child receives immediate feedback about the correctness of his responses to questions and exercises and may even receive periodic summaries of performance. Finally, CAI programs often employ sound effects and graphics designed to promote the child's attention to and interest in the material being presented.

How effective are CAI approaches to instruction? Meta-analyses of hundreds of studies have shown that on average, students with CAI experience improve in achievement test scores and that this effect is moderately strong (Lepper & Gurtner, 1989). CAI is especially effective with elementary school and special-needs children, who seem to profit most from individualized approaches to learning (Kulik, Kulik, & Bangert-Drowns, 1985; Niemiec & Walberg, 1987).

Newer educational software places less emphasis on rote memorization and more on providing children with opportunities to use higher-order thinking skills as they master academic subjects. To date, the effects of these efforts have been mixed (Roschelle et al., 2000). For example, math education programs designed to encour-

computer-assisted instruction (CAI)   Use of computers to provide tutorial information and drill-and-practice routines.

age children to think more fully seem to have positive effects, whereas those that are oriented toward making repetitive math learning more fun seem to have no, and perhaps even detrimental, effects on learning (Wenglinsky, 1998). In general, however, the areas in which computer learning seems to have the greatest benefits are in science and mathematics (Roschelle et al., 2000). Being able to visualize and observe simulations of scientific concepts appears to encourage children to engage in levels of thinking generally more advanced than had been thought possible (Gordin & Pea, 1995; White & Fredriksen, 1998). Another factor associated with computers that may have powerful benefits is the opportunity to work on real-world problems that are available through the Internet. More specifically, with increased access to recently collected data from scientific research, children and adolescents can engage in the very same types of activities of experimentation, design, and reflection that scientists and researchers carry out in their efforts to make contributions to understanding the environment, society, and the physical and biological world.

Other major advantages of the computer, especially with Internet access, stem from the opportunity to learn about issues and topics that simply would not be available to most children any other way. For example, with very little investment, children can explore and even design art and music, choreograph dramatic scenes, acquire information about other cultures (both existing and extinct), and communicate with other peoples. They can also find others who share similar academic interests and activities. As a consequence of these opportunities, children become more willing to take on more difficult academic problems (Roschelle et al., 2000).

Among the cognitive skills that may be enhanced are spatial representation, iconic skills, and increased ability to attend to multiple events, as is often required in action game playing associated with the computer and video games (Subrahmanyam et al., 2001). The limited research carried out on the impact of computers on these abilities suggests positive effects (e.g., Greenfield, 1998; Greenfield & Cocking, 1996).

KEY THEME
Interaction Among Domains

Social Development

Contrary to popular opinion, the interactions a child has with the computer do not necessarily displace other activities of a more social nature, nor is computer use itself necessarily a solitary activity (Crook, 1992). In one survey of more than five hundred children, those with computers at home resembled nonowners in the frequency with which they visited friends, participated in club meetings, and engaged in sports (Lieberman, 1985). Furthermore, children who work on computer projects in school tend to collaborate and share ideas more in these settings than they do in other school activities (Hawkins et al., 1982). In one observation of four-year-olds who had a computer in their child care center, 63 percent of the time they spent at the computer was in joint participation with a peer and 70 percent of the interactions consisted of active sharing of the computer (Muller & Perlmutter, 1985). Thus, rather than inhibiting social interactions, computer activities may actually promote them, especially when teachers encourage group problem solving as opposed to individual projects (Bergin, Ford, & Hess, 1993).

KEY THEME
Interaction Among Domains

Older children and adolescents do spend much of their time at the computer alone. Adolescents who put in relatively large amounts of time on the computer— for example, more than two hours a day—report fewer and poorer social interactions with parents and friends (Sanders et al., 2000). Nevertheless, a substantial portion of children's involvement with the computer, especially after it is no longer a novelty in the home, is devoted to communicating and maintaining social relationships with others via e-mail, instant messaging, playing games with others, or in chat rooms (Subrahmanyam et al., 2000; Subrahmanyam et al., 2001). Of course, one major concern is what kinds of social interactions may be occurring during some of these on-line activities, especially with individuals with whom the young person is not acquainted.

Sex Differences

Ask children ranging from kindergarten age to twelfth grade to rate the word *computer* on a scale labeled M (for "male") at one end and F (for "female") at the other. Ask them also to rate how much they like the item. Researchers who have followed these and other procedures have found that children place computers toward the "male" side of the rating scale. In general, boys like computers more than girls do (Culley, 1993), and children sometimes perceive school computers as "belonging more" to boys (Cassell & Jenkins, 1998). Yet these gender differences are apparent primarily at the elementary and high school levels and are not present at younger ages; preschoolers and kindergartners are much less likely to display these stereotypes, at least with respect to interest in the computer (Bergin et al., 1993; Collis & Ollila, 1990; Krendl & Broihier, 1992). Moreover, the gender gap appears to be narrowing; girls now indicate that they use their home computers as much as boys do (Subrahmanyam et al., 2000). And boys and girls use the Internet about equally often, although the sites they access may differ (Clark, 2001). New computer games designed for girls have helped to reduce the disparity (Subrahmanyam & Greenfield, 1998), as has the increasing availability of web sites responsive to girls' interests (Subrahmanyam et al., 2000).

CONTROVERSY: THINKING IT OVER

What Regulations Should Exist for Children's Access to the Internet?

With the emergence of new technologies often come new challenges and dilemmas for parents and society. Because computers and the Internet have become such a prevalent part of the environment for many children, this new resource has generated its own set of controversies.

What Is the Controversy?
As we have just seen, many positive advantages can exist for children using the Internet. These benefits may come from being able to move from one site to another in exploring or addressing a question and in obtaining in-depth information about a topic. But readily accessible sites may provide access to some material not considered appropriate for children, including ways to engage in violent activity, information from groups that promote hatred and bigotry, and sexually explicit imagery. Children also may be constantly bombarded with advertising and other images that can promote certain points of view that children have difficulty understanding and that parents may find objectionable.

What Are the Opposing Arguments?
The issues related to this matter bear closely on questions of free speech and rights to information. Few would argue in support of the unfettered availability to children of some types of material. Parents can take steps in limiting their children's exposure to unacceptable information in the home. However, applying the same restrictions to the schools and, particularly, to children's access to the Internet in public libraries or other public places may be far more difficult. Should filters and blocking devices be installed on computers in these publicly accessible locations as well? Would such restrictions be inappropriate in public facilities given that they interfere with the rights of adults? Still others are concerned that efforts to regulate public sites, and even efforts by parents in the home, may promote a false sense of security among caregivers that overlooks the myriad ways in which inappropriate material can become available to their children via the computer.

Other debates arise over how to determine when it becomes reasonable for children and adolescents to have access to various kinds of information—for example, in cases in which a young person (and his or her parents) may feel uncomfortable or unwilling to discuss sexuality with their children. The timetable for such access may differ considerably depending on a child's age, the parents' beliefs about such matters, and community standards (National Research Council and Institute of Medicine, 2001). Additionally, young people must ultimately learn to engage in responsible use of the Internet, an educational goal that could receive little attention when parents and others rely on filters or blocking devices to monitor web site activity.

What Answers Exist? What Questions Remain?

Parents may need to become more fully aware of how their children are using the computer. For example, whereas only 30 percent of parents think their adolescent children have ever corresponded with a stranger via e-mail, more than 50 percent of teenagers report having done so. Moreover, whereas only 17 percent of parents believe that their teenage children have provided personal information over the computer, 45 percent of young people report having done so (Penn, Schoen, & Berland Associates, 2000). In addition, little research exists on what children are actually viewing on the Internet. Perhaps it would also be valuable to establish web sites to offer balanced and healthy information on topics about which young people might otherwise search for and find more controversial material. There is also a growing need for psychologists and educators to develop programs to teach children and adolescents about appropriate on-line computer usage. Indeed, in order to address the question about what regulations are needed for children's access to the Internet, perhaps it is important to first ask to what extent *mentoring* or *monitoring* is needed to effectively deal with the problem (National Research Council and Institute of Medicine, 2001).

FOR YOUR REVIEW

- How has computer use changed over the past several decades?

- What benefits do computers provide in the mastery of academic material? What has been their impact on social development?

- How do boys and girls differ in their use of and attitudes toward computers?

- What controversies exist concerning children's access to computers?

School

The main aim of education is to provide children with the skills necessary to function as independent, responsible, and contributing members of society. Schools reinforce cultural practices for how to get things done (Matusov, Bell, & Rogoff, 2002). Academic accomplishment and the development of cognitive skills are the chief points of emphasis. For example, school experience cultivates rote memory, classification, and logical reasoning (Morrison, Smith, & Dow-Ehrensberger, 1995; Rogoff, 1981). One especially important goal of schooling is the development of literacy, the ability to read and write using the symbol system of the culture's language. Literacy is virtually a prerequisite for survival in most societies; more and more jobs in the professional and technical sectors require not only reading and writing skills but also the ability to communicate, reason, and apply mathematical and scientific concepts (Jackson & Hornbeck, 1989). Yet as we discussed in the chapter titled "Cognition: Piaget and Vygotsky," societies vary in the extent to which they stress the experience of formal schooling; rural and agrarian subcultures in some countries, for example, do not have compulsory schooling.

FIGURE 16.5
High School Completion
Rates in the United States

**Although the percentage
of young adults who have
completed high school has
remained relatively stable in
the United States since 1980,
the greatest gains in comple-
tion rates have been made
in young adults of Hispanic
origin. However, this group
still remains below African
Americans, who, in turn, fall
below Caucasians in percent-
age completing high school.**
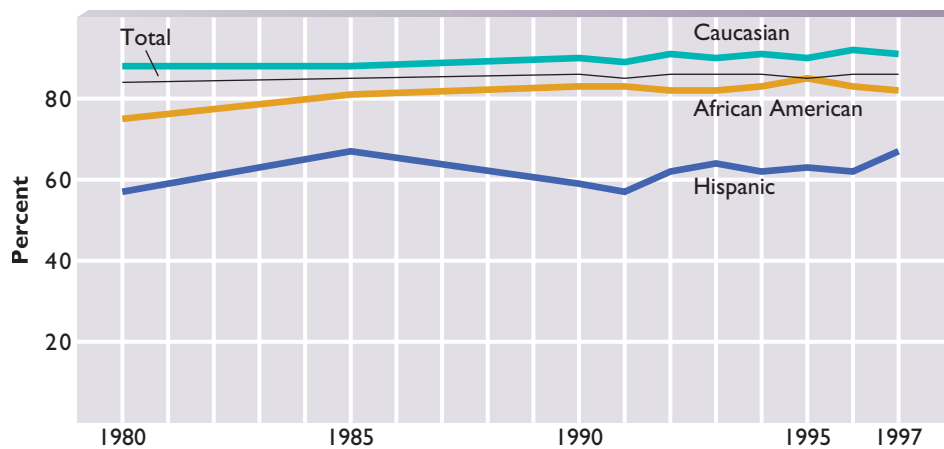
Note: Because of changes in the survey questionnaire and data collection methodology beginning in 1994,
percentages for earlier years may not be strictly comparable. Percentages are not shown separately for
non-Hispanic Asians/Pacific Islanders and American Indians/Alaska Natives, but they are included in the total.
Sources: Kaufman, Klein, & Frase, 1999; U.S. Bureau of the Census (various years).

In some measure, most children in the United States and many other countries
attain the basic goals educators and parents have set for academic achievement in
school. For example, in the United States between 1980 and 1997 approximately 85
percent of young adults had completed high school. However, these completion
rates are not the same for young adults of different ethnic backgrounds, as can be
seen in Figure 16.5.

How well are children learning in schools? Major national surveys often conclude
that academic achievement among American students is not high and compares un-
favorably with that of students from other industrialized countries. For example, by
age seventeen, less than half of American students are able to read and understand
complicated information (Gonzales et al., 2000), although no comparison with
other countries exists for this kind of information. However, the United States ranks
below many countries in student performance on tests in science and mathematics,
as indicated by the results of the Third International Mathematics and Science
Study (TIMSS). This research project has included evaluations of academic per-
formance by fourth-graders and twelfth-graders, as well as for eighth-graders
whose relative level of performance is shown in Figure 16.6. Because children in
many East Asian and European nations perform better than those in the United
States, the findings are among those that have created enormous concern about the
adequacy of our educational system. Major improvements in the United States edu-
cational system may be needed, but a closer look at the methodologies used in stud-
ies involving international comparisons is also worthwhile for explaining some of
the findings.

EXAMINING RESEARCH METHODS

Interpreting Cross-Cultural Test Results

To many in the United States who take great pride in this country's scientific
accomplishments, and where considerable sums of money are expended on edu-
cation (Vogel, 1996), the results of cross-cultural comparisons involving TIMSS and
other projects are both alarming and perplexing. Have American schools shirked
their commitment to academic excellence? Has the educational system failed? What
steps must be carried out to improve competence in these, and perhaps other, sub-
ject areas? Or are there other possible explanations for why nations rank high or low
on such tests?

MATHEMATICS

Nation	Average
Singapore	604
Korea, Republic of	587
Chinese Taipei	585
Hong Kong SAR	582
Japan	579
Belgium-Flemish	558
Netherlands	540
Slovak Republic	534
Hungary	532
Canada	531
Slovenia	530
Russian Federation	526
Australia	525
Finland[a]	520
Czech Republic	520
Malaysia	519
Bulgaria	511
Latvia-LSS[b]	505
United States	**502**
England	496
New Zealand	491
Lithuania[c]	482
Italy	479
Cyprus	476
Romania	472
Moldova	469
Thailand	467
(Israel)	466
Tunisia	448
Macedonia, Republic of	447
Turkey	429
Jordan	428
Iran, Islamic Republic of	422
Indonesia	403
Chile	392
Philippines	345
Morocco	337
South Africa	275
International average of 38 nations	487

SCIENCE

Nation	Average
Chinese Taipei	569
Sinagpore	568
Hungary	552
Japan	550
Korea, Republic of	549
Netherlands	545
Australia	540
Czech Republic	539
England	538
Finland	535
Slovak Republic	535
Belgium-Flemish	535
Slovenia	533
Canada	533
Hong Kong SAR	530
Russian Federation	529
Bulgaria	518
United States	**515**
New Zealand	510
Latvia-LSS[b]	503
Italy	493
Malaysia	492
Lithuania[c]	488
Thailand	482
Romania	472
(Israel)	468
Cyprus	460
Moldova	459
Macedonia, Republic of	458
Jordan	450
Iran, Islamic Republic of	448
Indonesia	435
Turkey	433
Tunisia	430
Chile	420
Philippines	345
Morocco	323
South Africa	243
International average of 38 nations	488

FIGURE 16.6
Average Mathematics and Science Achievement Scores, 1999.

This table presents the average scores of eighth-graders for the thirty-eight nations included in the Third International Mathematics and Science Study. Although these findings typically receive considerable interest from politicians, educators, and others, the methodological problems that often accompany comparisons of performance by young people from different nations may be substantial, and the policy implications for education are not always clear.

 Average is significantly higher than the U.S. average
 Average does not differ significantly from the U.S. average
 Average is significantly lower than the U.S. average

Note: Eighth grade in most nations. Parentheses indicate nations not meeting international sampling and/or other guidelines. The international average is the average of the national averages of the thirty-eight nations.

[a] The shading of Finland may appear incorrect; however, statistically, its placement is correct.
[b] Designated LSS because only Latvian-speaking schools were tested, which represents 61 percent of the population.
[c] Lithuania tested the same cohort of students as other nations, but later in 1999, at the beginning of the next school year.

Source: Gonzales et al., 2000.

Cross-cultural research is exceedingly difficult. No matter what issue is under investigation, translating a questionnaire or research task so that it asks an equivalent question in different languages or is understood with the same meaning by participants whose customs differ is not always a certainty. Good research projects go to great lengths to overcome these problems. However, other obstacles to sound research involving large-scale international research projects such as TIMSS may be far more difficult to manage.

One question is how to obtain equivalent populations of students for participation. For example, in comparing the performance of twelfth-graders, in which students in the United States did not do well, drop-out rates need to be considered. Because individuals leaving school before completion of the twelfth grade might be expected to score generally lower on the tests than students who complete their high school education, nations who have a higher proportion of their students remaining in school in this grade could be penalized. The difficulty of equating the proportion of the eligible population taking part in a study, however, is not unique to cross-cultural research. For example, in the United States, the lowest average SAT scores tend to be reported in those states that have the highest proportion of students taking the exam (Rotberg, 1998).

Another issue relating to the population tested is the age of the participants and the number of years, as well as types, of schooling they have received. In the case of the TIMSS project, some participants, depending on the age at which they entered the educational system, had received from ten to fourteen years of formal schooling before completing the twelfth-grade exam; moreover, the countries that scored highest tended to have older students (Rotberg, 1998). And although great effort was made to include participants from all kinds of schools, countries differed in their inclusion of students from vocational schools, apprenticeship programs, and private schools. Because of these differences, the proportion of children representing different socioeconomic backgrounds may not be equivalent across the various countries. Nor would it be easy to equate for such factors, because nations vary tremendously in the types of schooling available to their children, as well as in their standards of living. Information may not be available to take steps to statistically control for these types of differences, making comparisons even more difficult to interpret.

A final concern with respect to the TIMSS project is that no information was provided concerning curricula instituted in the educational programs of various nations. Children in the United States, for example, scored relatively well on science when tested at the third and fourth grades (Vogel, 1997). But that may be because science education begins in this country's schools much earlier than it does in many other countries. In contrast, by eighth grade, for example, children in schools in other countries are tackling algebra and geometry, whereas in the United States they are often still covering arithmetic.

Thus issues relating to student preparation, as well as methodological problems associated with selectivity, representation, and other characteristics of the student sample, only compound the problem of making meaningful sense of the data. Are international tests really the best way to compare children's competencies with respect to math, science, or any other subject matter? At present, they are one of the few ways of doing so. But could a nation's scientific and technological education efforts be evaluated more effectively using other measures of success (Gibbs & Fox, 1999)? Perhaps a good place to begin is by identifying those factors within the curriculum that contribute to high performance in children regardless of where they are being educated (Rotberg, 1998).

KEY THEME
Interaction Among Domains

Families and Peers as Agents Mediating School Achievement

Several factors aside from aspects of the school curriculum itself are associated with academic success. Not surprisingly, parents are of paramount importance. Consider,

FIGURE 16.7 A Model of Parental Influences on Children's Academic Achievement

One model of children's academic achievement suggests that parental involvement and support of children's autonomy predict children's "inner resources." These resources include children's feelings of control, competence, and autonomy. These characteristics, in turn, predict academic achievement. Research has found support for the major elements of this model.
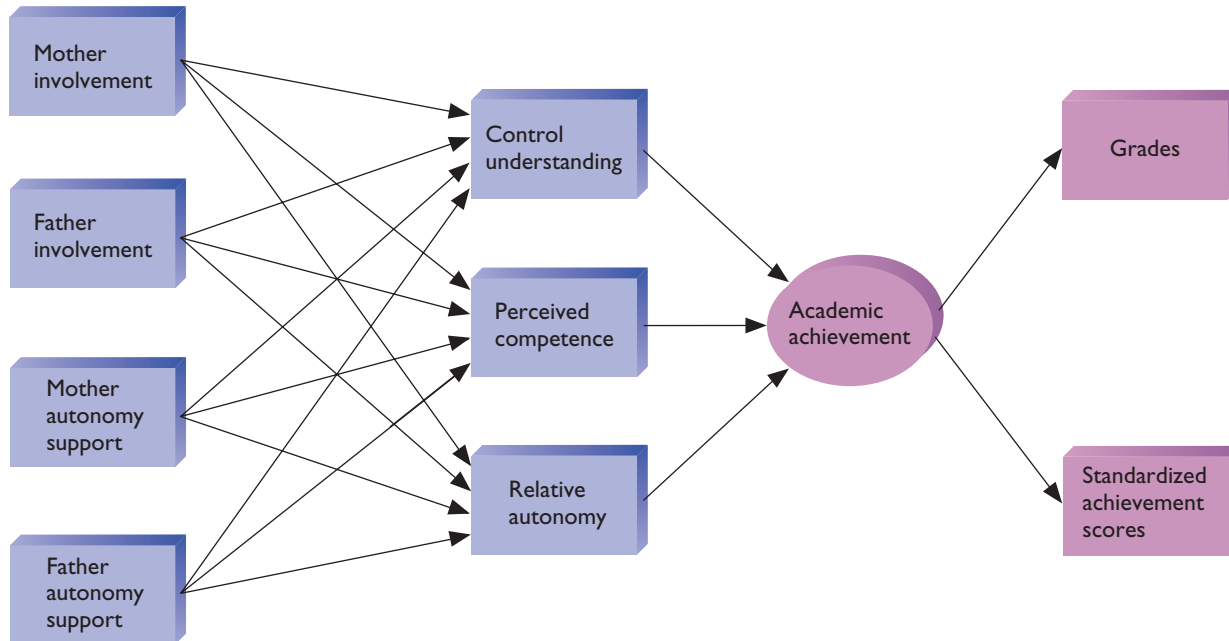
Source: Grolnick, Ryan, & Deci, 1991.

for example, a model proposed by Wendy Grolnick and her colleagues (Grolnick, Ryan, & Deci, 1991) and illustrated in Figure 16.7. According to these researchers, parental support for their children's autonomy (e.g., encouraging independent decision making) and involvement with their children (such as spending time talking with them about the children's problems) are related to the strength of children's "inner resources." That is, children develop feelings of competence, autonomy, and control, which in turn influence academic performance. To test these ideas, the researchers measured both parental and child qualities that were components of the model, as well as children's academic success. Using sophisticated statistical techniques, they were able to show the relationships they had predicted. Other researchers have confirmed that authoritative parenting (characterized by warmth and extensive verbal explanation) and the social support parents provide predict, at least indirectly, exactly how well children will do in school during middle childhood and adolescence (DeBaryshe, Patterson, & Capaldi, 1993; Dubow et al., 1991; Steinberg et al., 1992). Frequent transitions in parenting (e.g., divorce and remarriage followed by another divorce) and a more discordant family climate are also related to less positive outcomes in school (Kurdek, Fine, & Sinclair, 1995).

Peers make a difference, too. As early as fourth grade, children tend to sort themselves into groups that have different levels of school motivation, and children who are members of a particular group at the start of the school year become even more aligned with the group's motivation level by the end of this period (Kindermann, 1993). For example, when a student at the beginning of the school year has friends who consider themselves disruptive in school, that student will begin to demonstrate more disruptive behavior as the school year progresses (Berndt & Keefe, 1995).

Peers may also enhance or offset the effects of different parenting styles on children's academic achievement. Laurence Steinberg and his associates found that among Asian American adolescents, for example, peer support for academic excellence lessened the negative effects of authoritarian parenting on academic achievement. For Caucasian adolescents, peer support for achievement complemented parents' tendency to be authoritative (Steinberg, Dornbusch, & Brown, 1992). A supportive family context may be an important factor in encouraging children to gain the interpersonal and cognitive skills that will lead to interactions with peers who promote academic success in the first place (Kurdek et al., 1995; Steinberg, 1996).

The availability of a mentor can also be an important contributor to success in the schools for adolescents. For example, research on Big Brother and Big Sister programs has revealed a positive influence on grades, attendance, and perceived competence with respect to academic subjects (Grossman & Tierney, 1998). Perhaps a bit surprising, however, is that many of these benefits seemed to be mediated by adolescents establishing better parental relationships rather than as a direct consequence of the mentor's activities with the student (Rhodes, Grossman, & Resch, 2000).

Still another factor that can affect academic performance of older children is whether they hold jobs before or after school. In general, adolescents who work more than fifteen to twenty hours per week attain poorer grades and show less commitment to school than adolescents who work fewer hours or not at all (Steinberg et al., 1982; Steinberg, Fegley, & Dornbusch, 1993).

School and Classroom Size

Schools can vary substantially in their organization and structure. Although the one-room classroom is rarely found today, schools can be large or small depending on the community, and they are likely to increase in size in the upper grades. Some children may also attend crowded classrooms, thus limiting the amount of time teachers can spend with each child. What are some of the effects of these factors on children's achievement?

● **School Size**   Although some controversy surrounds the importance of school size, any significant effects researchers have found usually favor students from smaller schools (Moore & Lackney, 1993; Rutter, 1983b). In a major study of thirteen high schools ranging in size from thirteen to more than two thousand students, researchers noted that students from smaller schools were less alienated, participated more in school activities, felt more competent, and found themselves more challenged (Barker & Gump, 1964). Students in smaller schools may need to fill more roles, particularly leadership roles such as editing the school newspaper or being captain of the band, for which positive feedback from parents, teachers, and peers is received. They are also likely to identify strongly with the school and develop a greater sense of personal control and responsibility. Furthermore, participating in school-based extracurricular programs seems to reduce the likelihood that young people will drop out of school, especially among those who are less academically competitive (Mahoney & Cairns, 1997).

● **Class Size**   Class size is another important aspect of school structure. Many countries around the world, as well as numerous states within the United States, have invested huge amounts of money to reduce class size (Ehrenberg et al., 2001b). For example, the number of students per teacher in elementary school classrooms in the United States has fallen from 25.1 to 18.3 over the past three decades; a similar decrease, from 19.7 to 14.0, has occurred in secondary schools (Ehrenberg et al., 2001b). Although research has not always revealed a consistent benefit from such efforts, the general consensus is that children in small classes, especially in the earlier grades, show academic advances over children in large classes (Ehrenberg et al., 2001a). Perhaps the most influential of these studies was carried out in Tennessee and involved seventy-six schools. Kindergarten children and teachers were randomly assigned to classes of dif-

KEY THEME
Child's Active Role

Many factors can influence children's success in school. Encouraging boys and girls to be engaged in classroom activities is one important factor. Perhaps because teachers can retain their attention more effectively, students in classrooms with fewer numbers of children seem to do better academically than students in classrooms with higher numbers of classmates.

ferent sizes (thirteen to seventeen versus twenty-two to twenty-five pupils per class). By the end of first grade, children in the small classes showed marked improvement in performance on standardized tests of reading and mathematics compared with children from regular-size classes. The benefits of small classes were especially pronounced for minority children (Finn & Achilles, 1990).

The long-term consequences of smaller class size have also been investigated. Children in small classes in kindergarten through third grade in the Tennessee study continued to do better than their classmates assigned to larger classes, even after entering regular-size classrooms beginning in fourth grade (Mosteller, 1995). The benefits of the smaller-class experience were exhibited by children in later grades as well. Moreover, when small class sizes were introduced to the poorest districts in the state, children in these districts moved from displaying reading and mathematics scores that were well below average to scores above average for the state.

Why do smaller classes work? For one thing, teachers probably have greater enthusiasm and higher morale when they are not burdened with large numbers of students. Teachers also have more time to spend with individual children, and students are more likely to be attentive and engaged in classroom activities and show fewer behavioral problems in small classes (Finn & Achilles, 1990; Mosteller, 1995). But it is likely that benefits of reduced class size emerge only when teachers are trained to take advantage of the opportunities of working with smaller numbers of students (Bennett, 1998; Ehrenberg et al., 2001a, 2001b).

School Transitions

In addition to the size of the school and the classroom, the school transitions children are expected to make at specific ages may influence development. Most children begin kindergarten at age five or six, and the way in which they adjust to this first experience of school frequently determines how much they will like later grades. A second important transition occurs in adolescence, when entering junior or senior high school makes new academic and social demands on them.

● **Starting School**   Few occasions in a child's life are as momentous as the first day of school. Parents typically find this a time of mixed emotions, of eager anticipation about the child's future accomplishments coupled with anxieties about whether

school will provide positive and rewarding experiences for their child. Children have many major adjustments to handle, including accommodating to a teacher and a new physical environment, making new friends, and mastering new academic challenges. Success in making the initial transition to school can set the tone for later academic and socioemotional development.

Not surprisingly, children who bring to school certain entry-level skills, such as a battery of positive social behaviors (e.g., cooperativeness in their preschool play or friendliness in their interactions with peers), and who exhibit cognitive and linguistic maturity (e.g., ability to engage in or be ready for school-related activities as a result of preschool and family experiences) do better in kindergarten (Entwisle, 1995; Ladd, Birch, & Buhs, 1999; Ladd & Price, 1987). Gary Ladd and his colleagues (Ladd et al., 1999), testing several hundred kindergartners throughout the school year, found that positive behavioral orientations exhibited by children in the first weeks of kindergarten fostered the formation of friendships and peer acceptance, whereas antisocial behaviors resulted in children being less liked by peers over the year and having greater conflict with teachers. Cognitive and linguistic maturity directly facilitated classroom participation and higher achievement. In addition, classroom participation, which ultimately plays an important part in contributing to achievement in kindergarten, was influenced by the relationships children established with their peers and their teachers. The negative qualities displayed by some children (lack of friends, peer rejection, poor teacher-child relationship) seemed to be increasingly detrimental for adjustment to this new environment (Ladd et al., 1999). These findings confirm that many factors working within the school, as well as the qualities children bring to the school environment, affect their early academic success.

The presence of familiar peers in the kindergarten classroom also facilitates peer acceptance (Ladd & Price, 1987) and is related to more positive attitudes toward school and fewer anxieties at the start of the school year. In general, factors promoting continuity between the preschool and kindergarten experiences seem beneficial to the child's adjustment, suggesting that parents should consider ways to foster their children's friendships with peers who will be future classmates. These results underscore the fact that the transition to school can be a particularly crucial time and that successes in one domain, peer relations, are related to successes in another, competence in school.

Another major controversy that surrounds this first school transition is the age of the child upon school entry. Some researchers claim the younger members of the classroom do not perform as well academically as the older members and continue to have difficulty in the later school years (Breznitz & Teltsch, 1989; May, Kundert, & Brent, 1995). Others, however, have pointed out methodological and other problems in this research and have failed to find evidence that younger and older children in the classroom differ in any meaningful way (Alexander & Entwisle, 1988; Shepard & Smith, 1986). Frederick Morrison and his colleagues have carried out further work on this issue with Canadian schoolchildren (Morrison, Griffith, & Alberts, 1997). They found that younger children do tend to score below older children on reading and mathematics achievement tests at the end of the school year. However, the same is true even at the beginning of the school year. In fact, when measures of progress in reading and mathematics were used as the criteria, younger first-graders gained just as much as older first-graders did. Furthermore, the first-graders, whether younger or older, gained more than children who remained in kindergarten but could have been enrolled in first grade. Although additional research needs to be carried out, these findings suggest that entrance age by itself may not be an important factor in academic progress and that children should not be delayed in entering school on that basis alone.

● **A Second Transition: Junior High**   Another important transition occurs later in many children's schooling careers, when they move from elementary school to a middle or junior high school. In the United States, this transition is usually the visible signal of childhood's end and the beginning of adolescence. Once again children must adapt to a new physical environment, new teachers, and, often, new peers; and

Entry into junior high or middle school is a source of new opportunities for learning, as well as new challenges and difficulties. In making the change, students such as these in the school cafeteria often find themselves in a much larger school and as a result may need to build new friendships.

now, rather than staying with the same classmates in the same room for most of the school day, they move from class to class, each usually with its own set of students. Frequently the difference in student body size is dramatic. In one study, the mean school size from grade six to grade seven increased from 466 to 1,307, and the mean number of children in each grade went from 59 to 403 (Simmons et al., 1987). It is no wonder that many researchers report a decline in school satisfaction and academic motivation in pre- and early adolescence, as well as a drop in grades and participation in extracurricular activities (Eccles, Midgley, et al., 1993; Hirsch & Rapkin, 1987; Schulenberg, Asp, & Petersen, 1984; Simmons & Blyth, 1987).

Some researchers have also observed a decline in self-esteem at this time, particularly among preadolescent girls, and an increase in physical complaints (Hirsch & Rapkin, 1987; Simmons et al., 1979). Early-maturing sixth-grade girls display better images of themselves when they attend schools with kindergarten through eighth-grade classes, presumably because they feel less pressured to adopt dating and other activities that become prevalent among seventh- and eighth-graders. On the other hand, those girls entering puberty at more typical ages and at about the same time at which they enter a new school program or undergo other significant transitions tend to have lower self-images and more difficulties in school, possibly because multiple changes in life are difficult to handle (Simmons et al., 1987). Boys and girls who feel they have little control over their academic progress and are less personally invested in succeeding in school also benefit by not having to undergo a school transition between fifth and sixth grades (Rudolph et al., 2001).
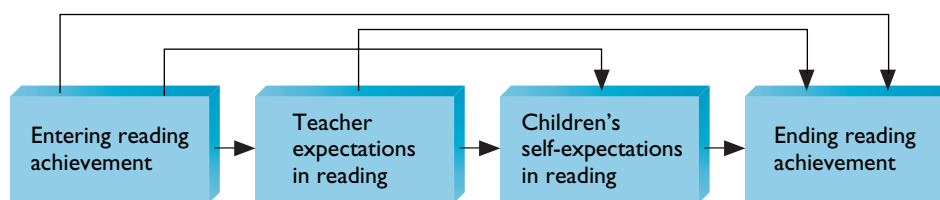
For some adolescents, the difficulties encountered during school transitions continue to be reflected in lower self-esteem, high levels of depression, and greater drug and alcohol use through the later school years (Rudolph et al., 2001). These difficulties may even set in motion a pattern of academic decline that leads them to drop out of school (Eccles et al., 1997; Eccles & Midgley, 1989). Perhaps school transitions do not fit the specific developmental needs of many preadolescents. At a time during which youngsters seek stronger peer associations and a supportive climate for resolving identity issues, they confront an educational environment that is more impersonal than elementary school and fragments peer relationships. Compared with elementary school, junior high school classrooms also tend to emphasize greater teacher control and discipline, offer fewer personal and positive teacher-student interactions, use a

KEY THEME
Interaction Among Domains

FIGURE 16.8
Teacher Expectancy Effects on Children's Reading Achievement

Teacher expectancies may not only have a direct effect on reading achievement but can also influence behavior by modifying children's own expectations for themselves, as this model suggests. Margaret Kuklinsky and Rhona Weinstein (2001) obtained support for this model, especially in classrooms in which teacher expectancies could be recognized easily by children. The impact of the children's own self-perceptions pertain-ing to reading, as influenced by teacher expectations, was especially evident when children were in fifth grade but far less evident in earlier grades.

WHAT **D**O
YOU **T**HINK?

Is Classroom Tracking
Beneficial?
psychology.college.hmco.com

```
Entering reading
achievement
```
→
```
Teacher
expectations
in reading
```
→
```
Children's
self-expectations
in reading
```
→
```
Ending reading
achievement
```

Source: Kuklinski & Weinstein, 2001, p. 1557.

higher standard of evaluating student competence while focusing on more public evaluation of the quality of work, and can often be less cognitively challenging as classrooms become more teacher directed and provide fewer opportunities for student-initiated learning (Eccles, Midgley, et al., 1993; Eccles & Roeser, 1999).

What happens when alternatives to the traditional junior high school and high school structures are instituted? When teachers offer greater academic and personal counseling, contact parents when students are absent, and encourage communication with parents and when students are assigned to classes with many of the same classmates, students show higher levels of academic success, less psychological dysfunction, and a substantially lower school dropout rate than students who experience more traditional school changes (Felner & Adan, 1988; Felner, Ginter, & Primavera, 1982).

Teachers: Key Agents of Influence

No single factor in the school experience plays a more critical role in student achievement and self-esteem than teachers. The expectations teachers have of students, their classroom management strategies, and the climate they create in the classroom are all major elements in student success or failure.

● **The Role of Expectations**   A highly publicized study by Robert Rosenthal and Lenore Jacobson (1968) documented how teachers' expectations of students' performance can affect students' actual attainments. The researchers told teachers that certain elementary school children could be expected to show sudden gains in intellectual skills during the course of the school year based on their scores on an IQ test administered at the beginning of the term. In reality, the students they designated as "rapid bloomers" were chosen randomly. An IQ test administered at the end of the school year revealed that the targeted children indeed showed significantly greater improvement than other students in the class, an outcome called the *Pygmalion effect*. The investigators explained the findings by suggesting that teachers somehow treated the targeted children differently based on their beliefs about the children's intellectual potential, thereby creating a self-fulfilling prophecy.

Differing expectations, especially when they are clearly evident to students, have consequences for achievement, as well. Margaret Kuklinski and Rhona Weinstein (2001) looked at children in grades one through five to determine whether teacher expectations affected performance on reading achievement. As Figure 16.8 suggests, the researchers anticipated that teacher expectations about reading ability would influence not only achievement in reading at the end of the school year but also the children's own self-perceptions of their reading ability. These self-perceptions would, in turn, also influence their reading achievement. The results of the study generally supported these hypotheses, especially in classrooms in which teacher expectations were more readily apparent to children, although children's self-perceptions tended not to become a factor until they reached the fifth grade.

Other studies have confirmed that high achievers *are* treated differently in the classroom by many teachers; they are given more opportunities to participate, given more time to answer questions, receive more praise for being correct, and receive less criticism than lower achievers (Minuchin & Shapiro, 1983). In other words, the class-

One of the most important factors in a child's school experience is teacher encouragement. This boy is receiving the kind of assistance with writing that will promote learning. Effective teachers are involved in all phases of instruction, provide clear feedback, and create a positive emotional climate in the classroom.

room climate is most supportive for those who have already demonstrated success, whereas those who most need the teacher's attention and encouragement may actually get it least.

● **Classroom Management Strategies** Students achieve most in school when their teachers maximize the time spent in actual learning. This statement may seem obvious, but not all school time is spent in direct instruction. Effective teachers plan their lessons well, monitor the entire classroom continuously, minimize the time spent in disciplining children who misbehave, and keep transitions between activities brief and smooth (Brophy, 1986). They make sure there is little "dead time" in the classroom when students are unoccupied, and they keep the focus on instruction.

Another key ingredient in a teacher's success is active involvement in the learning process. This means teachers remain personally involved in every phase of instruction, from the initial presentation of a new lesson to supervising the individual work of students. *Involvement* also refers to the teacher's enjoyment and knowledge of students. Even when students are working in groups, teachers who guide the discussion or progress of the group will foster higher levels of mastery and greater feelings of competence than those who leave students completely on their own (Brophy, 1986; Skinner & Belmont, 1993). Effective teachers also provide students with clear feedback on the quality of their performance and on what is expected of them (Rutter, 1983).

Creating peer-centered learning experiences can be an effective means of involving students in the educational enterprise of the school. In studies of **cooperative learning,** students work in groups rather than individually to solve academic problems. These groups, for example, may consist of four or five students, some boys and some girls, with a range of abilities and from diverse backgrounds. The teacher is usually instrumental in introducing a topic or set of materials, but then the team members work and study together on the problems, quizzing one another until they decide collectively that they understand the unit. Cooperative learning has been found to increase affiliations among students from diverse backgrounds (e.g., cross-racial friendships), improve self-esteem, and produce more favorable attitudes toward academic achievement (Slavin, 1990).

As an illustration of the effectiveness of cooperative learning, Hanna Shachar and Shlomo Sharan (1994) compared the communication and achievement skills of 197 eighth-graders assigned to cooperative learning classrooms in history and geography with those of 154 students in classrooms taught by traditional teacher-led methods.

cooperative learning Peer-centered learning experience in which students work together in small groups to solve academic problems.

An important form of learning is *cooperative learning,* in which small groups of students work together. The four students participating in this project can learn a great deal from each other. Students engaged in cooperative learning, compared with those who receive more traditional methods of instruction, often display significantly higher performance in subject matters on which they work as a group.

The study, carried out in Israel, included Jewish students from Western and Middle Eastern backgrounds. The classes were taught for six months. The cooperative learning groups were reconstituted several times throughout the year to give students the opportunity to work with a number of different peers. At the end of the year, a videotaped discussion of a topic in history and geography involving six-person groups revealed that those who participated in cooperative learning expressed themselves more frequently, were more likely to take a personal position and expand on the ideas brought up by another student, and were less likely to interrupt their peers than students who participated in traditional classrooms. The gains in communication skills were especially great for Middle Eastern students; those with this background who came from the traditional classroom were far less likely to express themselves than their peers from Western backgrounds. Gains in scores on achievement tests in history were also much higher among students who participated in the cooperative groups than among students in the traditional classroom.

One form of peer-centered education is called **collaborative learning.** Here students work jointly on the same problems, often without competing with other groups but with the goal of arriving at solutions jointly, solutions that would be unlikely to arise from students working by themselves (Littleton & Häkkinen, 1999). For example, in one study fourth-graders worked in pairs on mathematics and spatial reasoning problems, some that required rote learning and copying and some that required formal reasoning (Phelps & Damon, 1989). After six sessions of collaboration, children showed significant gains in performance on math and spatial problems compared with a control group of children who did not participate in collaborative efforts. This effect occurred for tasks that required formal reasoning but not for those that required rote learning or copying. Another interesting outcome was that the superiority of boys over girls on spatial problems at the start of the study significantly diminished. In fact, other research indicates that cooperative and collaborative learning may be especially beneficial in certain areas for students, such as, for example, girls learning math or science. These gains could come about because girls now have a chance to take on leadership roles or because cooperative or collaborative learning more closely fits their preferred style of learning and helps to maintain interest in these subjects (Eccles & Roeser, 1999; Peterson, Johnson, & Johnson, 1991).

collaborative learning   Peer-centered learning in which students work together on academic problems with the goal of arriving at solutions that are more effective than solutions that could have been derived from individual effort alone.

● **The Classroom Climate**   One possible factor associated with cooperative and collaborative learning efforts may be the perception that the teacher and the school are promoting *autonomy* or increased student initiative within the classroom, a perception that appears to be beneficial to student progress (Boggiano et al., 1992; Valeski & Stipek, 2001). Children who view their teachers as giving them greater responsibility within the classroom have higher self-esteem scores than those who perceive teachers as controlling and directive (Ryan & Grolnick, 1986). Moreover, teachers who display the kinds of qualities associated with good parenting—that is, who have high expectations for their students and who show caring, supportive, and nurturant qualities in contrast to an emphasis on negative feedback in their educational approach—are more effective in promoting student adjustment to the classroom and high academic performance in early adolescence (Linney & Seidman, 1989; Rutter, 1983; Rutter et al., 1979; Wentzel, 2002).

Children as early as first grade are able to recognize the strength of their interpersonal relationship with a teacher. When they perceive that teachers care about them, children have more favorable attitudes toward school (Valeski & Stipek, 2001). Moreover, teacher-child relationships that begin early in the schooling process have long-term outcomes. Bridget Hamre and Robert Pianta (2001) asked kindergarten teachers in a small community to assess their personal relationships with each of their students. Nearly 200 of these students were followed through eighth grade. Those reported to have had a negative relationship with the teacher as kindergartners, for example, conflict and overdependency, continued to have difficulties with school over the next eight years. However, if children who displayed behavior problems in kindergarten were able to develop positive relationships with their kindergarten teachers, it helped to counter behavioral difficulties in the later school years, a finding that has considerable implications for the importance of a young student's relationship with his or her teacher and academic success.

Cultural Differences in School Achievement

The school experience is not the same for children of different racial and ethnic backgrounds. Children who attend school bring with them attitudes about school that are first nurtured within their families, as well as cultural beliefs that may be in synchrony or in conflict with the predominant belief system of the school (Gibson & Ogbu, 1991). For example, are schools a vehicle for economic and personal advancement? Cultural and ethnic groups may vary in their responses to this question. Is verbal, rational expression (which schools emphasize) the optimal means of human communication as opposed to emotional or spiritual sharing? Again, cultures differ in the extent to which they value these skills. One of the major challenges facing educators is how to ensure the academic success of children who come from a range of cultural-ethnic backgrounds.

● **School Achievement Among Minority Children**   A persistent finding in past research on school achievement in the United States is that children from some minority groups—for example, African American children—score significantly lower than Caucasian children on many measures of academic performance. In the 1960s, the prevailing explanation for the school difficulties of minority children centered on the *cultural deficit hypothesis,* the notion that some deficiency in the backgrounds of minority children hindered their preparation for the academic demands of school. However, Herbert Ginsberg (1972) pointed out that rather than being culturally deficient, minority children are culturally *different;* that is, the behaviors minority children display help them to adapt to their specific life circumstances. For example, rather than having poor language skills, African American children display rich images and poetic forms when speaking to one another in Black English. According to the **cultural compatibility hypothesis,** school instruction produces greater improvements in learning if it is consistent with the practices of the child's own culture (Tharp, 1989).

An example of an educational intervention specifically designed to be compatible with the child's cultural background is the Kamehameha Early Education Program

cultural compatibility hypothesis   Theory that school instruction is most effective if it is consistent with the practices of the child's background culture.

(KEEP) in Hawaii (Tharp et al., 1984). Like many minority children in other parts of the United States, youngsters of native Hawaiian ancestry have been the lowest achieving in the state. The KEEP program was instituted as an early education program in language arts for kindergartners through third-graders. Several unique features of the program were tied to the practices and beliefs of traditional Hawaiian culture. Because collaboration and cooperation are highly valued in that society, classrooms were organized into small groups of four to five children working on independent projects under the close supervision of a teacher. Teachers made a deliberate attempt to establish warm, nurturant relationships with their charges through the frequent use of praise and the avoidance of authoritarian methods of control. The program also capitalized on the tendency of native Hawaiian children to engage their peers in rich and animated verbal interactions. Each day teachers conducted small-group discussions of some academic topic and did not discourage children's interruptions, overlapping speech, and rapidly paced discussions. In addition, reading was taught with the aim of developing comprehension as opposed to mechanics, and children were encouraged to relate personal experiences that were triggered by reading a given text.

What were the results of this broad-based intervention? Participants in KEEP scored at approximately the national norms on several tests of reading achievement, whereas control participants from similar low-income backgrounds continued to place below national averages (Tharp et al., 1984). The KEEP program is an excellent example of how modifying classroom practices to incorporate cultural patterns of language, communication, and social organization can enhance the school performance of children.

● **African American Culture and Education**   In a study of children in the first two years of school, Karl Alexander and Doris Entwisle (1988) found that African American and Caucasian first-graders did not differ significantly on a standardized test of verbal and quantitative achievement when they were assessed at the beginning of the school year. But by the end of the year and during the second year, the scores of African American and Caucasian students began to diverge noticeably. In keeping with the cultural compatibility hypothesis, some have argued that for many African American students, a conflict exists between their background culture and the social and cognitive structure of traditional schools. For example, the spiritualism, expressiveness, and rich oral tradition characteristic of the African American heritage frequently clash with the materialism, emotional control, and emphasis on printed materials characteristic of European Americans and their schools (Boykin, 1986; Heath, 1989; Slaughter-Defoe et al., 1990). Some African American children may also perceive that academic success does not necessarily lead to occupational or economic success, and therefore do not take academic performance seriously (Ogbu, 1974). Furthermore, many African American children believe they will do well in school even though past performance indicates they are likely to do otherwise. These children may need not only to overcome the hurdles imposed by racism and economic hardship but also to more fully understand what behaviors will be necessary to achieve their expectations, that is, to become motivated to master the academic materials and skills necessary to achieve their goals (Alexander, Entwisle, & Bedinger, 1994; Steinberg, 1996).

In focusing on cultural differences, however, researchers need to recognize that they may be unwittingly contributing to stereotypes. After all, many children in all cultural and ethnic groups in the United States are doing well in school. In fact, children of immigrant families in the United States, who are often poor and members of minority groups, generally do better in mathematics and English courses in high school than children of native families (Fuligni, 1997). What factors are contributing to their success? Tom Luster and Harriette McAdoo (1994, 1996) have provided some answers for African American children, and the answers should not be too surprising. African American children who are high achieving, just as other children who are high achieving, experience relatively supportive home environments in which mothers display self-esteem and are members of smaller families whose incomes are above the poverty line. Luster and McAdoo (1996) followed African American chil-
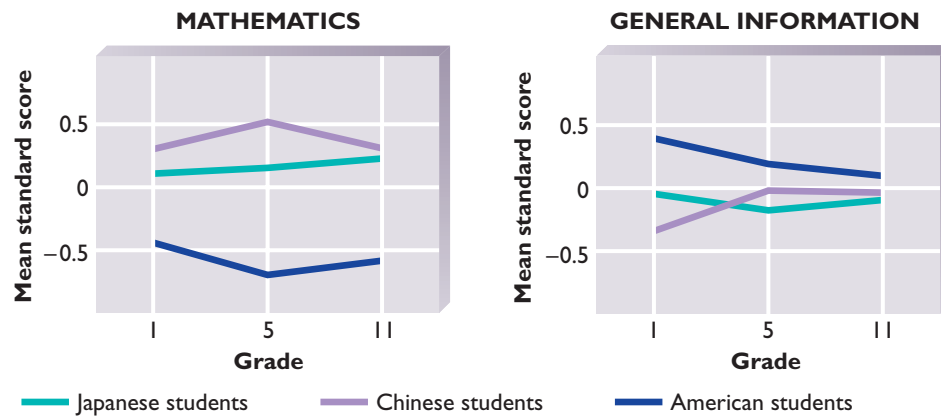
MATHEMATICS

GENERAL INFORMATION

Japanese students   Chinese students   American students

Source: Reprinted with permission from H. W. Stevenson, C. Chen, and S. Y. Lee, "Mathematics Achievement of Chinese, Japanese, and American Children: Ten Years Later," *Science, 259,* 53–58. Copyright 1993 American Association for the Advancement of Science. Visit us at http://www.sciencemag.org

Chinese and Japanese students score higher than American students on tests of mathematics achievement beginning in first grade, and their superiority in this area continues throughout high school. However, on tests of general information, children from all three cultures perform at similar levels, especially in the higher grades. The better performance on mathematics tests by East Asian children may reflect both school- and family-related cultural influences.

dren from preschool age until young adulthood. All the children lived in families with low socioeconomic status during the preschool period. Consistent with our earlier discussion emphasizing the importance of parents in promoting school success, the cognitive competence and academic motivation these children brought to the public school setting, as well as their degree of social adjustment, predicted performance on achievement tests during the elementary school years. Children of mothers who were more involved with their children's schooling also tended to do better in the lower grades, although this relationship did not hold up during adolescence. However, parents' expectations for success in the classroom were correlated with achievement throughout the school years. These findings further confirm the important role families play in the education of African American children, just as in the education of all children (Fuligni, 1997; Steinberg, 1996).

● **Achievement Among Asian Children**   Beginning in the mid-1980s, Harold Stevenson and his associates have conducted comparative research on the academic abilities of Taiwanese Chinese, Japanese, and American students. This research has been guided by an effort to understand why Asian students seem to do particularly well in the areas of mathematics and science. First- and fifth-grade students from middle- to upper-class backgrounds in all three countries were tested on a battery of specially designed cognitive tasks that assessed, among other things, spatial relations, perceptual speed, auditory and verbal memory, and vocabulary, along with reading and mathematics achievement (Stevenson, Lee, & Stigler, 1986).

Most noteworthy about the findings was that American children scored far lower in mathematics than the other two groups (see Figure 16.9). The distinctive patterns of achievement could not be explained by superior cognitive skills in any one group. The researchers found no predictive relationships between scores on the various cognitive assessments and scores on achievement tests. In fact, the children's cognitive profiles were quite similar across cultural groups by the time they reached fifth grade (Stevenson et al., 1985). When again tested in eleventh grade, American children continued to lag well behind the Chinese and Japanese in mathematics achievement, although, as Figure 16.9 shows, on age-appropriate tests of general information (e.g., "What are two things a plant needs in order to grow?" or "Why has it been possible to make smaller computers in recent years?"), the Asian children were not superior to the American children (Stevenson, Chen, & Lee, 1993).

In a subsequent study, Chuansheng Chen and Harold Stevenson included comparisons between Caucasian American and Asian American high school students on mathematics achievement (Chen & Stevenson, 1995). Asian Americans scored higher than Caucasian Americans but somewhat lower than Taiwan Chinese or Japanese students on mathematics tests. What accounts for this pattern of findings? Stevenson's

research group reported significant differences in children's school routines and parents' attitudes and beliefs among the Taiwan Chinese, Japanese, and American groups, as well as differences between Asian American and Caucasian American families. For example, during the year Taiwan Chinese and Japanese children attend school about fifty more days than American children do. Furthermore, Asian high school students spend close to fifty hours a week in school and students in the United States about thirty-six hours a week (Fuligni & Stevenson, 1995).

The percentage of classroom time actually spent in academic activities also differs. For fifth-grade students, the figures were 64.5 percent of the time for American children, 91.5 percent for Taiwan Chinese children, and 87.4 for Japanese children. Furthermore, American children studied language arts more than twice as long as they did mathematics, whereas the Asian children spent equal amounts of time on each subject. Thus the American children received far less instruction in mathematics than their Taiwanese and Japanese counterparts did (Stevenson, Lee, & Stigler, 1986). In addition, the Asian teachers were far more likely to use their time in mathematics classes directly teaching the entire class, whereas American children spent more than half their time in mathematics classes working alone (Stigler, Lee, & Stevenson, 1987).

Stevenson's research group also examined attitudes and behaviors related to homework. American children devoted substantially less time to doing homework—an average of 46 minutes per day among fifth-graders, according to mothers' estimates—compared with 114 and 57 minutes for Taiwanese and Japanese children, respectively. American mothers were not dissatisfied with the small amount of homework their children received, nor were Taiwan Chinese and Japanese mothers dissatisfied with the large amounts their children were assigned (Stevenson, Lee, & Stigler, 1986). In addition, compared with American students, high school students, their peers, and their parents in the two Asian cultures seemed to expect higher standards and voiced greater concern about education, with Asian Americans surpassing their Caucasian American counterparts on these measures (Chen & Stevenson, 1995). American high school students were also far more likely to work, date, and engage in other leisure time activities than East Asian students. Finally, East Asian students were also more likely than American students to believe their own effort was the best route to accomplishments; Asian Americans outscored Caucasian Americans on this measure as well (Chen & Stevenson, 1995). Indeed, effort is a central component of the socialization process in many Asian cultures, that is, the procedures by which one achieves a goal are considered extremely important (Bempechat & Drago-Severson, 1999).

These data confirm that a number of factors other than pure cognitive ability determine the child's level of achievement in school. As we have seen throughout this section, the events that transpire in the classroom, parental attitudes, and larger cultural influences are all related to patterns of academic success or failure. If we are concerned about the educational attainments of students and their overall psychological development, research on the influence of schools reveals that there are many ways to more fully engage children of all ability levels and diverse sociocultural backgrounds (Steinberg, 1996).

ATYPICAL DEVELOPMENT

Educating Youths with Serious Emotional Disturbances

The goal of public education in the United States is to help all children achieve to the highest level they can. As a consequence, schools are responsible for educating every child regardless of his or her background or ability. Children enter the public schools with various strengths and sometimes with disabilities. In fact, approximately 11 percent of students in the United States have one or more disabilities (Wagner, 1995). How well do such students do? There is no simple story to tell about the success of children with disabilities in the schools, because enormous variability occurs among this population of children. Some children—for example, those with

sensory impairments—are just as likely to further their educations beyond high school as youngsters in the general population but may not do as well in the labor market. Others, such as those with learning disabilities, often obtain jobs quickly after high school, although they are less likely to pursue further education.

One group of youth, those with serious emotional disturbances who display problems over a long period of time—such as unexplained difficulty in learning, inability to establish satisfying interpersonal relationships with peers or adults, pervasive depression or fears, or other inappropriate behaviors or emotions in normal circumstances—seem to have an especially difficult time both in school and afterward. These children typically become disengaged from school, as evidenced by frequent absenteeism and failure to make friends among schoolmates. The consequence is often poor school performance and dropping out. Only a relatively small proportion continue their educations (Wagner, 1995).

Are there ways the schools can improve on these outcomes? One concern is that these students be provided the kind of support they need to achieve their goals. For example, the few special services they are likely to receive are academic (tutoring, slower-paced instructions, and so forth) rather than assistance with emotional or behavioral problems. Moreover, the vast majority of youth with serious emotional disturbances are expected to compete just as other students do despite their additional needs and different career goals. Under these sink-or-swim conditions, perhaps it is little wonder that youngsters with serious emotional disorders often find school frustrating and difficult; even those who do graduate still have difficulty obtaining jobs.

What interventions might help these children? As repeatedly observed in our discussion of the impact of school on children, the involvement of parents in promoting learning, holding high expectations for their children's efforts, and becoming involved in the school seems to contribute to success for youngsters with serious emotional disorders (Henderson, 1994). However, schools may need to offer these students more, and perhaps earlier, vocational and technical courses that maintain their interest in education and provide the job skills needed for success (Wagner, Blackorby, & Hebbeler, 1993). When student interest is maintained, participation in regular courses in the later school years is likely to be more positive. Finally, fostering integration with other students, through sports, hobbies, or other social activities, along with greater collaboration with mental health and social service agencies to address the specific needs of individual children, can also yield positive outcomes for youngsters with serious emotional disturbances (Wagner, 1995).

School Violence

In recent years violence in the schools has become a growing concern. Violent behavior may range from attacks on children or teachers that result in physical and psychological damage, to even death. Youth violence resulting in deaths in the schools in the United States increased substantially in the late 1980s in disadvantaged urban schools among African American and Hispanic youths. However, in the latter half of the 1990s, violence was reported increasingly frequently in suburban and rural communities and at the hands of middle-class Caucasian American youths (National Research Council and Institute of Medicine, 2002b). Shootings in schools have resulted in deaths not only in the United States but also in Western Europe and other nations. Fortunately, such incidents remain quite rare. Nevertheless, they have received enormous attention in the media and have contributed to considerable public alarm (M. Anderson et al., 2001).

The violence associated with inner-city schools often appears to be an extension of the violence found in urban neighborhoods (National Research Council and Institute of Medicine, 2002b). Problems involving poverty, racial segregation, and illegal drug activity very likely spill over from the neighborhood and into the school in urban communities and typically involve specific grievances held by the perpetrators against particular individuals. However, in suburban and rural schools the violence seems more like the kind of "rampage" shootings by adults that occur in workplaces

SEE FOR YOURSELF
psychology.college.hmco.com
School Violence

or in other public locations (National Research Council and Institute of Medicine, 2002b). Although the youths who commit violence in suburban and rural communities also hold grievances, their dissatisfactions tend to be more abstract and less concerned with specific issues or threats. Case studies of a number of these rampage-type events reported by researchers reveal few similarities among the students committing these acts of violence other than that the perpetrators are virtually always male. But among other factors shared by some of the perpetrators are a recent drop in grades, the tendency to be associated with or engage in delinquent behavior, serious mental health problems (not typically recognized by either parents or the school), and easy access to guns. The stereotyped picture of a child who is a member of a dysfunctional family, who is a loner, and whom adults believe to be at high risk for committing violence is not usually supported in the cases that have been studied. Although the youths who committed lethal violence were often members of some student groups and informal cliques—that is, they were not completely outside the configuration of social participation with other peers—they were more likely to be only marginally associated with the group. At least some adults had hints that these boys might commit violent acts; however, the gap between the young persons who displayed such clues and their parents or others who might have been able to obtain help was never bridged. Some of the youths' friends had an even greater sense of the potential danger of violence. However, they, too, failed to communicate this information to appropriate authorities who might have been able to intervene.

Perhaps many steps can be taken to reduce or eliminate such rampages in the future and to make schools safer. For example, more extensive mental health services should be provided in the schools for children in need of them. Additionally, greater efforts may be required to limit young people's access to weapons such as guns, because their use has been the primary means by which violent acts resulting in death have occurred. However, the most important step in reducing violent lethal behavior may be to establish a climate, not just in the schools but in other locations within the community as well, in which adults and young people can communicate with each other and work together to provide a supportive network committed to the safety and well-being of all youth (National Research Council and Institute of Medicine, 2002b).

FOR YOUR REVIEW

• What are some of the difficulties in making cross-cultural comparisons of academic performance?

• What factors—apart from classroom experience itself—predict academic success?

• How do school and class size influence performance in the classroom?

• Why are school transitions difficult and what practices can be implemented to make them easier for children?

• What is the role of teacher expectations for success in the classroom?

• What are some classroom management strategies that appear to promote achievement? Why do peer cooperation and collaboration seem to be effective?

• How does the classroom climate and a teacher's style of interaction with children affect their development?

• How does the cultural compatibility hypothesis help to explain school achievement among children from an ethnic minority group? What factors seem to facilitate learning among minority children? Why do Asian children outperform American children in mathematics?

• What responsibility does public education have toward children who are emotionally disturbed? How successful are such children in the classroom?

• What explanations exist for violent behavior in schools?

Neighborhoods

In many cultures and societies, rearing children is considered a communal effort. Even in the United States, with its emphasis on the family as the bedrock for the transmission of cultural values and beliefs, neighbors and other community members often provide resources to families in their efforts to create a supportive rearing environment (National Research Council and Institute of Medicine, 2002a). Of course, at one time, neighbors might often have included distant family members. But today, increased family mobility, less visibility in the community because of long absences for work, more heterogenous interests among the residents, and the deterioration of some areas as a result of crime, drugs, and poverty have made questions about the neighborhood's role in development—that is, the broader ecological context in which children live—even more important.

<div style="float:right; border:1px solid #999; padding:4px;">

KEY THEME

Sociocultural Influence

</div>

Do Neighborhoods Matter?

A recent review by Tama Leventhal and Jeanne Brooks-Gunn (2000) of the literature on their effects on developmental outcomes indicates that neighborhoods do matter. They matter, for example, with respect to school readiness and achievement; children who grow up in neighborhoods in which the residents have higher socioeconomic status do better in school and are more likely to graduate from high school and to attend college. Neighborhoods matter, too, with respect to behavioral and emotional problems; both are more likely to be present among children residing in neighborhoods with lower socioeconomic status. And youths living in neighborhoods with higher socioeconomic status tend to delay engaging in sexual activity and are less likely to bear children as teenagers.

These findings are probably not too surprising. However, a more important question is how neighborhoods might influence these kinds of outcomes (Jencks & Mayer, 1990). Leventhal and Brooks-Gunn (2000) propose three different pathways by which neighborhoods can have an impact. One pathway is via the availability of institutional resources such as libraries, educational programs, and museums designed to promote achievement. Such resources also extend to the availability of quality child care and the presence of good schools and medical services and, in the case of adolescents, employment opportunities that encompass visible opportunities for "getting ahead" through the acquisition of job-relevant skills. The benefits of high-quality child care and good schools are well documented, although evidence that other institutional resources make a difference needs more thorough research.

A second pathway by which neighborhoods may have an effect on development is through the parenting styles caregivers engage in and the interpersonal support networks that are available to parents. Indeed, parenting is affected by a mother's perception of the neighborhood, such as how safe it is. As an illustration, mothers who have a negative view of their neighborhoods are more likely to show greater supervision of their children's activities than mothers who view their neighbors as a source of help (O'Neil, Parke, & McDowell, 2001). Nevertheless, more restrictive parental practices in poorer, high-crime neighborhoods may be beneficial to children, as the findings of a recent study carried out by Rosario Ceballo and Vonnie McLoyd (2002) indicate. Perhaps such parental practices reduce opportunities for children to be influenced by peers who may encourage them to engage in less desirable activities (Jarrett, 1997). Even so, an important beneficial component to children of concerned and involved parents in poor neighborhoods continues to be nurturance rather than harsh and inconsistent socialization practices (Brody et al., 2001). When parents have greater social support from family and friends within the community, the negative effects that often accompany increased parental stress in poor neighborhoods may also be reduced.

Yet a third pathway for influences on development occurs through the individual and community-level offerings provided within neighborhoods to supervise young people and to reduce the risks that they may experience. This pathway is sometimes referred to in terms of the norms or collective efforts of neighbors (Leventhal &

Brooks-Gunn, 2000). The social cohesion—that is, the willingness of residents to intervene or establish alternatives such as athletic activities, after-school programs, and social clubs designed to promote the values and goals of the community—may differ substantially from one neighborhood to another. Yet when residents are willing to take the initiative in monitoring or overseeing the doings of children and youths, neighborhoods tend to experience less violence and fewer deviant behaviors among the young (Brody et al., 2001; Elliott et al., 1996; Sampson, Raudenbush, & Earls, 1997).

These various neighborhood effects on development are not large (Caspi et al., 2000; Leventhal & Brooks-Gunn, 2000). For example, research involving identical twins growing up in a range of communities suggests that neighborhood differences account for about 5 percent of the variability associated with their mental health. Although this impact may seem small, when the interventions designed to improve institutional resources, interpersonal support, and the norms and collective efforts of a community are extended to a large number of children within a neighborhood, the costs are small and the benefits quite high. Thus social policies designed to enhance the institutional resources within the community, parental perceptions of support and other features that uphold desirable parenting practices, and the individual and collective efforts of the community members to monitor and assist in the supervision of children and adults may be important avenues for promoting child and youth development.

War and Children

Perhaps no other tragedy aside from natural calamities such as earthquakes, floods, or famine is more disruptive to neighborhoods than war. But wars often have an impact on large numbers of communities and are the result of human motivation; they are therefore subject to a form of intervention that is not available for many other kinds of disasters. The consequences of war for young people can be devastating. As a result of conflicts between 1990 and 2000, perhaps as many as 2 million children around the world have lost their lives, 6 million have been injured or disabled, 12 million have been left homeless, and 1 million have been orphaned (UNICEF, 2002).

Of children who experience and survive war in their neighborhoods, a high percentage, typically on the order of 40 to 50 percent, display posttraumatic stress disorder (PTSD), a disorder that was described with respect to physical and sexual abuse in the chapter titled "The Family." In the case of war, multiple factors may contribute to the appearance of PTSD. Children may witness violent acts such as killing, rape, and torture (or even experience some of these) or see the physical manifestations of war, including dead bodies or destroyed buildings. They may also be subjected to homelessness, starvation, relocation to refugee camps, and separation from family and friends. All of these factors can contribute to the occurrence of PTSD (Allwood, Bell-Dolan, & Husain, 2002), and the extent of stress reported by children is influenced by the degree to which they report experiencing the more traumatizing aspects of war (Smith et al., 2001).

In general, the symptoms of PTSD are most evident within the first year of exposure to war events; after one year, they decline. However, some stressors, such as relocation and separation from family, may be ongoing for years, and, as a consequence, children may remain vulnerable to PTSD for long periods of times (Thabet & Vostanis, 2000). Nevertheless, some children show exceptional resilience in the face of such tragedy. At the present time, researchers know little about the factors that might promote this resilience; however, the availability of some kind of social support is often theorized to be one important element (Cairns & Dawes, 1996). That support usually comes from a mother. Her reactions to the war experience do have an impact on the child's level of distress (Smith et al., 2001).

Effective ways to treat children experiencing the stresses of war remain uncertain (Yule, 2000). Perhaps a first step is to establish a secure environment for children, often an extremely difficult task given the possibilities of continued conflict, the uncertainties associated with living under refugee conditions, and the suspicions that can

pervade attitudes toward others who may not be well known by the children. Psychosocial intervention efforts designed to assist the mothers of children exposed to war so that they, in turn, can be more helpful to their children show promise of positive benefits (Dybdahl, 2001).

Vast amounts of support may be needed for children who have experienced this kind of disruption in their lives. Well-designed research to evaluate the procedures that can help the most should be a priority until such time as neighborhoods are safe, no matter where children reside.

FOR YOUR REVIEW

- What aspects of development are known to be influenced by the neighborhood?

- How might the neighborhood have its influence on developmental outcomes?

- What are the most serious outcomes for children experiencing war, and what procedures may be most effective in dealing with these consequences?

CHAPTER RECAP

SUMMARY OF DEVELOPMENTAL THEMES

■ **Sociocultural Influence** *How does the sociocultural context influence the child's experiences with media, computers, schools, and the neighborhood?*

The society in which the child grows up determines what kind of exposure she will have to television, computers, schools, and neighborhood resources. Not all cultures emphasize formal schooling, and not all children have access to television or computers. In terms of school, the child's cultural background may either harmonize or conflict with the predominant values of the educational system. In the latter case, the child may experience academic failure as well as lower self-esteem. The KEEP model suggests that the child's academic performance climbs when educational practices are compatible with his culture. In addition, exposure to war varies considerably depending on the society in which a child grows up.

■ **Child's Active Role** *How does the child play an active role in experiences with media, computers, schools, and the neighborhood?*

In their television viewing, children actively direct their attention to programs they understand. In their school experiences, children show greater academic achievement and higher self-esteem when school structures facilitate their greater participation in the educational process. In addition, educational tech-

niques such as peer collaboration, classroom autonomy, and computer activities in group contexts all seem to foster development by promoting the child's active involvement.

■ **Interaction Among Domains** *How do the child's experiences with media, computers, schools, and the neighborhood interact with development in other domains?*

As children's cognitive skills grow, so does their ability to comprehend information portrayed on television. At the same time, television programs can enhance cognitive growth in such areas as prereading skills. Moreover, television can influence social behavior through the strong messages it portrays about violence, prosocial acts, and gender-role stereotypes. Experiences with computers also can facilitate cognitive and social development. Children's developmental accomplishments affect their school experience, and vice versa. Children who have good peer relations are more likely to adjust well to school in the first place. Once in school, children typically have experiences that can promote their intellectual advancement, peer relations, and self-concept. For example, open classrooms can enhance peer interaction skills, and the academic feedback students receive can influence self-esteem. Peer learning techniques especially foster developmental accomplishments in many domains.

■ **SUMMARY OF TOPICS**

Television

- Among the most frequent activities in which children engage is watching television. Children tend to watch increasing amounts of television as they become older, until they reach adolescence.

Children's Comprehension of Television Programs

- Although the formal features of television often guide their attention, children actively attend to the portions of programs they comprehend. As children's cognitive and verbal skills expand, so does their ability to comprehend both the explicit and implicit elements of programs.

Television's Influence on Cognitive and Language Development

- Television can promote certain prereading skills, such as knowledge of the alphabet and numbers. Children who watch relatively greater amounts of educational television as preschoolers continue to demonstrate greater academic achievement during the high school years.
- Television can also promote language development and increase children's vocabularies.

Television's Influence on Social Development

- Children who observe aggressive events on television learn such behaviors and can demonstrate them in similar situations. Viewing high levels of violence on television is associated with greater aggression in children and youth.
- Prosocial behaviors can be learned via television and may be even more influential on children's behavior than violent content.
- Gender stereotypes are commonly exhibited in television programming. Children's attention to these stereotypes appears to be dependent on an understanding of their own gender.
- Children's understanding of commercials may not be clear. When children view commercials on television, they tend to request the products.
- Parents can take a number of steps to encourage positive benefits from television. These include being aware of their children's viewing habits, selecting acceptable programs for viewing at appropriate times, and commenting on the programming to assist children in their understanding of it.

Computers

- Most children now have access to computers either in the home, at school, or in both locations.

Academic Mastery and Cognition

- Computer-assisted instruction may result in gains in achievement in various subjects. The largest gains in achievement occur when children are required to think more fully about a topic. Gains are most frequently reported in the areas of mathematics and science.
- Among the cognitive skills that appear to benefit from children's use of computers and other electronic technologies are spatial representation, iconic skills, and the ability to attend to multiple events.

Social Development

- Children and adolescents spend a substantial portion of their time on computers engaging in social interactions, as, for example, in using e-mail and other communication opportunities.
- Controversy exists over how to regulate access to the Internet, as some material available on it may not be suitable for children. A major unresolved issue is the extent to which children should be either educated about or monitored in the use of the Internet.

Sex Differences

- Although boys may still use computers more than girls for game playing, the difference has declined over the years for other uses, including word processing and accessing the Internet.

School

- Assisting children in acquiring the academic skills needed in society is the main goal of schools.
- Criticisms have been leveled at the schools because cross-cultural comparisons of performance by children suggest that students in the United States lag in the acquisition of some academic skills. Interpreting cross-cultural research is difficult because of the many methodological problems associated with collecting information in other countries.

Families and Peers as Agents Mediating School Achievement

- The resources children bring to the school as a result of family and peer experiences can have a large impact on their academic success.

School and Classroom Size

- Schools vary greatly in their organization and structure.
- Children who attend smaller schools seem to show benefits not always found among children who attend larger schools.
- The number of pupils in classrooms in the United States has declined over the past several decades. Smaller classes, especially during the early grades, appear to have positive consequences for children.

School Transitions

- Children who initially demonstrate good skills with respect to social behaviors and cognitive and linguistic skills on entering school tend to be more successful in school. Entering school

along with familiar peers has some advantages for young children. Those children in the classroom who are younger show similar gains during the school year as those who are older.

■ The transition from elementary to junior high school can be difficult for many children, especially if they experience other developmental transitions at the same time. The kinds of interactions that occur in the more advanced grades may be difficult for some children if they feel they have little control over their academic progress or are not personally invested in succeeding in the classroom.

Teachers: Key Agents of Influence

■ Teacher expectations about student performance can have important consequences on IQ and academic achievement.

■ Children actively involved in the learning process do better in school. Studies of *cooperative learning* and *collaborative learning* reveal more favorable academic outcomes for students. These results provide some support for the theories of Piaget and Vygotsky concerning the importance of peers for learning and the value of a scaffold for facilitating learning.

Cultural Differences in School Achievement

■ Research demonstrates that children's academic performance rises when educational tactics incorporate elements of their culture, that is, are *culturally compatible* with their background.

■ Children in Asian societies display higher levels of achievement than American children in the areas of mathematics and science. These differences may arise from the amount of time spent in learning about these subjects, demands for homework, the concerns of parents for successful school performance, and the central role that effort plays in the socialization process in many Asian cultures.

■ The schools are not well equipped to provide appropriate educational experiences for children with serious emotional problems.

School Violence

■ The past two decades have seen an increase in lethal school violence within the public schools.

■ In urban communities, school violence tends to reflect an extension of violence found in the neighborhood. In suburban and rural communities, the violence is more likely the result of a youth engaging in a "rampage." Few commonalities are shared by the perpetrators, and although both adults and peers may show some signals that anticipate these actions, the signs are often not sufficiently visible to lead others to intervene.

Neighborhoods

■ In many cultures and societies, the socialization efforts of parents are often supplemented by neighbors and other community members.

Do Neighborhoods Matter?

■ The neighborhoods in which children grow up do have an effect on academic success, mental health, and sexual behavior.

■ The mechanisms by which a neighborhood influences development include the availability of institutional resources within the community, the parenting style practiced in response to the safety and support network perceived to exist in the neighborhood, and the individual and collective efforts of community residents to supervise and monitor the development of youth.

War and Children

■ Large numbers of children are killed and injured and experience homelessness, loss of family members, and relocation to refugee settlements as a result of war.