

## CHAPTER 1

# Children and Adolescents

## *Unique Audiences*

*Sometimes wise and disconcertingly like adults, children are nonetheless children. To the wonder, joy, and vexation of adults, they are different. As they grow older, they become increasingly like us and therefore intelligible to us, but at each age or stage of development there is something for adults to learn more about, to be amused by, and to adjust to.*

—Professor Aimee Dorr  
*Television and Children: A Special Medium for a Special Audience* (1986, p. 12)

*Over the past twenty or thirty years, the status of childhood and our assumptions about it have become more and more unstable. The distinctions between children and other categories—“youth” or “adults”—have become ever more difficult to sustain.*

—Professor David Buckingham  
*After the Death of Childhood: Growing Up in the Age of Electronic Media* (2000, p. 77)

*Children and young people are a distinctive and significant cultural grouping in their own right—a sizeable market share, a subculture even, and one which often “leads the way” in the use of new media.*

—Professor Sonia Livingstone  
*Young People and New Media: Childhood and the Changing Media Environment* (2002, p. 3)

*Unlike the children of the 1950s, 1960s, and 1970s, whose media choices were limited and stood out like isolated, familiar landmarks in communal life, kids today inhabit an environment saturated and shaped by a complex “mediascape” that envelops and bombards them day and night.*

—James P. Steyer

*The Other Parent: The Inside Story of Media’s Effect on Our Children* (2002, p. 4)

**B**ecause it was one of her favorite movies, Louise decided to rent a DVD of the film *Monsters, Inc.* to share with her two children, a 4-year-old and a 10-year-old. The 10-year-old immediately liked the blue-furred Sulley and his one-eyed sidekick Mike, laughing at the monsters as they scared children and collected their screams to power their factory in the city of Monstropolis. The 4-year-old, on the other hand, tensed up the first time she saw Sulley’s hulking frame and Mike’s bulging eyeball. The young child asked several nervous questions: “What are they?” “Why are they trying to scare those kids?” Shortly thereafter, the 4-year-old announced that she did not like this “show” and that she wanted to change the channel. When a young girl named Boo accidentally entered the factory, the 4-year-old let out a yelp and buried her face in her blanket (see Figure 1.1). Louise was dismayed at her young child’s reaction, wondering how anyone could be frightened by such funny and benign monsters.

Although this example involves a fictitious family, the incident is likely to resonate with parents who are often perplexed by their children’s responses to the media. Indeed, a great

**Figure 1.1** Image from the film *Monsters, Inc.*

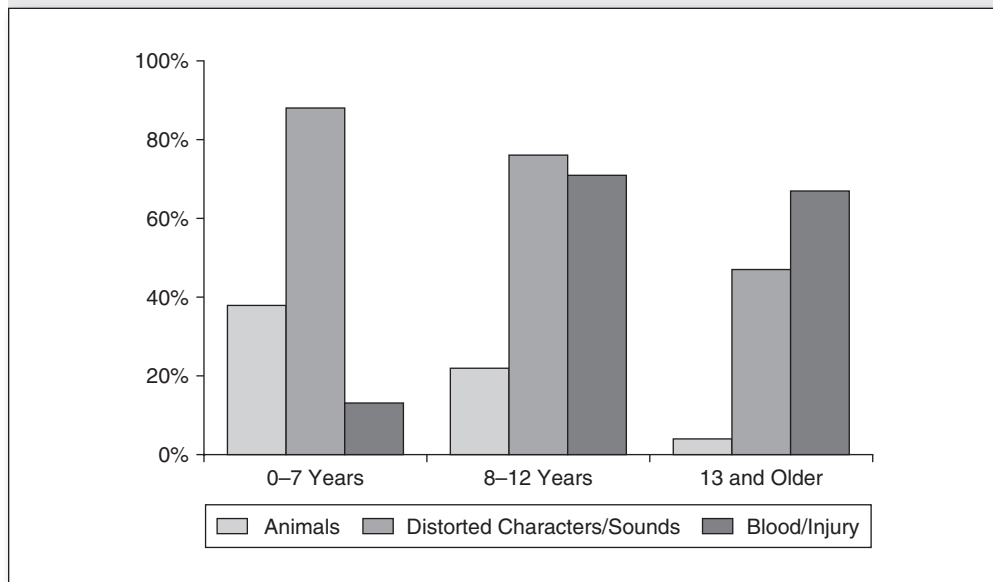


many parents have reported that their preschool children were unexpectedly frightened by the gentle but strange-looking alien in the movie *E.T. the Extra-Terrestrial* (Cantor, 1998). Likewise, G-rated movies such as *Bambi* and *Beauty and the Beast* have provoked fear in younger children (Hoekstra, Harris, & Helmick, 1999). One study even found that younger children were frightened by Michael Jackson’s music video “Thriller,” which featured the popular singer transforming into a werewolf (Sparks, 1986).

These reactions are not unique to a few films or videos. Research has documented strong differences in the types of media themes that frighten people across age (Harrison & Cantor, 1999). The types of stories that most often upset children younger than 7 involve animals or distorted-looking characters such as ghosts and witches (see Figure 1.2). The impact of such themes greatly diminishes by the time people reach adolescence and adulthood. In older viewers, portrayals involving blood and physical injury are most likely to trigger negative emotions.

From an adult perspective, a young child’s fears of monsters and ghosts are difficult to explain. But they signal the importance of considering children’s unique orientation to the world in trying to understand how the media can affect younger audiences. In this chapter, we will explore how children and adolescents interact with the media, concentrating on the crucial role human development plays in the process. As background, we will first give an overview of the media environment and media habits of today’s youth. Next, we will explore several major principles or ideas that can be gleaned from child development research: Children are different from adults, children are different from each other, and adolescents are different from children. We will conclude the chapter with a focused look at specific cognitive skills that emerge during childhood and adolescence that are relevant to making sense of the mass media.

**Figure 1.2** Percentage of respondents reporting fright responses to media themes as a function of age at time of exposure.



SOURCE: Adapted from Harrison and Cantor (1999).

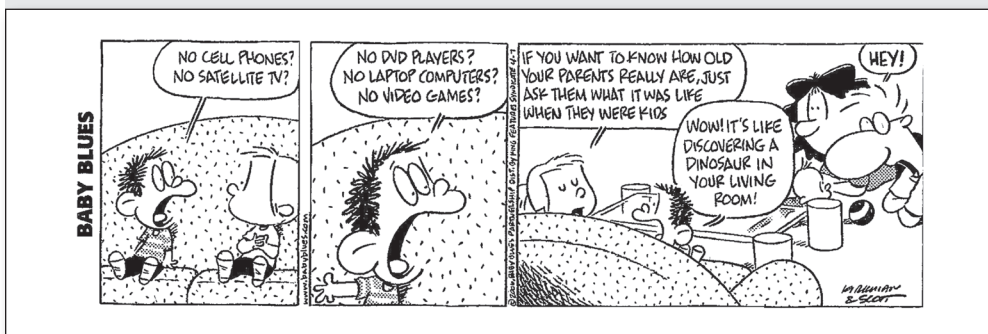
## The Media Environment and Habits of Today's Youth

A recent headline in the *Detroit Free Press* warned, “More Kids Vulnerable to Sexual Exploits Online” (Baldas, 2012). The article described an incident in which a 14-year-old boy visited an online chat room and interacted with a stranger who convinced him to expose himself on a webcam. According to research cited in the article, nearly half of American children (48%) between the ages of 10 and 17 say they have visited chat rooms, and one in 11 children (9%) has received an unwanted sexual solicitation online. Such statistics help to stir a sense of panic about the impact of media technologies on youth. But even more traditional forms of media can raise concerns. Reality programs on television feature the lives of teenage moms as they juggle adolescence with parenthood, and those of “real” housewives who seem obsessed with physical appearance and money. Rap artists such as Eminem and Lil Wayne celebrate hatred, revenge, and violence in their music. And video games have become increasingly violent. A popular video game series called *Call of Duty* allows the player to take on the role of a soldier battling increasing levels of enemy violence, which occasionally results in the death of innocent parents and children.

There is no doubt that today's youth are confronted with a media environment very different from the one faced by their grandparents or even their parents (see Figure 1.3). Terms such as *digital television*, *texting*, and *Google* did not even exist 20 or 30 years ago. One of the most profound changes concerns the sheer proliferation of media outlets and technologies. Children today live in a “multidevice, multiplatform, multichannel world” (Carr, 2007). The advent of cable and satellite television has dramatically increased the number of channels available in most homes today. Digital cable is multiplying this capacity. Many homes in the United States are also equipped with CD players, DVD players, personal computers, wireless Internet access, and digital cameras. At a very young age, then, children are learning about keypads, e-readers, touch screens, and remote controls.

As these technologies proliferate, they are changing the nature of more traditional media. The TV screen, which once provided a way to watch broadcast television, is now being used for a much wider range of activities, including online shopping, video-on-demand, and viewing digitally recorded photographs and home movies. Newspapers can still be delivered to the doorstep, but they can also be received online. In other words, old distinctions between the television screen and the computer screen or between print and broadcast are becoming less meaningful.

Figure 1.3



SOURCE: *Baby Blues* by Rick Kirkman and Jerry Scott. © 2006 Reprinted with permission of King Features Syndicate.

As media technologies are converging, so are the corporations that own them. In January 2011, the Federal Communications Commission (FCC) and the Justice Department approved the merger of Comcast, the largest cable operator in the United States, and NBC Universal, the well-known broadcasting company. Together, these two media giants own 10 TV and movie production studios; a number of national cable networks, including USA, MSNBC, Oxygen, and Bravo; over two dozen local NBC and Telemundo broadcast stations; two pro sports teams, four theme parks; and several digital media properties, including NBC.com and iVillage. All of this, plus the merger, means access to more than 23 million video subscribers and nearly 17 million Internet subscribers. The deal represents a powerful integration of content and delivery, meaning that programming can be created, promoted, and delivered by a single corporation. This \$30 billion megamerger is one of many examples of corporate synergy and partnership.

Such mergers have sparked heated debates in the United States about the dangers of monopolistic growth (Hiltzik, 2011; Silver, 2011). Furthermore, media corporations that were once primarily American-based now have major stakes in the international market. So our capitalistic, privately owned media system and the cultural messages we produce are being exported worldwide. And as these media industries grow, they are becoming increasingly commercial in nature. For example, advertising is now a regular part of the Internet (see Chapters 2 and 8) and is creeping into cable television and even movie theaters.

In the relentless search for new markets, media corporations are increasingly recognizing and targeting youth as a profitable group of consumers (see Chapter 2). Television networks such as Nickelodeon and the Cartoon Network are designed for young viewers; magazines such as *J-14*, *Teen Vogue*, *American Cheerleader*, and *Teen Voices* are targeted to adolescents, particularly girls; and many websites are aimed specifically at children and adolescents. Poptropica, a site targeting 6- to 15-year-olds, allows children to create a “Poptropican” character to travel the many islands of Poptropica, solve mysteries at each location, and interact with other players in “multiplayer” rooms. Of course, there are game cards and toys available for purchase. Even technologies are being marketed to youth. Handheld gadgets such as the VTech MobiGo and the LeapFrog Leapster Explorer are popular among younger children, an age group that is also the target for specially designed smartphones (see Figure 1.4). By 2010, one in five (20%) American children between the ages of 6 and 11 had their own cell phone (American Kids Study, 2010). Ownership

**Figure 1.4** Technologies for young children.

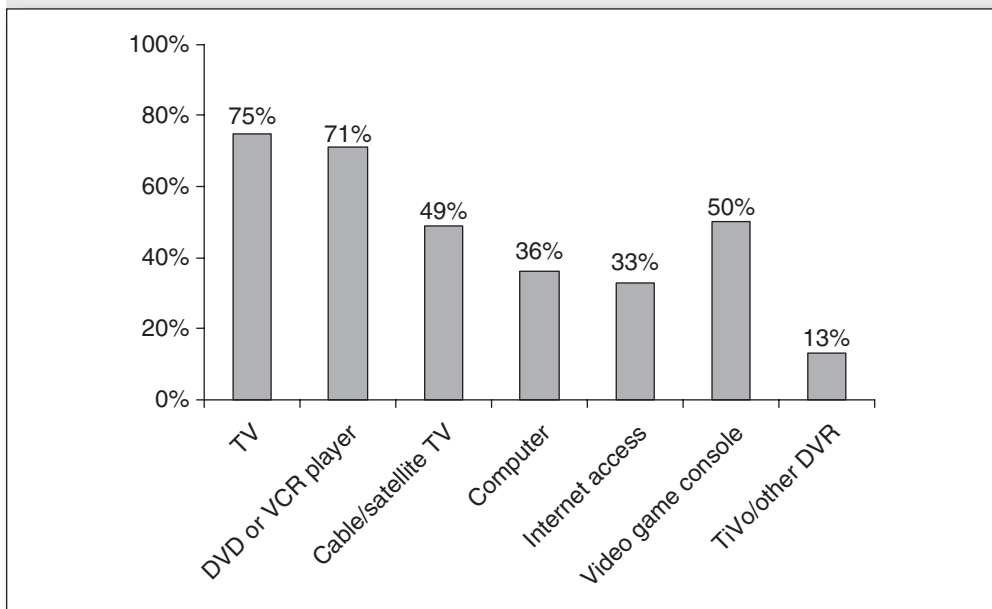


increases dramatically by age; roughly 77% teens between the ages of 12 and 17 own a cell phone (Lenhart, 2012). And two out of three (67%) teens have a mobile device capable of connecting to the Internet (Rideout, 2012). The proliferation of such handheld devices means that children can experience media around the clock, seven days a week.

Finally, digital technology is altering the very nature of media experiences. Images and sounds are more realistic than ever, further blurring the distinction between real-world and media events. By entering virtual worlds while riding on a school bus or sitting in their bedrooms, children can travel to different places, encounter strange creatures, and play adventurous and often violent games. And these new media are far more interactive, allowing youth to become participants in their quest for information, action, and storytelling.

How are the youth of today responding to this modern and complex media environment? A recent national study took an in-depth look at the media habits of American children (Rideout, Foehr, & Roberts, 2010). Surveying more than 2,000 children ages 8 to 18, the study documented that youth today are surrounded by media. The average child in the United States lives in a home with four TVs, two CD players, two radios, three DVD/VCR players, two console video game players, and two computers. More telling, the media have penetrated young people’s bedrooms. A full 71% of American children between the ages of 8 and 18 have a television in their room. Moreover, 49% have access to cable or satellite TV and 50% have a video game console in their room (see Figure 1.5). And one-third (33%) of these young people have Internet access in their bedroom, up from 20% in 2005. Having a TV as well as a video game console in the bedroom is more common among both African American and Hispanic youth than among White and Asian youth (Rideout, Lauricella, & Wartella, 2011).

**Figure 1.5** Proportion of children 8 to 18 years of age having various media in their bedroom.



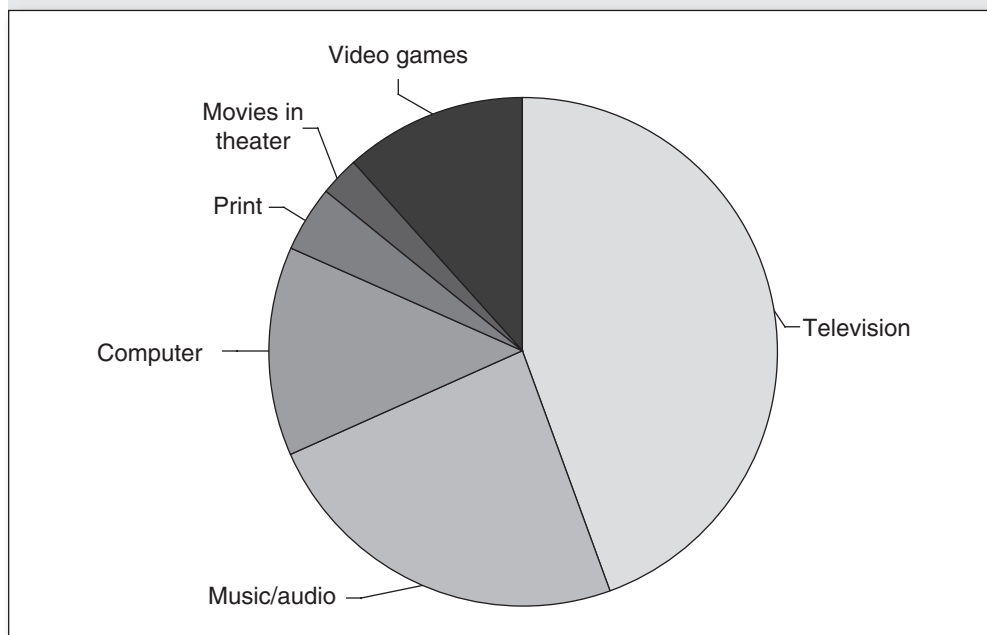
SOURCE: Adapted from Rideout, Foehr, and Roberts (2010).

In terms of exposure, the average U.S. child between the ages of 8 and 18 spends seven and a half hours a day consuming media (Rideout et al., 2010). As noted by Rideout and her colleagues, the typical young person in this country spends roughly the same amount of time with media as most adults spend at work each day. Moreover, time spent with media keeps increasing. In 2005, youth spent an average of six and a half hours a day consuming media—a full hour less than in 2010. Even more critical is that most youth today engage in multitasking—using more than one medium at a time. When multitasking is taken into account, youth today consume a total of 10 hours and 45 minutes' worth of media content during those seven and a half hours per day.

Despite all the technologies available, most of this time is spent watching television (see Figure 1.6). On average, American children watch four and a half hours of TV content per day. Notably, “television” today is no longer just regularly scheduled programs on broadcast TV. It now includes DVDs of popular TV series and movies, on-demand TV, prerecorded content on TiVo and other digital recorders, and classic and current TV programs watched online using a laptop, iPad, or cell phone.

As it turns out, media use differs by race and ethnicity. Black, Hispanic, and Asian youth consistently spend more time consuming media each day than do White youth (Babey, Hastert, & Wolstein, 2013; Rideout et al., 2011). The biggest differences are in TV viewing: Black and Hispanic youth spend at least one hour more a day watching TV than White youth do (Rideout et al., 2011). In contrast, Asian youth spend about an hour more a day using the computer than do the other three groups. These differences hold up even after controlling for parents' socioeconomic status and whether the child is from a single- or two-parent home.

**Figure 1.6** Average amount of time children 8 to 18 years of age spend with each medium during a typical day.



SOURCE: Adapted from Rideout, Foehr, and Roberts (2010).



The national study by Rideout and her colleagues (2010) also revealed that parents typically do not exercise much control over their children's media experiences. Less than half (46%) of the children reported that there were rules in their home about what they could watch on TV, and less than one-third (30%) said there were rules concerning which video games they could play. In general, children more often have rules about the specific types of content they may consume than about the amount of time they may spend consuming it. In addition, the likelihood of having media rules decreases with age—30% of 15- to 18-year-olds reported having no rules at all about any type of media use, whereas only 3% of 8- to 10-year-olds reported no rules. Of course, when parents themselves are queried, they report supervising their children's media use to a greater extent than their offspring report (Gentile, Nathanson, Rasmussen, Reimer, & Walsh, 2012). Underscoring the importance of parental oversight is the fact that children and teens who have a TV set in their bedroom spend substantially more time watching television than do those without a set in their room (Jordan et al., 2010; Rideout et al., 2010).

Computers are rapidly spreading in American homes, and so is Internet access. Today the vast majority of young people have a computer at home regardless of their parents' education or race (Rideout et al., 2010). However, Internet access, especially high-speed wireless, still varies by demographics: White youth and youth whose parents are college educated are more likely to have high-speed access. The most popular computer activities for young people are visiting a social networking site such as Facebook, playing a computer game, and watching a video on a site such as YouTube.

Of course, one of the most dramatic changes in the media landscape is the explosion of mobile devices. Roughly two-thirds of young people between the ages of 8 and 18 own a cell phone, and nearly one-third have their own laptop (Rideout et al., 2010). It is rare these days to spend time with any teen who is not carrying a phone. And texting is a big part of teen communication (see Figure 1.7). One recent study found that the typical teen sends an average of 167 text messages a day (Lenhart, 2012). Older girls in particular have embraced this form of communication; girls between 14 and 17 years of age send an average of almost 200 texts a day, or 6,000 texts a month. Heavy texters are more likely to talk on their cell phones, more likely to spend time with friends outside of school, and more likely to use a social networking site than are their light-texting peers (Lenhart, 2012). In other words, heavy texters are socially active teens. Yet despite all these gadgets, teens report that they prefer using old-fashioned face-to-face communication to talk with friends (Rideout, 2012). Moreover, in a recent

**Figure 1.7**



SOURCE: Zits © 2005 Zits Partnership. Reprinted with permission of King Features Syndicate.



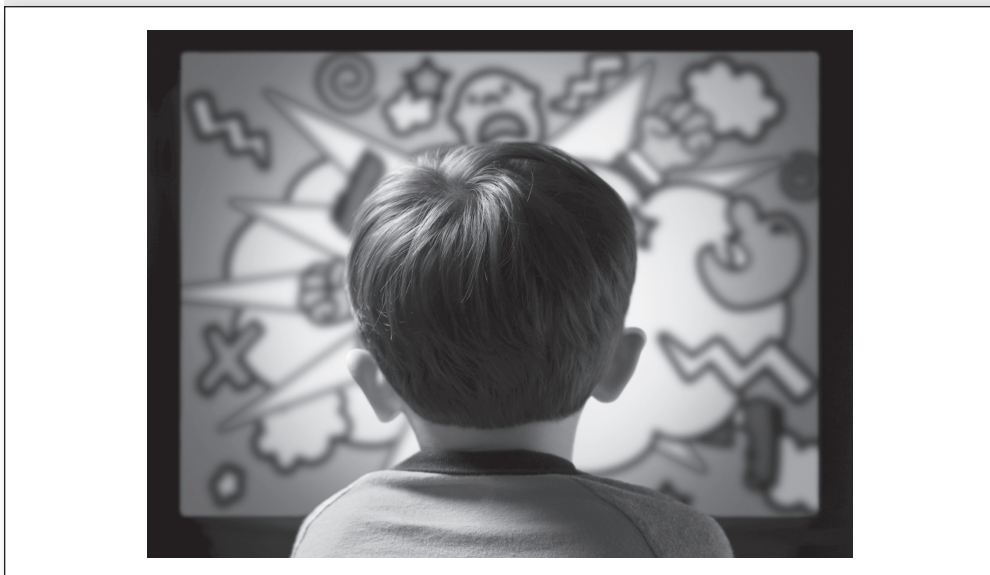
national survey of 1,000 13- to 17-year-olds, 43% agreed strongly or somewhat that they wished they could “unplug” sometimes (Rideout, 2012). In addition, 41% reported that they would describe themselves as “addicted” to their cell phone.

Most of the tracking of media habits has focused on older children and teens. However, infants and preschoolers are spending a fair amount of time with media as well. One national study surveyed over 1,000 parents of children ages 6 months to 6 years (Vandewater et al., 2007), age groups that many assume are too young to be involved much with media. Contrary to this assumption, the average American child between the ages of 6 months and 6 years spends about an hour and a half a day using media. Again, most of this time is spent watching television or videos and DVDs (see Figure 1.8). In fact, children younger than age 6 spend more time watching TV and videos than they do reading (or being read to) or playing outside. Perhaps most surprising, nearly 20% of children younger than age 3 have a TV set in their bedroom; roughly 40% of 3- to 6-year-olds have a TV in their room (see Figure 1.9). In a recent large-scale study of over 600 preschoolers, those who had a TV in their bedroom were significantly more likely to suffer from sleep problems, including daytime tiredness and difficulty falling asleep at night (Garrison, Liekweg, & Christakis, 2011).

American children are not so different from some of their counterparts abroad. One early study of more than 5,000 children living in 23 different countries found that the average 12-year-old spent three hours a day watching television (Groebel, 1999), a figure remarkably comparable to that found in the United States at the time. A more recent study of five Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden) found that 95% of young people in this region have Internet access in the home, but that television viewing remains the single most prominent leisure activity (Carlsson, 2010).

To summarize, youth today are confronted with a media environment that is rapidly changing. Technologies are proliferating, merging, more interactive, and mobile. Furthermore, the content featured in these technologies is increasingly graphic, realistic, and commercial in

**Figure 1.8** Children spend a great deal of time watching television each day.

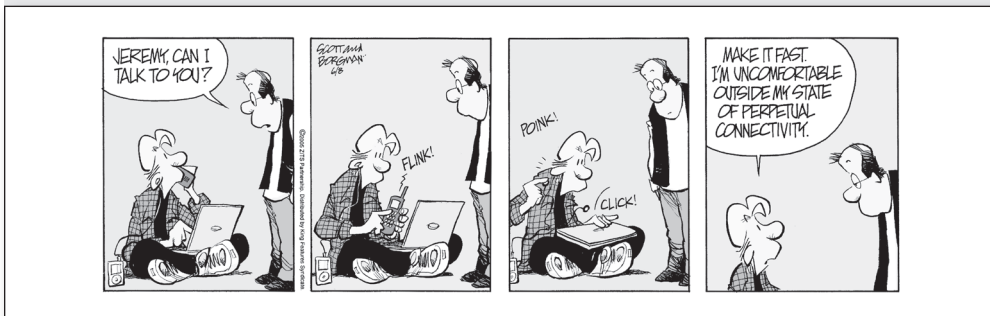


**Figure 1.9** Television sets are common in American children’s bedrooms.



nature. At the same time, media use is at an all-time high. Youth today spend anywhere from one-third to one-half of their waking hours with some form of media (see Figure 1.10). Preteens and teens frequently are engaging in more than one media activity at a time, making estimates of overall exposure more challenging. And much of this media use is becoming more private as children carry smartphones throughout their daily activities and then retreat to their bedrooms to watch TV, play video games, listen to music, or text their friends. We will now highlight several developmental principles that underscore the need to consider youth as a special audience in today’s media environment.

**Figure 1.10**



SOURCE: *Zits* © 2005 Zits Partnership. Reprinted with permission of King Features Syndicate.

## Children Are Different From Adults

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Most adults believe that they personally are not affected much by the media. In a well-documented phenomenon called the “third-person effect,” people routinely report that others are more strongly influenced by the media than they themselves are (Perloff, 2009). As an example, a recent study found that undergraduates perceived themselves to be less likely to be harmed by Facebook use in terms of privacy and future employment opportunities than were their closest friends, friends in their Facebook network, and even Facebook users in general (Paradise & Sullivan, 2012). This difference in perceived impact gets larger as the age of the “other” person decreases. In other words, adults perceive that the younger the other person is, the stronger the effect of the media will be (Eveland, Nathanson, Detenber, & McLeod, 1999). Interestingly, even children endorse a kind of third-person effect, claiming that only “little kids” imitate what they see on TV (Buckingham, 2000).

Are children more susceptible to media influence than adults are? At the extremes, there are two radically different positions on this issue (see Buckingham, 2011). One view is that children are naive and vulnerable and thus in need of adult protection. This stance sees the media as inherently problematic and in some cases evil because they feature material that children are simply not yet ready to confront. Buckingham (2000) points out that “media panics” have been with us a long time, especially those concerning the impact of sex and violence on children. Such panics gain steam any time a public crisis occurs, such as the massacre at Columbine High School, or any time a new and unknown form of media technology is developed (Wartella & Reeves, 1985).

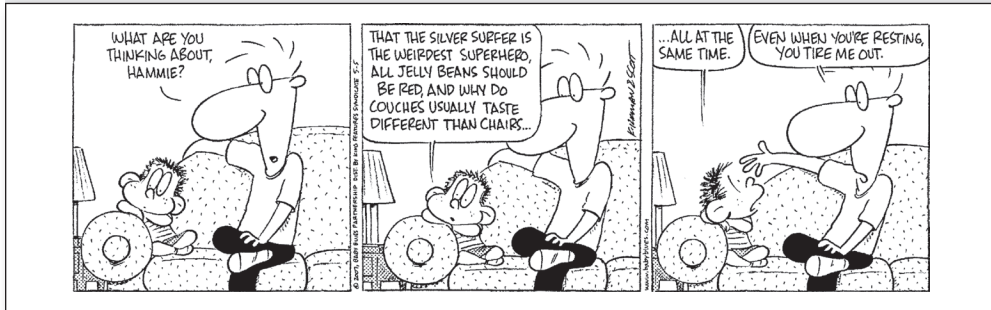
A contrasting view is that children are increasingly sophisticated, mature, and media savvy (Livingstone, 2002). According to this position, efforts to shield youth from media are too protectionist in nature, smack of paternalism, and construe children as acted upon instead of actors. Instead, children should be empowered to take control of their own media experiences, negotiating and learning along the way. Buckingham (2000) noted that this position is widely shared among those who see children as independent consumers who should be able to spend their own money and buy what they want.

These very different perspectives illustrate that notions of childhood are constantly being defined, debated, and renegotiated over the course of history (James, Allison, Jenks, & Prout, 1998). In truth, neither of these extreme positions seems very satisfying. Children are not entirely passive in the face of the media, nor are they extremely worldly and discriminating. The reality is probably somewhere in between. Nevertheless, most parents, developmental psychologists, policymakers, and educators would agree that children are not the same as adults (see Figure 1.11).

Several features of childhood support this distinction. First, children bring less real-world knowledge and experience to the media environment (Dorr, 1986). Every aspect of the physical and social world is relatively new to a young child, who is busy discovering what people are like, how plants grow, what animals eat, and where one neighborhood is located relative to another. As they get older, children explore increasingly abstract concepts and ideas such as the social norms of their culture, what prejudice is, and how life begins. In almost every arena, though, children possess a more limited knowledge base compared to adults.

One implication of this is that children can fail to understand a media message if they lack the background knowledge needed to make sense of the information. As an illustration,

Figure 1.11



SOURCE: *Baby Blues* © 2007 Baby Blues Partnership. Reprinted with permission of King Features Syndicate.

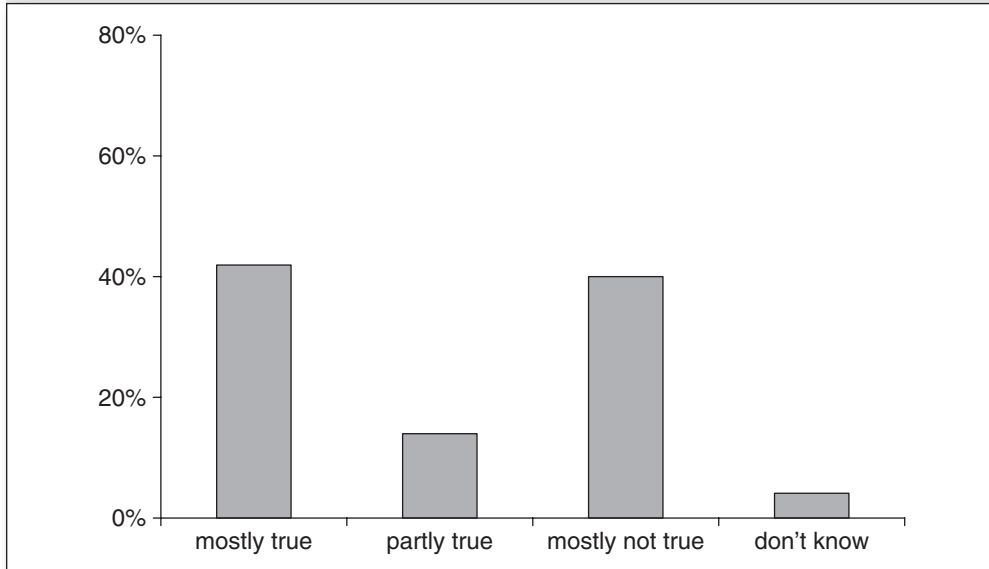
in 1996, researchers at the Children's Television Workshop (now called Sesame Workshop) wanted to produce a *Sesame Street* segment about visiting the doctor. On the basis of preliminary interviews, the researchers discovered that preschoolers mostly associated doctor visits with getting shots and that they had little knowledge of the importance of such vaccinations ("Feeling Good," 1996). Had the producers not discovered this, they might have created a script that focused too much on getting shots, inadvertently reinforcing children's negative and limited impressions of the purpose of going to a physician.

As another example, researchers working on the *Sesame Street* website wanted to create an activity that would help preschoolers learn about email. In developing the "Sesame Street Post Office," the researchers discovered that preschool children have little, if any, experience with email or with composing letters (Revelle, Medoff, & Strommen, 2001). In other words, the children's background knowledge was quite limited. Taking this into account, the post office activity was designed to be very concrete by having the child choose a Muppet to email from a set of pictures of Muppets and then choose questions to ask from a set tailored to each Muppet. The child's message was displayed on the screen before it was sent so that children could see how their choices influenced the composed letter. Researchers also determined that adding a "Dear [name of Muppet]" to the beginning of the email and a "Your friend, [name of child]" to the end of it helped children understand the conventions of letter writing.

The lack of real-world knowledge can also make children more willing to believe the information they receive in the media. It is difficult to evaluate a story for accuracy or truthfulness in the face of no alternative data. An adult watching a TV advertisement is able to evaluate that message in the context of knowledge about the television industry as well as a vast array of personal experiences with purchasing products. A child, on the other hand, rarely has this rich set of knowledge structures on which to rely. As an illustration, Figure 1.12 presents children's perceptions of how truthful advertisements are (Chan, 2001). In a sample of over 400 children ages 5 to 12, a full 42% reported that television advertising is "mostly true." Given this level of trust, a young child seems fairly defenseless when confronted with a slick TV ad that costs thousands of dollars to produce and may yield millions of dollars in sales profit.

A second feature that distinguishes childhood from adulthood is the strong eagerness to learn that marks the early years (Dorr, 1986). Parents find this tendency exhausting sometimes,

**Figure 1.12** Children's (5–12 years of age) perceptions of the truthfulness of TV advertising.



SOURCE: Adapted from Chan (2001).

as their infant daughter puts one more object in her mouth or their preschool son asks for the 20th time, “What’s that?” or “Why?” Such curiosity is a hallmark of childhood and is celebrated by educators. But it means that children are as open to learn from the mass media as from other sources, particularly in situations where firsthand experience is not possible. For example, most American children are not able to visit Japan, but they can learn about the country by reading a book or viewing a TV documentary. A preschooler can even watch *Big Bird in Japan*, a Sesame Workshop production available on DVD or even YouTube. These examples show the educational benefits of the media. Unfortunately, a child could also learn about Japan by visiting a website created by a hate group that disparages people of Asian descent.

A third feature that characterizes childhood is a relative lack of experience with the media. Admittedly, these days some children are actually more media savvy than their parents are. Indeed, many children know how to take and store photos on a smartphone or program the digital video recorder while their parents still fumble with these technologies. One study found that 19% of children younger than age 6 were able to turn on the computer by themselves (Rideout & Hamel, 2006). But with most media, it is still the case that adults have spent more time with the technology. Adults readily appreciate, for example, that the placement of a story in a newspaper signals something about its importance, that public television is a noncommercial channel in contrast to the broadcast networks, and that there are different genres and subgenres of movies. In contrast, children often show an incomplete understanding of production techniques such as dissolves and split screens (Beentjes, deKoning, & Huysmans, 2001), have difficulty distinguishing nightly news programs from tabloid news shows such as *Inside Edition* and *Current Affair* (Wilson & Smith, 1995), and do not fully appreciate the commercial nature of most media in the United States (Dorr, 1980). This lack of familiarity with the technical forms and structure of the media makes a child less able to critically evaluate the content presented.

To summarize, children differ from adults in a number of ways that have implications for responding to the media. Younger age groups have less experience with the real world and at the same time possess a strong readiness to learn about those things with which they are unfamiliar. They also tend to be less savvy about the nature, intricacies, and potential distortions of the media. Such naïveté makes a preschooler and even an elementary schooler more likely to believe, learn from, and respond emotionally to media messages than is a more mature and discriminating adult.

## Children Are Different From Each Other

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It may be easier to recognize that children are different from adults than it is to appreciate how much children differ from one another. In some ways, the label *children* itself is misleading because it encourages us to think of a fairly homogeneous group of human beings. As the *Monsters, Inc.* example at the start of this chapter illustrates, a 4-year-old thinks and responds to the world very differently than a 10-year-old does. But even a group of 4-year-olds will exhibit marked differences in how they respond to the same situation. In fact, sometimes it is difficult to believe that two children are the same age or in the same grade level.

On any elementary school playground, kindergartners can be readily distinguished from 5th graders—they are shorter in height and normally weigh less. Their heads are smaller, they dress differently, and they tend to be more physically active. But even more profound differences exist in their cognitive functioning. Younger children attend to and interpret information in different ways than do their older counterparts. Several influential perspectives on children's development support this idea, including Piaget's (1930, 1950) theory of cognitive development as well more recent models of information processing (Flavell, Miller, & Miller, 2002; Siegler, 2005).

Age is often used as a marker of these differences in cognitive abilities, although there is tremendous variation in how and when children develop. Still, most research reveals major differences between preschoolers and early elementary schoolers (3–7 years of age) on the one hand and older elementary school children (8–12 years of age) on the other, in terms of the strategies they use to make sense of the world (Flavell et al., 2002). These strategies have important implications for how children respond to mass media, as will be discussed below in the section titled “Developmental Differences in Processing the Mass Media.”

Cognitive development is not the only factor that distinguishes children from each other. Personality differences also set children apart. For instance, some children are withdrawn or inhibited in unfamiliar situations, whereas others are not (Kagan & Snidman, 2004). Children also differ in the degree to which they possess prosocial dispositions toward others (Eisenberg, Fabes, & Spinrad, 2006), the degree to which they are capable of regulating their emotions (Stegge & Terwogt, 2007), and the degree to which they enjoy novel or stimulating situations (Zuckerman, 1994).

Research consistently shows sex differences among children, too. For example, girls tend to prefer activities that are less vigorous than the ones boys tend to choose (Eaton & Enns, 1986), and boys typically are more physically aggressive (Kistner et al., 2010). In terms of cognitive skills, girls generally obtain higher grades in school and do better on tests involving writing, whereas boys do better on visual-spatial tasks (Halpern, 2004).



The fact is that children, even those who share biological parents and are raised in the same environment, differ on many dimensions. And children themselves recognize these differences early in development. For example, children become aware of their own gender by around age 2 (Berk, 2000). During the preschool years, they begin formulating mental conceptions of activities, norms, attributes, and scripts that are associated with being male or female (Ruble et al., 2007). Young children's initial understanding of gender as a social category is often based on superficial qualities such as hair length and dress. As they enter elementary school, children's conceptions grow more sophisticated, and they become keenly interested in gender role information in the culture. They actively search for cultural meanings about gender in their homes, on the playground, and in the media (see Bussey & Bandura, 1999). In other words, the unique characteristics that differentiate children in turn get represented and reinforced in the culture.

All of these unique characteristics make it difficult to come up with a single prototype for what a child is like. Therefore, when we make generalizations about children and the media, we must be careful to take into account the developmental, personality, and gender characteristics of the individuals involved.

## Adolescents Are Different From Children

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Although we cannot generalize about all children, we can clearly differentiate them as a group from their older counterparts—teenagers. Parents certainly appreciate this transformation as they watch their warm, cuddly 12-year-old turn into an emotionally distant and independent 13-year-old. Of course, this developmental progression does not happen evenly or all at once. But the changes are reflected in a variety of activities and interests that a young person has, including media preferences. For example, children under the age of 12 prefer watching cartoons and animated movies on television, many of which involve fantasy themes (see Table 1.1). In contrast, viewers between the ages of 12 and 17 prefer reality shows and sitcoms that focus on teenage issues. There is some overlap in the list of top 10 TV programs for these two age groups, but the differences are striking.

Adolescence is often characterized as a time of challenge and turbulence (Roth & Brooks-Gunn, 2000). Along with bodily changes that can be quite dramatic, teens are faced with increased independence and growing self-discovery. Scholars of adolescent development refer to these changes as developmental transitions or passages between childhood and adulthood (Arnett, 1992a). In other words, the sometimes stormy periods are a necessary and normal part of growing up (Gondoli, 1999).

Unfortunately, parents and even the general public often view the teenage years with some trepidation. One national poll revealed that 71% of adults described teenagers negatively, using terms such as *irresponsible* and *wild* (Public Agenda, 1999). Some of this public opinion is likely fueled by the media's preoccupation with high-profile cases of troubled teens who become violent. Contrary to public opinion, though, most teens are able to navigate adolescence in a socially responsible way, learning new competencies and new roles on the path to adulthood (Graber, Brooks-Gunn, & Petersen, 1996).

What are some of the developmental hallmarks of adolescence? One of the main challenges a teen faces is identity formation (Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2010). During the teenage years, boys and girls alike begin to ask questions about who they are and how they



**Table 1.1** Top 10 Programs for the 2010–2011 Season

<b>Viewers Ages 2–11</b>			
<b>Rank</b>	<b>Program</b>	<b>Channel</b>	<b>Genre</b>
1	<i>Phineas and Ferb</i>	Disney Channel	Animated movie
2	<i>Toy Story 2</i>	Disney Channel	Animated movie
3	<i>Bolt</i>	Disney Channel	Animated movie
4	<i>American Idol – Wednesday</i>	FOX	Reality
5	<i>A Fairly Odd Movie: Grow Up, Timmy Turner!</i>	Nickelodeon	Movie
6	<i>SpongeBob SquarePants</i>	Nick at Nite	Cartoon
7	<i>Big Time Rush</i>	Nick at Nite	Teen sitcom
8	<i>American Idol – Thursday</i>	FOX	Reality
9	<i>The SpongeBob SquarePants Movie</i>	Nickelodeon	Animated movie
10	<i>The Adventures of Sharkboy and Lavagirl</i>	Disney Channel	Movie
<b>Viewers Ages 12–17</b>			
<b>Rank</b>	<b>Program</b>	<b>Channel</b>	<b>Genre</b>
1	<i>American Idol – Wednesday</i>	FOX	Reality
2	<i>American Idol – Thursday</i>	FOX	Reality
3	<i>Glee</i>	FOX	Musical comedy-drama
4	<i>America's Got Talent – Tuesday</i>	NBC	Reality
5	<i>The Voice</i>	NBC	Reality
6	<i>America's Got Talent – Wednesday</i>	NBC	Reality
7	<i>Family Guy</i>	FOX	Animated sitcom
8	<i>Big Time Rush</i>	Nick at Nite	Teen sitcom
9	<i>iCarly: iParty With Victorious</i>	Nickelodeon	Teen sitcom
10	<i>The Game Plan</i>	Disney	Movie

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differ from their parents. This emerging sense of the self is fragile and malleable as teens “try on” different appearances and behaviors. An article in *Newsweek* magazine described the teen years like this: “From who’s in which clique to where you sit in the cafeteria, every day can be a struggle to fit in” (Adler, 1999, p. 56). As this quote suggests, the process of identity formation is highly social in nature, with teens working to integrate different facets of themselves as they encounter others at school, at work, and during leisure activities (Crosnoe & Johnson, 2011). Today’s youth even use the media to grapple with their identities. For example, one study of

20 female teen bloggers found that the girls used LifeJournal as a digital space for self-expression and “self-theorizing” (Davis, 2010). Another study found that 50% of 9- to 18-year-olds who used the Internet had pretended to be somebody else while communicating by email, instant messaging (IM), or chat (Valkenburg, Schouten, & Peter, 2005). Teens also spend a great deal of time posting photographs, videos, and personal information on popular websites such as Facebook, YouTube, and Twitter. As they experiment with ways of expressing themselves online, teens may be working through the psychosocial process of understanding who they are and how they feel about their emerging identity (Valkenburg & Peter, 2011).

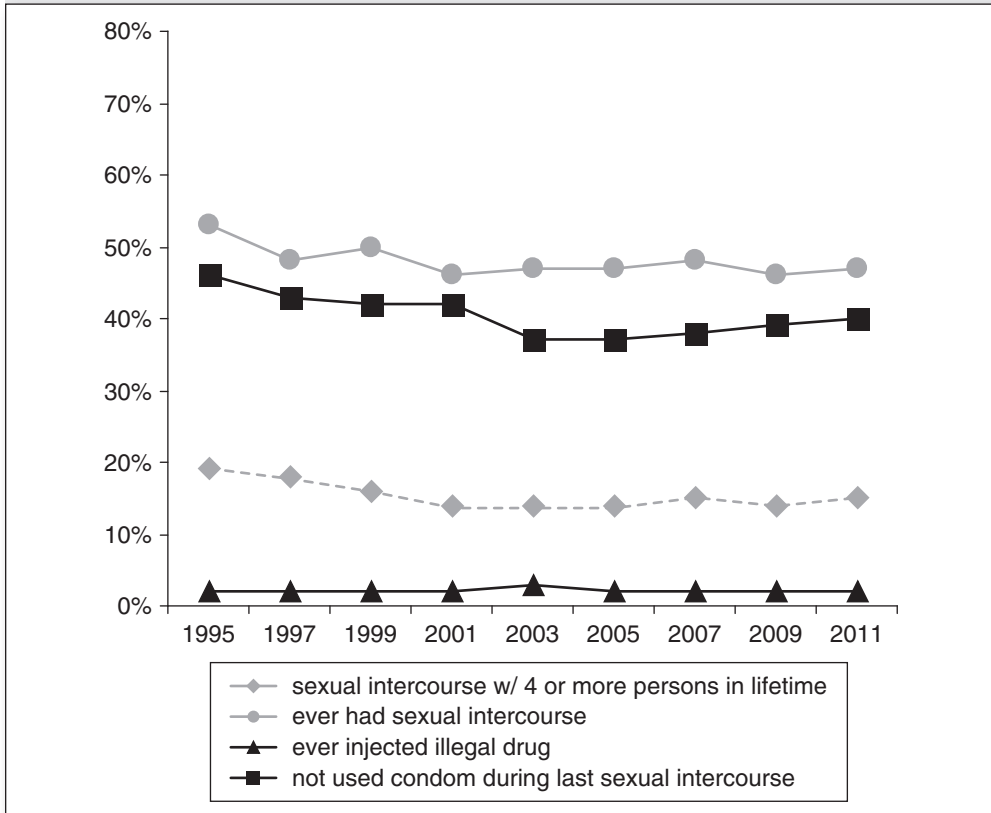
A second challenge of adolescence is increased independence. Parents naturally feel less need to supervise a 13-year-old who, unlike a 5-year-old, can dress, study, and even go places alone. Teens often have jobs outside the home and by age 16 can typically drive a car, furthering their autonomy. In one study, the percentage of waking hours that teens spent with their families fell from 33% to 14% between the 5th and 12th grade (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996).

Time away from parents can provide teens with opportunities to make independent decisions. It also can allow for experimentation with a variety of behaviors, some of which are not very healthy. A large national study involving more than 90,000 adolescents in Grades 6 to 12 found strong differences between teens who regularly ate dinner with a parent and those who did not (Fulkerson et al., 2006). In particular, teens who spent less dinner time with parents showed significantly higher rates of smoking, drinking, depression, violence, and school problems, even after controlling for family support and family communication. The direction of causality is difficult to pinpoint here because it may be that troubled teens simply choose to spend less time at home. However, other studies have also documented the importance of parent involvement as a buffer against unhealthy behaviors during the teenage years (Cookston & Finlay, 2006).

This point leads us to a third feature of adolescence—risk taking. Today’s teens face tough decisions regarding a number of dangerous behaviors such as smoking, drug use, and sexual activity. And there is no doubt that adolescence is a time of experimentation with reckless activities (Santelli, Carter, Orr, & Dittus, 2009). For example, 1.4 million American youth under the age of 18 started smoking cigarettes for the first time in 2010 (National Survey on Drug Use and Health, 2010). Furthermore, a recent national survey revealed that 47% of 9th through 12th graders reportedly have had sexual intercourse (Centers for Disease Control and Prevention, 2011). The same study found that 17% of the teens had carried a weapon (i.e., gun, knife, or club) during the 30 days preceding the survey, 39% had drunk alcohol, 23% had used marijuana, and 40% of sexually active students had not used a condom (see Figure 1.13). Moreover, 24% had ridden in a vehicle in the last 30 days that was driven by someone who had been drinking.

Some of this risk taking may be a function of what scholars have labeled “adolescent egocentrism” (Elkind, 1967, 1985; Schwartz, Maynard, & Uzelac, 2008). In particular, teenagers often seem preoccupied with their own thoughts and appearance and assume others are equally interested in their adolescent experiences. This view of the self as unique and exceptional can in turn lead to a feeling of invulnerability to negative consequences (Greene, Krcmar, Walters, Rubin, & Hale, 2000). In other words, self-focused teens think they are different from everyone else and that tragedies occurring to others “won’t happen to me.” Indeed, studies show that teens routinely underestimate their own personal chances of getting into a car accident compared with the risks they assume others face (Finn & Bragg, 1986). Similar misjudgments have been found among sexually active young girls who underestimate the likelihood that they themselves might

**Figure 1.13** Percentage of U.S. high school students who reported engaging in risk-related behaviors over the last two decades.



SOURCE: Adapted from Centers for Disease Control and Prevention (2012).

get pregnant (Gerrard, McCann, & Fortini, 1983). One study linked this type of optimistic bias to teen smoking. Song, Glantz, and Halpern-Felsher (2009) surveyed over 300 ninth graders every six months for two years. They found that adolescents who perceived low risk associated with being exposed to secondhand smoke were more likely to start smoking in subsequent months than were those who perceived secondhand smoke to be risky. Risk taking can also be viewed as an adolescent's effort to assert independence from parents and to achieve adult status (Jessor, 1992). However, not all teens engage in reckless behaviors, and even the ones who do seldom limit their activities to those legally sanctioned for adults. Arnett (1995) argued that risk taking must be viewed in the larger context of an adolescent's socialization. Some teens experience *narrow socialization*, which he characterized as involving strong allegiance to the family and community, clear expectations and responsibilities, unambiguous standards of conduct, and swift sanctions for any deviation from those standards. Other teens are raised in an environment of *broad socialization*, where independence and autonomy are encouraged, standards of conduct are loose or even self-determined, and enforcement of standards is lenient and uneven. Arnett argued that in addition to parents, the schools, the legal system, and even the media contribute to these overarching patterns of socialization. As might be expected, risk taking is more prevalent in cultures in which socialization is broad rather than narrow (see Arnett, 1999, for a review).

A fourth feature of adolescence is the importance of peers. Teens spend a great deal of time with friends and place a high value on these relationships (Rubin, Bukowski, & Parker, 2006). On average, teens spend up to one-third of their waking hours with friends (Hartup & Stevens, 1997). In her controversial book *The Nurture Assumption: Why Children Turn Out the Way They Do*, Judith Harris argued that parents have a minimal influence on their child's development other than to nurture and shape the child's peer group (Harris, 1998). Peer groups certainly do make a difference during adolescence. Studies have documented the role of peers in the initiation and continuation of behaviors such as cigarette smoking (Scherrer et al., 2012), drug use (Creemers et al., 2009), and sexual intercourse (Whitbeck, Yoder, Hoyt, & Conger, 1999). Engaging in reckless behavior often helps a teen become a member of a peer group, and the group itself can foster a sense of collective rather than individual invincibility (Arnett, 1992a).

But peer influence is not as straightforward and not necessarily as negative as some might assume. Friends actually can be a source of support for teens and can also increase self-esteem (Wilkinson, 2004). Generally, adolescents are more susceptible to *antisocial* peer pressure when they have more delinquent than nondelinquent friendships (Haynie, 2002), when they have poorer relationships with their parents (Dishion, 1990), and when they are alienated from community support structures such as schools (Arnett, 1992b; Resnick et al., 1997).

Last but not least, puberty and sexual development are hallmarks of adolescence. Body hair, acne, muscle growth, and weight gain are only a few manifestations of the dramatic physical changes that occur during the teenage years. Puberty typically begins during early adolescence, around age 9 or 10 for girls and roughly one to two years later for boys (Archibald, Graber, & Brooks-Gunn, 2003), although there are large individual variations. As their bodies change, many teens also experience an increased energy level as a function of significant changes in their endocrine system (Petersen & Taylor, 1980). Furthermore, increased production of androgens and estrogens stimulates the growth of reproductive organs (see Rekers, 1992).

As might be expected, the hormonal and physical changes associated with puberty are accompanied by an increased interest in sexuality. In one study, for example, 12- to 15-year-old girls who were more physically mature (i.e., had experienced earlier puberty) reported a greater interest in seeing sexual content in the movies, television, and magazines than did those who were less mature (J. D. Brown, Halpern, & L'Engle, 2005). Thus, at some point during adolescence, most teens will become intensely curious about sex and will seek information about sexual norms, attitudes, and practices in their culture. It is no accident, then, that popular teen magazines devote a great deal of space to sexual issues and relationships (Walsh-Childers, 1997).

Whether the teenage years are characterized as tempestuous or transitional, there is no doubt that significant developmental changes occur during this period. Adolescents spend more time alone or with friends and less time with parents. This growing independence comes at the same time that teens are exploring their identities and their sexuality. The challenge is to provide these young people with enough latitude as well as guidance so that the decisions they make will result in a healthy rather than risky lifestyle.

## Developmental Differences in Processing the Mass Media

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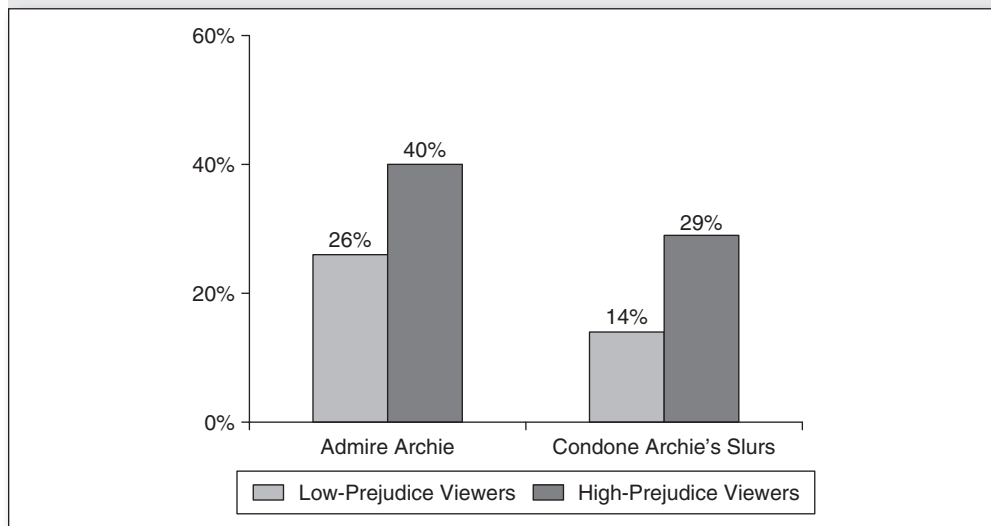
So far, we have focused on broad developmental features that characterize childhood and adolescence and that differentiate these periods from adulthood. Now we will turn our attention more directly to young people's interactions with the media. Any individual who

confronts a mediated message must make sense of and interpret the information presented. Like adults, children and adolescents construct stories or readings of media messages that they encounter (Dorr, 1980). Given some of the pronounced differences in experience and maturation described above, we can expect that interpretations of the same content will vary across the life span. That is, a young child is likely to construct a different story from a TV program than an older child or teenager will.

These different interpretations may seem “incorrect” or incomplete to an adult viewer. But even among mature adult viewers, there are differences in how people make sense of stories. For example, one early study looked at people’s reactions to the 1970s TV sitcom *All in the Family*, featuring a bigoted character named Archie Bunker (Vidmar & Rokeach, 1974). The research revealed that interpretations of the program varied widely based on individual attitudes about race. Viewers who held prejudiced attitudes identified with Archie Bunker and saw nothing wrong with his racial and ethnic slurs (see Figure 1.14). In contrast, viewers who were less prejudiced evaluated Archie in negative ways and perceived the program to be a satire on bigotry.

What cognitive activities are involved when a young person watches a television program, enjoys a movie, or plays a video game? In general, five mental tasks are involved (Calvert, 1999; Collins, 1983). First, the child needs to select important information for processing. When viewing television, for example, a multitude of auditory and visual signals are presented in a particular program or advertisement. Moreover, there are cues in the environment that often compete with the television, such as family members talking in the background or loud music from another room. A viewer must allocate attention to these myriad cues, consciously or unconsciously filtering out what is not essential and instead focusing on what is important in the situation.

**Figure 1.14** Adults’ reactions to the TV show *All in the Family* as a function of viewer prejudice.



SOURCE: Adapted from Vidmar and Rokeach (1974).

Second, the child needs to sequence the major events or actions into some kind of story. Most media messages feature a narrative or storyline (Grossberg, Wartella, & Whitney, 1998). Television plots are the easiest example of this, but even an advertisement, a video game, a song, or a radio program conveys a story.

Third, the child needs to draw inferences from implicit cues in the message. The media do not have the space or the time to explicitly present all aspects of a story. Television programs jump from one location to another, characters in movies have dreams or experience flashbacks, and even characters in video games travel in ways that are not always orderly or linear. A sophisticated consumer recognizes the need to “read between the lines” to fill in the missing information. But a young child may fail to recognize that time has passed between scenes (Smith, Anderson, & Fischer, 1985), that the events depicted are only part of a dream (Wilson, 1991), or that a flashback to earlier events in the plotline has occurred (Durkin & Lowe, 1999).

Fourth, to make sense of both explicit and implicit cues in the message, a child must draw on the rich database of information he or she has stored in memory that relates to the media content. For instance, a child who lives in a rural community will have an easier time making sense of a movie about a family that loses a farm to bank foreclosure than will a child who lives in an apartment complex in New York City. This rich set of past experiences and acquired knowledge forms a mental database that helps a child interpret new messages.

Fifth, the child will typically evaluate the message in some way. The simplest evaluation pertains to liking or not liking the message. Children as young as 2 years of age already show preferences for certain types of TV programs, such as those featuring puppets and young characters (Lemish, 1987; Rideout & Hamel, 2006). One mother described her preschool daughter’s attachment to a televised purple dinosaur in the following way: “She played the Barney tape every single hour that she was awake the entire weekend. And if we tried to turn it off, she’d be screaming, yelling, crying” (Alexander, Miller, & Hengst, 2001, p. 383). As children grow older, they become increasingly sophisticated and critical of media messages (Potter, 2010). Not only are they capable of evaluating the content, but they also begin to appreciate the forms, economic structure, and institutional constraints that characterize different media (Dorr, 1980). An adolescent, for example, may reject all mainstream American television programming because of its inherent commercialism.

Given this set of tasks, we can expect that children will process media messages in different ways across development. We now describe some of the major shifts in cognitive processing that occur during the transition from early to middle childhood and during the transition from late childhood to adolescence. By no means is this list exhaustive; instead, it reflects some of the skills that are most relevant to interacting with the media (for further reading, see Dorr, 1980; Flavell et al., 2002; Wilson & Drogos, 2009). We will end this chapter with a topic receiving a great deal of interest these days: How do infants and toddlers interact with the media?

Two caveats need to be noted here. First, most of the changes highlighted below occur gradually rather than abruptly during development (Flavell et al., 2002). Piaget (1950, 1952) argued that younger children’s thinking is qualitatively different from that of older children, such that their cognitive systems progress through distinct stages (i.e., sensorimotor, approximately 0–2 years of age; preoperational, 2–7 years; concrete operational, 7–11 years; formal operational, 11 years and older). However, research indicates that cognitive performance can be uneven across different types of tasks and that children exhibit varied skill levels even

within a particular domain (Siegler, 2005). Thus, it is widely believed that development is far less stagelike or abrupt than Piaget's theory would have us believe.

Second, the ages during which these shifts occur vary markedly across children. For rough approximations, we define younger children as those between 2 and 7, older children as those between 8 and 12, and adolescents as those between 13 and 18.

## Younger Children Versus Older Children

*From Perceptual to Conceptual Processing.* Preschoolers pay close attention to how things look and sound. This focus on salient features has been referred to as *perceptual boundedness* (Bruner, 1966). Perceptual boundedness is defined as an overreliance on perceptual information at the expense of nonobvious or unobservable information that may be more relevant (Springer, 2001). For example, preschoolers frequently group objects together based on shared perceptual features such as color or shape (Bruner, Olver, & Greenfield, 1966; Melkman, Tversky, & Baratz, 1981). In contrast, by age 6 or 7, children have begun sorting objects based on conceptual properties such as the functions they share (Tversky, 1985). With regard to the media, studies show that younger children pay strong visual attention to perceptually salient features such as animation, sound effects, and lively music (Anderson & Levin, 1976; Calvert & Gersh, 1987; Schmitt, Anderson, & Collins, 1999). Older children, on the other hand, tend to be more selective in their attention, searching for cues that are meaningful to the plot rather than those that are merely salient (Calvert, Huston, Watkins, & Wright, 1982).

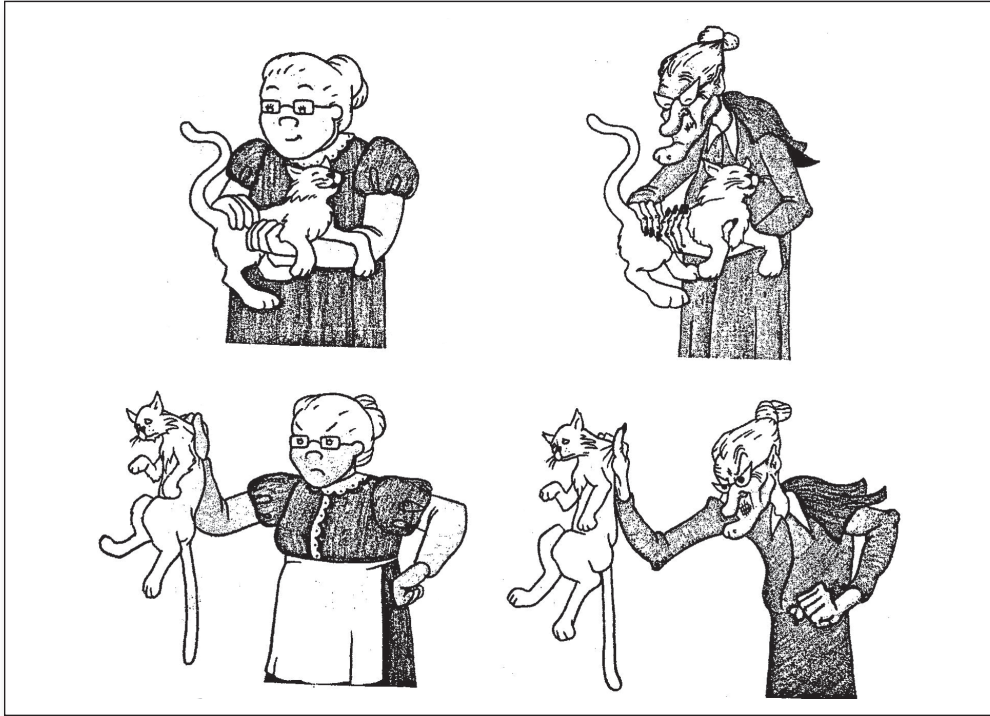
One creative experiment involving television revealed this distinction quite clearly. Hoffner and Cantor (1985) exposed children to a television character who was either attractive or ugly and who acted kind toward others or was cruel (see Figure 1.15). Preschoolers generally rated the ugly character as mean and the attractive character as nice, independent of the character's actual behavior. In other words, their evaluations were strongly affected by the character's physical appearance. Older children's judgments, in contrast, were influenced more by the character's behavior than her looks.

Why are younger children so perceptual in their focus? Tversky (1985) has argued that all children can be swayed by strong perceptual cues in a situation, but that as they develop children come to suppress immediate, salient responses in favor of slower, more thoughtful ones. This shift is undoubtedly fostered by the acquisition of knowledge that is conceptual in nature, such as the idea that motives are an important predictor of behavior. Children of all ages, and even adults, are also less likely to be swayed by perceptual cues when they are dealing with situations and tasks that are familiar (Springer, 2001).

We can apply this developmental trend in perceptual boundedness to the example at the beginning of this chapter. The preschool child is transfixed by the monsters' strange physical appearance, reacting with fright when she sees their distorted forms. In contrast, the older child is able to minimize the characters' looks and instead focus on the creatures' behavior and motivation.

*From Centration to Decentration.* As noted above, children and even adults can respond strongly to salient features in a message. But another characteristic of younger children's thinking is that they often focus on a single striking feature to the exclusion of other, less striking features. This tendency has been called *centration* and is illustrated in some of Piaget's classic liquid conservation tasks (see Ginsburg & Oppen, 1979). In these tasks, a child is shown



**Figure 1.15** Four characters differing in appearance and behavior.

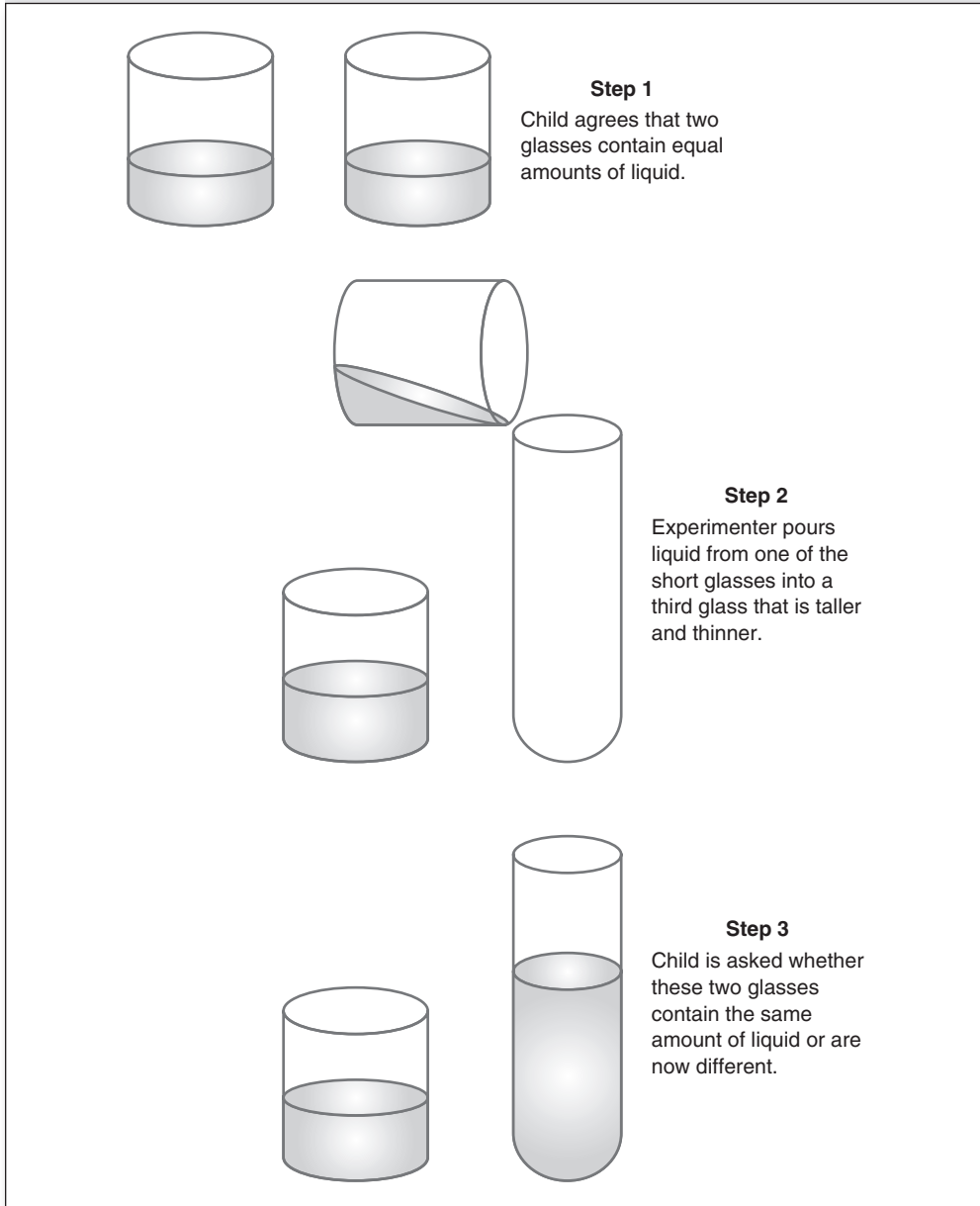
SOURCE: From Hoffner and Cantor (1985). Copyright ©American Psychological Association. Reprinted with permission.

two glasses containing identical amounts of water. Once the child agrees that the amounts are identical, the experimenter pours the water from one glass into a third glass, which is taller and thinner (see Figure 1.16). The experimenter then asks the child whether the two amounts of liquid are still identical or whether one glass now contains more water. The typical preschooler concludes that the taller glass has more liquid in it. Why? Because the taller glass *looks* as if it has more in it. In other words, the differential height of the liquids captures most of the preschooler's attention.

In contrast, older children are increasingly able to “decenter” their attention and take into account the full array of perceptual cues. The liquid in one glass is higher, but that glass also has a different shape to it. It is taller and thinner. Also, pouring the liquid from one container to another does not change the quantity. The amount of liquid stays the same. By recognizing that the liquid is the same, the older child is able to *conserve* continuous quantities.

The same developmental differences are found with other types of conservation tasks. For example, two rows of six pennies can be laid out next to one another in one-to-one correspondence. If one row is then compressed, a younger child is likely to perceive it as containing fewer coins because it is now shorter (Ginsburg & Oppen, 1979). In contrast, the older child notes all the perceptual data in the situation and recognizes that the number of pennies is unchanged or “conserved” despite appearances.

**Figure 1.16** A typical Piagetian conservation task.



O'Bryan and Boersma (1971) documented these differences further by examining children's eye movements during conservation tasks. They found that younger children who are unable to conserve or master the task correctly tend to fixate on a single dimension, such as the height of the liquid in a glass. Older children who are able to conserve show more varied eye movements, shifting their gaze over many parts of the testing display.

Applying the idea of centration to the media, younger children are likely to respond strongly to a single feature in a television or movie scene, such as a character's red dress or a

hero's shiny weapon. The prominence of the cues as well as the child's own interests will help determine what is most salient. Other perceptual cues such as the character's hair color, name, physical size, and even certain overt behaviors may go unnoticed. In emotional stories, for example, a character's feelings are often conveyed through facial expressions as well as situational information in the plot. Younger children will be more likely to fixate on one or the other of these sets of cues, even when they conflict (Wiggers & van Lieshout, 1985). Thus, in some cases, we can expect that this centration will interfere with a young child's comprehension of the storyline (see Figure 1.17).

*From Perceived Appearance to Reality.* Another important cognitive skill during childhood concerns the ability to distinguish fantasy from reality. Much to a parent's amazement, a 3-year-old child may attribute life to an inanimate object such as a rock, have an invisible friend, and want Dora from *Dora the Explorer* to come over to the house for a play date. All of these tendencies reflect a fuzzy separation between what is real and what is not.

Numerous studies have found strong developmental differences in children's perceived reality of television (see Dorr, 1983; Wright, Huston, Reitz, & Piemyat, 1994). Younger children between the ages of 2 and 3 show little understanding of the boundary between television and the real world (Jaglom & Gardner, 1981). In fact, at this age, children routinely talk to the television set and wave at the characters (Noble, 1975). For example, in one study, many 3-year-olds reported that a bowl of popcorn shown on TV would spill if the television set were turned upside down (Flavell, Flavell, Green, & Korfmacher, 1990).

By around age 4, the young child begins to appreciate the representational nature of television but still tends to assume that anything that *looks* real is real (M. H. Brown, Skeen, & Osborn, 1979). This literal interpretation has been called the "magic window" perspective, reflecting the idea that young children naively assume that television provides a view of the real world. Gradually, children come to appreciate that some of what is shown on television is not real, although most of this centers first on perceptual cues. For example, 5-year-olds typically judge cartoons as not real because they feature physically impossible events and characters (Wright et al., 1994). In other words, the young child assesses content by looking for striking violations of physical reality (Dorr, 1983). It is important to note, though, that these emerging distinctions are initially quite fragile. Young children may be able to report that an animated character is "not real" yet still become quite frightened of it (Cantor, 1998). In one study



SOURCE: PEANUTS reprinted by permission of United Features Syndicate, Inc.

(Woolley, Boerger, & Markman, 2004), preschoolers were introduced to a novel fantasy creature named the “Candy Witch,” and even 5-year-olds believed she was real and not “pretend,” particularly if the witch purportedly visited their homes at night and left candy. In a more recent study, 5-year-olds were just as willing to follow advice from a computer-generated TV character as from a live person, whereas 7- and 9-year-olds responded only to the person (Claxton & Ponto, 2013).

As children mature, they begin to use multiple criteria for judging reality in the media (Hawkins, 1977). Not only do they notice marked perceptual cues, but they also take into account the genre of the program, production cues, and even the purpose of the program. Most important, older children begin to judge content based on how similar it is to real life (M. H. Brown et al., 1979). Although they recognize that much of television is scripted, older children are likely to judge a scene or a program as realistic if it depicts characters and events that are *possible* in the real world (Dorr, 1983; Hawkins, 1977). In one survey, 28% of 2nd and 3rd graders and 47% of 6th graders spontaneously referred to “possibility” criteria in judging whether a series of characters and events on television were realistic (Dorr, 1983). In contrast, only 17% of kindergartners used this type of criteria. These trends are congruent with research on language comprehension, which suggests that the concept of possibility is not fully understood until around 8 years of age (Hoffner, Cantor, & Badzinski, 1990; Piaget & Inhelder, 1975).

Obviously, a child’s personal experiences will place a limit on how sophisticated these reality judgments can be. As an illustration, Weiss and Wilson (1998) found that elementary schoolers rated the TV sitcom *Full House* as very realistic, indicating on average that “most” to “all” real-life families are like the family featured in this program. These perceptions seem a bit naive given that the program was about a widowed father raising his three daughters with live-in help from his brother-in-law and his best friend.

Additionally, the nature of the media will have an impact. Computer games and other technologies that employ virtual reality can simulate the perceptual and social features of the real world. Interacting in such environments may tax a young person’s cognitive capacity, making it difficult even for an older child to distinguish fantasy from reality.

*From Concrete to Inferential Thinking.* A final cognitive trend during childhood that has implications for the media is the shift from concrete to inferential thinking. As we have mentioned above, a young child’s thinking is very tangible, focusing closely on what can be seen and heard (Bruner, 1966). For a 2- or 3-year-old, this means that attention can be swayed by highly salient cues that may actually be extraneous to the plot (Schmitt et al., 1999). For example, a bright red costume may get more attention than the actions of the character who is wearing this garment.

By age 4, children can begin to focus more on information that is central to the plot than on incidental details (Lorch, Bellack, & Augsbach, 1987). Of course, younger children do best with age-appropriate content, programs that are relatively short in duration, and comprehension tests that assess forced-choice recognition rather than spontaneous recall (Campbell, Wright, & Huston, 1987). With development, children become increasingly able to extract events that are central to the storyline in a program (Collins, 1983; Durkin & Lowe, 1999). Yet the information younger children focus on is still likely to be fairly explicit in nature. For example, one study found that 4- and 6-year-olds most often recalled actions after watching televised stories, whereas adults most often recalled information about characters’ goals and motives (van den Broek, Lorch, & Thurlow, 1996). Actions are typically concrete and fairly

vivid in television programming, making them easy to understand and represent in memory. Another study found that a majority of kindergartners thought an episode of *Clifford the Big Red Dog* was a story about dogs interacting, which meant they took the story quite literally (Mares & Acosta, 2008). At this young age, they missed the overarching moral lesson about social tolerance and inclusiveness. As discussed above, full comprehension involves apprehending not only explicit content but also implicit information in the unfolding narrative. For instance, in one scene, a protagonist might discover that a “friend” is trying to steal his money. In a later scene, the protagonist might hit the friend. The viewer must deduce that the protagonist’s aggression, which in isolation might appear unprovoked, is actually motivated by a desire to protect personal property. In other words, the viewer must link scenes together and draw causal inferences about content that is not explicitly presented. Studies show that older children are better able than their younger counterparts to draw different types of inferences from verbally presented passages (Ackerman, 1988; Pike, Barnes, & Barron, 2010). The same pattern emerges in the context of mediated messages. By roughly age 8 or 9, children show substantial improvements in their ability to link TV scenes together and draw connections between characters’ motives, behaviors, and consequences (Collins, Berndt, & Hess, 1974; Collins, Wellman, Keniston, & Westby, 1978; Kendeou, Bohn-Gettler, White, & van den Broek, 2008). This shift from concrete to inferential processing has implications for other forms of media as well. A video game and even a website require the user to make connections across space and time.

To summarize, a number of important cognitive shifts occur between early and middle childhood. A preschooler watching screen media is likely to focus on the most striking perceptual features in a program. This child may comprehend some of the plot, especially when the program is brief and age appropriate. Yet comprehension will be closely tied to concrete actions and behaviors in the storyline. In addition, the preschooler is likely to have difficulty distinguishing reality from fantasy in the portrayals. As this same child enters elementary school, she will begin to focus more on conceptual aspects of the content such as the characters’ goals and motives. She increasingly will be able to link scenes together, drawing causal connections in the narrative. And her judgments of reality will become more accurate and discriminating as she compares media content with that which could possibly occur in the real world. Clearly, her overall understanding of a media message is quite advanced compared with what she was capable of as a preschooler. Nevertheless, her skills are continuing to develop even during her later elementary school years. Next we will explore some of the cognitive shifts that occur between late childhood and adolescence.

## Older Children Versus Adolescents

*From Real to Plausible.* As described above, older children use a variety of cues to judge the reality of media content. One of the most important yardsticks for them is whether the characters or events depicted in the media are possible in real life (Morison, Kelly, & Gardner, 1981). Adolescents become even more discriminating on this dimension, judging content as realistic if it is likely or *probable* in real life (Dorr, 1983; Morison et al., 1981). In Dorr’s (1983) research, almost half of adolescents defined real television events as those that were probable or plausible in real life. In contrast, probability rationales were seldom used by older elementary school children. To illustrate this distinction, a movie featuring an evil stepfather who is trying to poison his stepchildren may be very upsetting to a 9- or 10-year-old because this

scenario *could* happen in real life. A teenager, on the other hand, is less likely to be disturbed by such content, reasoning that the vast majority of stepfathers in the world are not murderers. The movement to probabilistic thinking is consistent with studies of language comprehension that indicate that the ability to differentiate probability from possibility crystallizes during early adolescence (Piaget & Inhelder, 1975; Scholz & Waller, 1983).

*From Empirical to Hypothetical Reasoning.* A related development that occurs between late childhood and early adolescence is the shift from empirical to hypothetical reasoning (Flavell et al., 2002). Adolescents become increasingly able to understand abstract concepts, use formal logic, and think hypothetically (Byrnes, 2003). Along with this abstract thinking comes an ability to engage in inductive and deductive reasoning (Keating, 2004) as well as conditional reasoning (Gauffroy & Barrouillet, 2011). An older child is able to reason conceptually too, but much of this process is based on collecting empirical evidence. A 5th or 6th grader, for example, may watch a person's behavior across several situations and infer from these actions what the person's motives are. In contrast, an adolescent might begin with a theory or hypothetical set of motives for a person and then observe behaviors to see if the theory is correct. In other words, the teenager is capable of more abstract thinking that need not be tied too closely to observable data.

Adolescents are also increasingly capable of suspending their own beliefs to evaluate the reasoning of someone else (Moshman, 1998). Put another way, teens can sometimes reason about arguments at an objective level.

The ability to think hypothetically means that a teenager can anticipate different plot events and predict logical outcomes as a storyline unfolds. The teen is also able to critique the logic and causal structure of different media messages. As abstract thought flourishes, the adolescent may also consider the meaning behind the message (e.g., "Who is the source of this website, and why is it constructed this way? How would the content differ if it were designed by someone else with different motives?").

*Metacognitive Thinking.* *Metacognition* refers to the ability to understand and manipulate one's own thought processes (Metcalf & Shimamura, 1994). It is called *metacognition* because it refers to second-order mental activities: A person thinks about his or her own thinking. Adults routinely reflect on their own cognitive processing, especially during situations that highlight the need to do so. For instance, studying for a test or actually taking one requires a person to concentrate carefully on cognitive enterprises such as attention, comprehension, and memory.

Flavell and his colleagues (2002) have distinguished between two types of metacognition: metacognitive *knowledge* and metacognitive *monitoring and self-regulation*. Metacognitive knowledge refers to a person's knowledge and beliefs about the human mind and how it works. For example, most adults realize that short-term memory is of limited capacity (see section below on processing capacity), that it is generally easier to recognize something when you see it than to recall it outright, and that certain tasks are more difficult and demanding of the human mind than others. But young children do not necessarily possess such metacognitive knowledge. In one study, for example, Lovett and Flavell (1990) presented 1st graders, 3rd graders, and undergraduates with three tasks: a list of words to be memorized, a list of words to match up with a picture, and a list of words to memorize and match. Unlike the 1st graders, the 3rd graders and the undergraduates were



able to select which strategy—rehearsal, word definition, or both—would work best for each task. Yet only the undergraduates understood that the tasks would be more difficult with longer lists and unfamiliar words. Thus, as children develop, they become increasingly aware that the mind engages in a range of activities, including memory, comprehension, and inference (Flavell et al., 2002).

The second type of metacognition involves monitoring and readjusting one's ongoing thinking. Consider the test taking instance, for example. An adult who is having difficulty with a certain section on a test might decide to jump ahead to an easier part for efficiency's sake and to build confidence before returning to the harder material. Research suggests that this type of self-monitoring is difficult during early childhood (see Flavell et al., 2002). In one study, preschoolers and elementary schoolers were instructed to examine a set of objects until they were sure they could recall them (Flavell, Friedrichs, & Hoyt, 1970). Older children examined the objects for a period of time, determined they were ready, and typically recalled all the items correctly. In contrast, the preschoolers examined the items, thought they were ready, and generally failed on the recall test. In other words, the preschoolers were not capable of monitoring their memory processes very accurately.

How do metacognitive knowledge and monitoring relate to the media? We can expect that as children approach adolescence, they will be better able to analyze the cognitive demands of different media and even different messages within a particular medium. According to Salomon (1983), some media require more nonautomatic mental elaborations or more AIME (amount of invested mental effort) than others. In general, television requires less effort and concentration than reading, for example, because the former is highly visual and relies less on language skills (Salomon & Leigh, 1984). Thus, a teenager is more likely than a young child to recognize that a difficult book or a television documentary requires higher concentration than watching a music video. Their awareness of different media will affect the depth of processing they use, which in turn should enhance comprehension and learning. Interestingly, when children are instructed to pay attention to and learn from TV, their mental effort and performance increase compared to what they do without such instruction (Salomon, 1983).

Nevertheless, the trend toward multitasking with media may make it difficult for even the most sophisticated teen to recognize the cognitive overload in such situations (see Cantor, 2009). Recent research indicates that people experience substantial declines in performance when they try to do more than one thing at a time (Bowman, Levine, Waite, & Gendron, 2010). For example, driving performance suffers when people simultaneously text on their cell phones (Owens, McLaughlin, & Sudweeks, 2011). Despite their metacognitive abilities, teens and young adults alike are fairly naive about how well they can study for an exam while monitoring Facebook, texting on their phones, and listening to music all at the same time.

Last, as children reach the teenage years, they should increasingly be able to monitor their own affective reactions to the media, for example, avoiding classical music they do not like or reminding themselves that "it's only a movie" when they feel scared. In one illustration of this, preschoolers and 9- to 11-year-olds were given different types of instructions on how to think about a frightening program they were about to watch on television (Cantor & Wilson, 1984). Children were told either to imagine themselves as the protagonist (role taking set) or to remember that the story and the characters were make-believe (unreality set). The cognitive-set instructions had no appreciable effect on the preschoolers' emotional reactions to the program. In other words, they showed little ability to use the information to alter how they

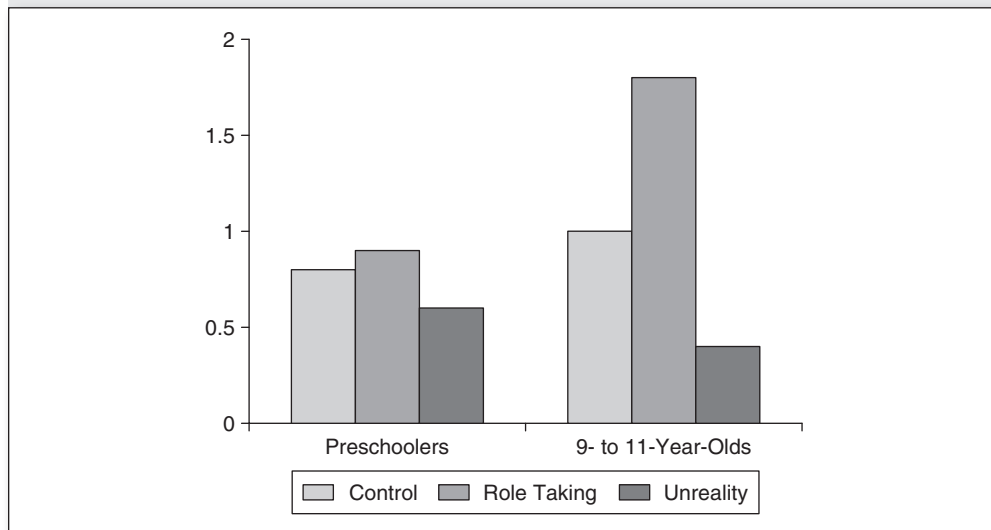


perceived the program. In contrast, older children in the role taking condition were more frightened by the program, and those in the unreality condition were less frightened, compared with a control group that received no instructions at all (see Figure 1.18). The findings are consistent with the idea that as children develop, they are increasingly able to modify their thought processes while watching television.

*Regulatory Competence.* Adults have long assumed that much of cognitive growth occurs during the childhood years. Recent research on the brain contradicts this view. With better measurement tools such as magnetic resonance imaging (MRI), we are beginning to realize that there are substantial changes in brain development during adolescence (Spear, 2010). Much of this development occurs in the prefrontal cortex region of the brain, which is crucial to the regulation of behavior and emotion (Sowell, Trauner, Gamst, & Jernigan, 2002). Until this area of the brain is fully developed, which may not occur until the mid-20s, young people often have difficulty regulating and controlling their moods and responses to different situations. This development of an “executive suite” or executive function is receiving considerable attention these days (Steinberg, 2005), in part because it signals that our conception of “adulthood” may need to be adjusted. Consistent with this idea, scholars have now adopted the term “emerging adulthood” to characterize young people between the ages of 18 and 25 (Arnett, 2007).

Executive functioning appears to play a crucial role in how young people respond to risk. One recent study found that teens who scored low on a battery of tests that measured executive control engaged in significantly more risky behavior than did those with higher executive control, even after controlling for risky personality traits, sex, and age (Pharo, Sim, Graham, Gross, & Hayne, 2011). Executive functioning not only varies individually but

**Figure 1.18** Children’s self-reported fear reactions to a scary program as a function of instructional set.



SOURCE: Adapted from Cantor and Wilson (1984).

also across adolescence, generally showing gradual improvement with age (Watson, Lambert, Miller, & Strayer, 2011). Therefore, younger adolescents will typically show less maturity and more risk taking when they confront various dilemmas in life, including those mediated by technologies. For example, younger teens are more likely than older ones to play with their identity in Internet communications (Valkenburg et al., 2005). Younger teens are also more likely than older teens to talk with strangers on the Internet (Jochen, Valkenburg, & Schouten, 2006).

## Two Overall Developmental Trends

Two other important trends occur continuously throughout childhood and adolescence and are not specific to particular age groups: (a) increasing knowledge about the social, physical, and mediated world in which we live and (b) increasing processing capacity.

*Increase in Domain-Specific Knowledge.* It may seem obvious to state that children gain increasing amounts of knowledge across different domains as they grow. But the point is still worth making because it has such important implications for interacting with the media. With each new experience, a child stores more and more information in highly organized ways in memory. The resulting knowledge structures, sometimes called mental templates or *schemas*, are powerful organizers that help children anticipate and assimilate new information (Fiske & Taylor, 1991). Research suggests that children as young as 3 years of age possess well-developed schemas or scripts for familiar events, such as getting ready for bed and taking a bath (Hudson, Sosa, & Shapiro, 1997). As evidence of the power of these mental organizers, a young child is likely to protest quite strongly if someone tries to alter these routines.

Young children also develop schemas for stories that include information about the typical structure and components of a narrative (Mandler, 1998). Research suggests that a well-developed story schema can help a child to organize and interpret television programming (Meadowcroft & Reeves, 1989). In addition, children can form schemas about the social and physical world in which they live. In the social realm, for example, children develop templates for emotions that include information about expressive signals, situational causes, and display rules associated with each affect (e.g., Campos & Barret, 1984). These schemas undoubtedly assist a child in making sense of an emotional scene on television. In turn, such schemas can be shaped and modified by exposure to the media (see Wilson & Smith, 1998).

Not surprisingly, children develop schemas about the media as well (Calvert, 1999). Each form of the media has its own special audiovisual techniques and codes, which at least in the case of television have been referred to as “formal features” (Bickham, Wright, & Huston, 2001; Huston & Wright, 1983). Television and film, for example, use production techniques such as cuts, zooms, fades, and special effects to signal shifts in time and changes in setting. Video games and computers have their own technological conventions. A user of the World Wide Web, for example, needs some understanding of search engines and hypertext. Knowing what to expect from each medium greatly increases a child’s sophistication in using it (Calvert, 1999; Smith et al., 1985). For this reason, efforts to teach youth to become critical consumers of the media often include instruction on the conventions of different technologies (see Chapter 13).

In addition to developing schemas *about* the media, children can actually enhance their cognitive thinking by spending time with certain technologies (see Subrahmanyam & Greenfield, 2008).

For example, studies show that practicing certain types of video games can improve dynamic spatial skills in both children (Subrahmanyam & Greenfield, 1996) and adults (Feng, Spence, & Pratt, 2007). There is also evidence that video game playing improves strategies for dividing visual attention, presumably because players must cope with events that occur simultaneously at different places on the screen (Greenfield, deWinstanley, Kilpatrick, & Kaye, 1996). In addition, listening to a song seems to stimulate imagination more than watching a music video of the same song does (Greenfield et al., 1987). All of these studies suggest a kind of interactive relationship between media exposure and schematic processing and development.

To summarize here, children can call on larger stores of remembered information across a variety of domains as they grow. In addition, they can integrate and combine information in more complex ways, forming more elaborate connections with what they already know (Siegler, 2005). In other words, their schemas become more elaborate and differentiated, and thus their interpretations of media content become richer and more complex.

Having a great deal of knowledge and experience in a given area has all kinds of benefits for cognitive processing. Compared to a beginner, a veteran has familiar concepts and ready-made strategies to apply to a problem (Siegler, 2005). Given that the terrain is familiar, the expert expends less cognitive energy and is free to apply mental workspace to high-order activities such as metacognition (Flavell et al., 2002). Consider for a moment how a 6-year-old might respond to a cigarette advertisement in a magazine compared with how a 16-year-old would process the same message. The 6-year-old presumably has never smoked, has little knowledge of how the lungs work, is unaware of the legal battles being waged against the tobacco industry, is not cognizant of who paid for the placement of the ad in the magazine, and has little experience with the cost of various products in a grocery store. The teenager certainly has less experience than an adult would have in this domain, but compared with the grade schooler, the adolescent brings a much broader knowledge base from which to draw in interpreting and evaluating such an ad.

*Increase in Processing Capacity.* Regardless of age or level of development, all humans experience limits in the capacity of their working memory (Fougnie & Marois, 2006). In other words, certain situations and tasks are so demanding that they exceed a person's available cognitive resources. One way this has been demonstrated is through reaction time studies that show that people perform slowly or poorly on secondary tasks when their mental energies are consumed by a primary task (Kail, 1991; Lang, 2000).

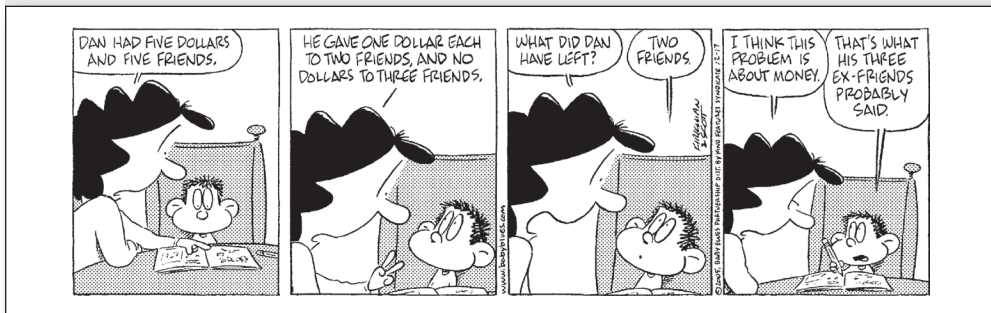
Developmental research demonstrates that as children mature, they are able to hold increasing amounts of information in working memory (Cowan, Nugent, Elliott, Ponomarev, & Saults, 1999; Gathercole, 1998). For example, a 5-year-old is typically able to deal with only four or five bits of information at once (e.g., digits, letters), whereas the average adult can handle seven (Dempster, 1981). There are differing theoretical accounts for this increased processing capacity. Some have argued that the structure or size of one's memory space actually increases with development (Cowan et al., 1999). Others have argued that the size remains fixed, but the functional use or efficiency of the space increases (Kail, 1993). As certain tasks become familiar, they are easily categorized into preexisting schemas. This categorization and routinization mean that fewer demands are placed on the cognitive system, and hence space is freed up for other cognitive processing.

Regardless of which view is correct, the implications are the same. Younger children have difficulty considering multiple pieces of information in working memory (see Figure 1.19). In addition, their capacities may be taxed quickly by a single cognitive activity that is somewhat novel and thus cannot be easily schematized. As children mature and gain experience in certain arenas, they can more quickly classify new information into preexisting schemas. This schematization allows them to consider and interrelate more bits of information at once and to engage in concurrent cognitive tasks. In other words, they become more efficient information processors.

How does processing capacity affect children's interactions with the media? Research suggests that older children are better able than younger children to consider multiple cues within a scene or across several scenes when interpreting a television portrayal (Collins et al., 1974; Hoffner, Cantor, & Thorson, 1989). Likewise, older children are able to track the main plot of a television story even when there is a subplot interspersed throughout, whereas younger children's comprehension suffers in the face of a distracting subplot (Weiss & Wilson, 1998). Older children are also better equipped to handle fast-paced programming that involves the integration of information across rapid changes in time and place (Wright et al., 1984). As discussed above, older children are also better able to consider their own thought processes while attending to a television program (Cantor & Wilson, 1984).

Any time a media message is complex, lengthy, fast paced, or delivered in a distracting environment, it is likely to present a cognitive challenge to younger children because of their more limited processing capacities. Extending these ideas to online or digital technologies, we might also expect that interactive media such as fast-paced computer games will quickly tax the mental resources of a young child because of the need to simultaneously comprehend content and respond cognitively and physically to it. As processing capacity increases throughout childhood and adolescence, these once very difficult types of media interactions will become increasingly routinized.

Figure 1.19



SOURCE: *Baby Blues* © 2005 Baby Blues Partnership. Reprinted with permission of King Features Syndicate.

## Infants and Baby Media

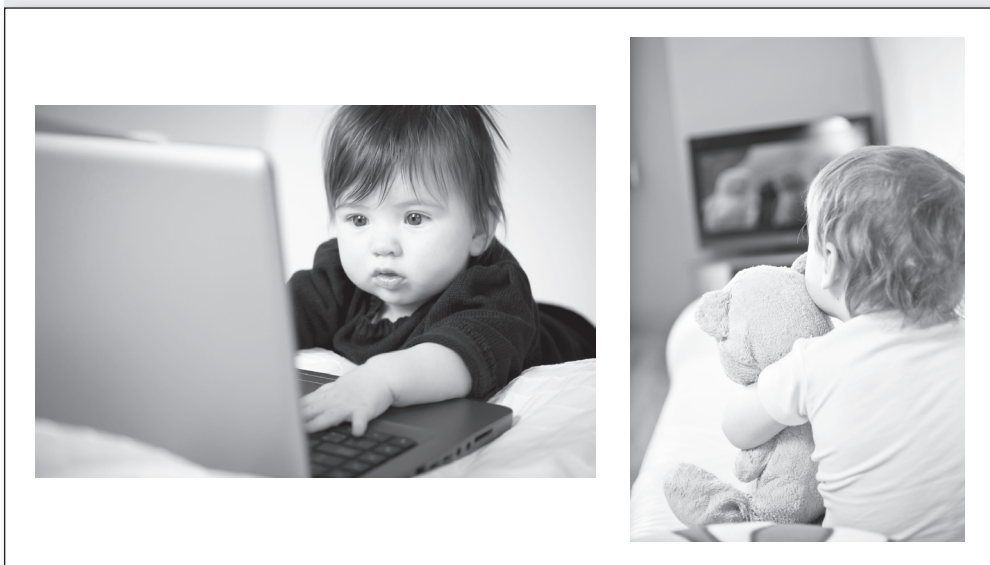
Video products designed and marketed specifically for infants first appeared in the late 1990s, starting with the Baby Einstein series. Today, the marketplace is exploding with such products, including DVDs, websites, flashcards, and even video games. Parents eager to have their

6-month-old interact with new technologies can buy a Fisher-Price Laugh & Learn Smilin' Smart Phone that activates music and fun phrases at the push of a button, or a VTech Baby's Learning Laptop with a colorful keyboard and a movable mouse. There is even a TV network called BabyFirstTV that features round-the-clock programming for infants. Many of these products are marketed to parents who are keen to enhance the cognitive development of their very young children. Critics have charged that this "genius baby" industry is unfair and misleading (Linn, 2009). In fact, the company behind the Your Baby Can Read products recently announced it was going out of business, citing the high cost of legal battles it was fighting in trying to defend its advertising claims about helping infants to read (Crary, 2012).

As indicated earlier in this chapter, American babies do spend a fair amount of time with screen media—on average, about one and a half hours a day (Vandewater et al., 2007). Scholars have argued that several factors contribute to the rise in babies' exposure to television and DVDs compared to a generation ago (Wartella, Richert, & Robb, 2010). First, families in the 21st century are accustomed to having television turned on throughout the day as a backdrop to all kinds of activities, including mealtimes. Obviously, this practice enhances exposure to screen media among children of all age groups. Second, families are moving older television sets into children's rooms, including those of their infants. And third, parents today are more accustomed to sending young children to preschool, and anything that can better prepare their offspring for such educational experiences is likely to be attractive (see Figure 1.20).

Surveys indicate that many parents do indeed believe that videos and DVDs can foster their infants' intellectual development (for a review, see Wartella et al., 2010). Yet the American Academy of Pediatrics (AAP) (2011) recently issued a recommendation that *discourages* media use for children younger than 2 years. The AAP also cautions against the use of background television intended for adults when an infant or baby is in the room. The AAP policy statement goes on to say, "Although infant/toddler programming might be entertaining, it should not marketed as or presumed by parents to be educational" (p. 4).

**Figure 1.20** Babies with screen media.



Which view is accurate? Are media products good for infants or are they problematic? The research is still accumulating on this topic, but emerging findings suggest we need to be cautious about the educational merits of screen media for babies. For one thing, infants have difficulty orienting to the television screen and paying sustained visual attention to it until they are 3 to 6 months old (Courage & Setliff, 2010). Even after that, what captures their attention are salient cues such as laughter, music, peculiar sounds, and rapid character action (Valkenburg & Vroone, 2004). Clearly, the industry has figured this out in designing video content for babies. But paying attention to salient formal features on the screen does not mean that a baby comprehends the content (Courage & Setliff, 2010).

In fact, there are a growing number of studies indicating that before the age of roughly 3, babies learn better from watching a live person than from watching the same type of material enacted on television (see Barr, 2010). This phenomenon has been called the “video deficit” effect (Anderson & Pempek, 2005), and it has been demonstrated for a range of activities, such as teaching infants to imitate novel behaviors, search for a hidden object, and respond to emotional cues (Barr, 2010). The superiority of live action over TV is likely due to several factors, including younger children’s difficulty in translating information from a two-dimensional to a three-dimensional format and their difficulty in appreciating the symbolic nature of what is on the screen (Barr, 2010).

Nevertheless, by about 18 months of age, babies are capable of learning some things from screen media, including simple vocabulary (Vandewater, 2011) and novel action sequences (Simcock, Garrity, & Barr, 2011). However, such learning is more apt to occur under the following conditions:

- when the video material is repeatedly viewed (Barr, Muentener, Garcia, Fujimoto, & Chavez, 2007)
- when popular characters are used (Lauricella, Gola, & Calvert, 2011)
- when an adult is in the room reinforcing the material (Barr, Zack, Garcia, & Muentener, 2008)
- when the material is developmentally appropriate (Linebarger & Walker, 2005)

Given all of these caveats, one might argue that spending time interacting with family members is better for babies than being plopped down in front of a screen. Indeed, developmental psychologists long have held that babies need rich social interactions with caregivers in order for healthy development to occur. Even in this context, screen media can be a challenge. Research shows that parents are less likely to interact with their babies when the television is turned on in the background (Christakis et al., 2009), and babies themselves spend less time playing with toys when the television is turned on compared to when it is off (Schmidt, Pempek, Kirkorian, Lund, & Anderson, 2008). As we develop more sophisticated ways of assessing brain development in babies, surely screen media will factor in to how we understand their growth.

## Conclusion

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The purpose of this chapter has been to underscore the fact that children are very different from adults and from each other when they interact with the media. Children are eager to learn, have less real-world experience, and have less developed cognitive skills, making them



ultimately more vulnerable to media messages. The remainder of this book will explore how children and teens respond to different types of media content, such as violence and sexual messages, as well as to different media technologies, such as video games and the Internet. We will continually draw on the concepts and developmental trends presented in this chapter to explain how children deal with the stimulating media world that confronts them. Clearly, there are robust developmental differences in children's attention to and comprehension of media messages. These cognitive processes in turn have implications for emotional responding as well as behavioral reactions to the media.

## Exercises

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1. Think about your childhood. What is the first experience you remember having with the media? How old were you? What medium was involved? What type of content was involved? What was your reaction or response to the experience? Did your parents know about it? Could a child today have a similar experience? Why or why not?
2. For one day, chart the time you spend with the media (e.g., television, radio, books, cell phone, Internet). Note which media you are using and what type of content you are experiencing. Also note when you are "media multitasking," or using two or more media at once (e.g., reading a book and listening to music). How much of your day did you spend with the media? Is your media use similar to that of the typical American child, as described in this chapter? How is it similar and how is it different? Do you perceive that you are effective or ineffective when media multitasking? Provide justification for your response.
3. Watch an episode of a TV sitcom that is popular with children. Think about the main theme of the program, the sequence of events in the storyline, and the nature of the characters. Based on developmental differences in cognitive processing, describe three ways in which a 4-year-old's interpretation of the episode would differ from that of a 10-year-old. How would a 10-year-old's interpretation differ from that of a teenager? What type of viewer do you think the program is targeted toward? Think about the program itself as well as the commercial breaks in addressing this question.
4. Some scholars argue that childhood is disappearing in today's modern society. They maintain that children are dressing more like adults, talking like them, and experiencing adult activities and even adult media content. Can you think of examples to support this thesis? Can you think of examples that challenge it? How is childhood changing in the 21st century? Do you agree that childhood is vanishing? How crucial are the media in debates about these issues?
5. When you were a child, did your parents have rules about what you could do with the mass media? Did they have rules when you were a teenager? Did you have a TV set in your bedroom? Do you think parents should exercise control over their children's media experiences? Why or why not?
6. Compare and contrast three rating systems designed to inform parents about media content: (a) the Motion Picture Association of America's ratings for movies (see <http://www.mpa.org/ratings/what-each-rating-means>), (b) the TV Parental Guidelines for



television shows (see <http://www.tvguidelines.org/>), and (c) the Entertainment Software Rating Board's ratings for computer and video games (see [www.esrb.org/ratings/ratings\\_guide.jsp](http://www.esrb.org/ratings/ratings_guide.jsp)). Evaluate the three systems in terms of what we know about child development, as discussed in this chapter. Do the systems seem accurate? Are they likely to be helpful to parents? How could they be improved? Can you think of a movie, TV show, or video game that you think is rated inappropriately?

7. Watch a program targeted to children that airs on public broadcasting (e.g., *Sesame Street*, *Arthur*, *WordGirl*). Now compare it with a cartoon that airs on Cartoon Network, ABC Kids, or Nickelodeon. Compare and contrast the two programs in terms of plot, characters, formal features, and degree of realism. Which program seems better suited to the developmental capabilities of a 4- or 5-year-old? Why?
8. Find the lyrics to a song from a genre of music that is popular among young people today (e.g., hip-hop, rap). Now compare the lyrics to those from a Beatles' song of the 1960s or 1970s. What do the songs say about adolescence? How are the songs similar in their representation of adolescent themes such as risk taking, social identity, peer relations, and sexuality? How are they different? Think about the social and political context in which these songs were written in addressing these issues.
9. Are you surprised by the amount of time that babies spend with media each day? What do you think about the AAP guidelines that discourage media use for children under the age of 2? Are the guidelines reasonable? Are they based on sound evidence? Should companies in the U.S. be allowed to market media products to very young children? Why or why not?

## References

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- Ackerman, B. P. (1988). Reason inferences in the story comprehension of children and adults. *Child Development, 59*, 1426–1442.
- Adler, J. (1999, May 10). Beyond Littleton: The truth about high school. *Newsweek*, pp. 56–58.
- Alexander, K. J., Miller, P. J., & Hengst, J. A. (2001). Young children's emotional attachments to stories. *Social Development, 10*(3), 374–398.
- American Academy of Pediatrics, Council on Communications and Media. (2011). Media use by children younger than 2 years. *Pediatrics, 128*(5), 1–6.
- American Kids Study. (2010, January 4). *Kids' cell phone ownership has dramatically increased in past five years*. Retrieved from [http://www.gfkmri.com/PDF/MRIPR\\_010410\\_KidsAndCellPhones.pdf](http://www.gfkmri.com/PDF/MRIPR_010410_KidsAndCellPhones.pdf)
- Anderson, D. R., & Levin, S. R. (1976). Young children's attention to *Sesame Street*. *Child Development, 47*, 806–811.
- Anderson, D. R., & Pempek, T. A. (2005). Television and very young children. *American Behavioral Scientist, 48*(5), 505–522.
- Archibald, A. B., Graber, J. A., & Brooks-Gunn, J. (2003). Pubertal processes and physiological growth in adolescence. In G. R. Adams & M. D. Berzonsky (Eds.), *Blackwell handbook of adolescence* (pp. 24–47). Malden, MA: Blackwell.
- Arnett, J. J. (1992a). Reckless behavior in adolescence: A developmental perspective. *Developmental Review, 12*, 339–373.
- Arnett, J. J. (1992b). Socialization and adolescent reckless behavior: A reply to Jessor. *Developmental Review, 12*, 391–409.

- Arnett, J. J. (1995). Broad and narrow socialization: The family in the context of a cultural theory. *Journal of Marriage and Family*, 57(3), 617–628.
- Arnett, J. J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist*, 54(5), 317–326.
- Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives*, 1(2), 68–73.
- Babey, S. H., Hastert, T. A., & Wolstein, J. (2013). Adolescent sedentary behaviors: Correlates differ for television viewing and computer use. *Journal of Adolescent Health*, 52, 70–76.
- Baldas, T. (2012, May 28). Dander in the chat room: More kids vulnerable to sexual exploits online. *Detroit Free Press*. Retrieved from <http://www.freep.com>
- Barr, R. (2010). Transfer of learning between 2D and 3D sources during infancy: Informing theory and practice. *Developmental Review*, 30, 128–154.
- Barr, R., Muentener, R., Garcia, A., Fujimoto, M., & Chavez, V. (2007). The effect of repetition on imitation from television during infancy. *Developmental Psychology*, 49, 196–207.
- Barr, R., Zack, E., Garcia, A., & Muentener, P. (2008). Infants' attention and responsiveness to television increases with prior exposure and parental interaction. *Infancy*, 13, 30–56.
- Beentjes, J., deKoning, E., & Huysmans, F. (2001). Children's comprehension of visual formal features in television programs. *Journal of Applied Developmental Psychology*, 22(6), 623–638.
- Berk, L. E. (2000). *Child development* (5th ed.). Boston, MA: Allyn & Bacon.
- Bickham, D. S., Wright, J. C., & Huston, A. C. (2001). Attention, comprehension, and the educational influences of television. In D. G. Singer & J. L. Singer (Eds.), *Handbook of children and the media* (pp. 101–119). Thousand Oaks, CA: Sage.
- Bowman, L. L., Levine, L. E., Waite, B. M., & Gendron, M. (2010). Can students really multitask? An experimental study of instant messaging while reading. *Computers and Education*, 54(4), 927–931.
- Brown, J. D., Halpern, C. T., & L'Engle, K. L. (2005). Mass media as a sexual super peer for early maturing girls. *Journal of Adolescent Health*, 36, 420–427.
- Brown, M. H., Skeen, P., & Osborn, D. K. (1979). Young children's perception of the reality of television. *Contemporary Education*, 50, 129–133.
- Bruner, J. S. (1966). On cognitive growth (I & II). In J. S. Bruner, R. R. Olver, & P. M. Greenfield (Eds.), *Studies in cognitive growth* (pp. 1–67). New York, NY: John Wiley.
- Bruner, J. S., Olver, R., & Greenfield, P. (1966). *Studies in cognitive growth*. New York, NY: John Wiley.
- Buckingham, D. (2000). *After the death of childhood: Growing up in the age of electronic media*. Cambridge, UK: Polity.
- Buckingham, D. (2011). *The material child: Growing up in consumer culture*. Cambridge, UK: Polity.
- Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychological Review*, 106, 676–713.
- Byrnes, J. P. (2003). Cognitive development during adolescence. In G. R. Adams & M. D. Berzonsky (Eds.), *Blackwell handbook of adolescence* (pp. 227–246). Malden, MA: Blackwell.
- Calvert, S. L. (1999). *Children's journeys through the information age*. Boston, MA: McGraw-Hill.
- Calvert, S. L., & Gersh, T. L. (1987). The selective use of sound effects and visual inserts for children's story comprehension. *Journal of Applied Developmental Psychology*, 8, 363–374.
- Calvert, S. L., Huston, A. C., Watkins, B. A., & Wright, J. C. (1982). The relations between selective attention to television forms and children's comprehension of content. *Child Development*, 53, 601–610.
- Campbell, T. A., Wright, J. C., & Huston, A. C. (1987). Form cues and content difficulty as determinants of children's cognitive processing of televised educational messages. *Journal of Experimental Child Psychology*, 43, 311–327.
- Campos, L. A., & Barret, K. C. (1984). Toward a new understanding of emotions and their development. In C. E. Izard & R. B. Zajonc (Eds.), *Emotion, cognition, and behavior* (pp. 229–263). Cambridge, UK: Cambridge University Press.
- Cantor, J. (1998). *"Mommy, I'm scared": How TV and movies frighten children and what we can do to protect them*. San Diego, CA: Harcourt Brace.

- Cantor, J. (2009). *Conquer cyberoverload: Get more done, boost your creativity, and reduce stress*. Madison, WI: CyberOutlook Press.
- Cantor, J., & Wilson, B. J. (1984). Modifying fear responses to mass media in preschool and elementary school children. *Journal of Broadcasting*, 28, 431–443.
- Carlsson, U. (2010). Young people in the digital media culture: Global and Nordic perspectives: An introduction. In U. Carlsson (Ed.), *Children and youth in the digital media culture: From a Nordic horizon* (pp. 9–22). Goteborg, Sweden: Nordicom.
- Carr, D. (2007, March 29). Do they still want their MTV? *New York Times*. Retrieved from <http://www.nytimes.com/2007/02/19/business/media/19carr.html>
- Centers for Disease Control and Prevention. (2011). Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, 2006–2010 national survey on family growth. *Vital and Health Statistics*, 23(31). Retrieved June 16, 2012, from [http://www.cdc.gov/nchs/data/series/sr\\_23/sr23\\_031.pdf](http://www.cdc.gov/nchs/data/series/sr_23/sr23_031.pdf)
- Centers for Disease Control and Prevention. (2012, July 27). *Trends in HIV-related risk behaviors among high school students – United States, 1991–2001*. Retrieved from [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6129a4.htm?s\\_cid=mm6129a4\\_w](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6129a4.htm?s_cid=mm6129a4_w)
- Chan, K. (2001). Children's perceived truthfulness of television advertising and parental influence: A Hong Kong study. *Advances in Consumer Research*, 28, 207–212.
- Christakis, D. A., Gilkerson, J., Richards, J. A., Zimmerman, F. J., Garrison, M. M., Xu, D., . . . Yapanel, U. (2009). Audible television and decreased adult words, infant vocalizations, and conversational turns: A population-based study. *Archives of Pediatrics and Adolescent Medicine*, 163(6), 554–558.
- Claxton, L. J., & Ponto, K. C. (2013). Understanding the properties of interactive characters. *Journal of Applied Developmental Psychology*, <http://dx.doi.org/10.1016/j.appdev.2012.11.007>
- Collins, W. A. (1983). Interpretation and inference in children's television viewing. In J. Bryant & D. R. Anderson (Eds.), *Children's understanding of television* (pp. 125–150). New York, NY: Academic Press.
- Collins, W. A., Berndt, T. J., & Hess, V. L. (1974). Observational learning of motives and consequences for television aggression: A developmental study. *Child Development*, 45, 799–802.
- Collins, W. A., Wellman, H., Keniston, A., & Westby, S. (1978). Age-related aspects of comprehension and inference from a televised dramatic narrative. *Child Development*, 49, 389–399.
- Cookston, J. T., & Finlay, A. K. (2006). Father involvement and adolescent adjustment: Longitudinal findings from Add Health. *Fathering: A Journal of Theory, Research, and Practice About Men as Fathers*, 4(2), 137–158.
- Courage, M. L., & Setliff, A. E. (2010). When babies watch television: Attention getting, attention holding, and implications for learning. *Developmental Review*, 30, 220–238.
- Cowan, N., Nugent, L. D., Elliott, E. M., Ponomarev, I., & Saults, J. S. (1999). The role of attention in the development of short-term memory: Age differences in the verbal span of apprehension. *Child Development*, 70, 1082–1097.
- Crary, D. (2012, June 16). Your Baby Can Read company going out of business. *Huffington Post*. Retrieved from [http://www.huffingtonpost.com/2012/07/16/your-baby-can-read\\_n\\_1677465.html](http://www.huffingtonpost.com/2012/07/16/your-baby-can-read_n_1677465.html)
- Creemers, H. E., Korhonen, T., Kaprio, J., Vollebergh, W. A. M., Ormel, J., Verhulst, F. C., & Huizink, A. C. (2009). The role of temperament in the relationship between early onset of tobacco and cannabis use: The TRAILS study. *Drug and Alcohol Dependence*, 104, 113–118.
- Crosnoe, R., & Johnson, M. K. (2011). Research on adolescence in the twenty-first century. *Annual Review of Sociology*, 37, 439–460.
- Davis, K. (2010). Coming of age online: The developmental underpinnings of girls' blogs. *Journal of Adolescent Research*, 25(1), 145–171.
- Dempster, F. N. (1981). Memory span: Sources of individual and developmental differences. *Psychological Bulletin*, 89, 63–100.

- Dishion, T. J. (1990). The family ecology of boys' peer relations in middle childhood. *Child Development*, 61, 874–892.
- Dorr, A. (1980). When I was a child, I thought as a child. In S. B. Withey & P. P. Abeles (Eds.), *Television and social behavior: Beyond violence and children* (pp. 191–230). Hillsdale, NJ: Lawrence Erlbaum.
- Dorr, A. (1983). No shortcuts to judging reality. In J. Bryant & D. R. Anderson (Eds.), *Children's understanding of television* (pp. 199–220). New York, NY: Academic Press.
- Dorr, A. (1986). *Television and children: A special medium for a special audience*. Thousand Oaks, CA: Sage.
- Durkin, K., & Lowe, P. J. (1999). The effect of flashback on children's understanding of television crime content. *Journal of Broadcasting and Electronic Media*, 43(1), 83–97.
- Eaton, W. O., & Enns, L. R. (1986). Sex differences in human motor activity level. *Psychological Bulletin*, 100, 19–28.
- Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (pp. 646–718). Hoboken, NJ: John Wiley.
- Elkind, D. (1967). Egocentrism in adolescence. *Child Development*, 38, 1025–1034.
- Elkind, D. (1985). Egocentrism redux. *Developmental Review*, 5, 218–226.
- Eveland, W. P., Nathanson, A. I., Detenber, A. I., & McLeod, D. M. (1999). Rethinking the social distance corollary: Perceived likelihood of exposure and the third-person perception. *Communication Research*, 26, 275–302.
- Feeling good about visiting the doctor. (1996). *Research Roundup*, 5, 1.
- Feng, J., Spence, I., & Pratt, J. (2007). Playing an action video game reduces gender difference in spatial cognition. *Psychological Science*, 18, 850–855.
- Finn, P., & Bragg, B. W. (1986). Perception of risk of an accident by young and older drivers. *Accident Analysis and Prevention*, 18, 289–298.
- Fiske, S. T., & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York, NY: McGraw-Hill.
- Flavell, J. H., Flavell, E. R., Green, F. L., & Korfmacher, J. E. (1990). Do young children think of television images as pictures or real objects? *Journal of Broadcasting and Electronic Media*, 34, 399–417.
- Flavell, J. H., Friedrichs, A. G., & Hoyt, J. (1970). Developmental changes in memorization processes. *Cognitive Psychology*, 1, 324–340.
- Flavell, J. H., Miller, P. H., & Miller, S. A. (2002). *Cognitive development* (4th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Fougnie, D., & Marois, R. (2006). Distinct capacity limits for attention and working memory: Evidence from attentive tracking and visual working memory paradigms. *Psychological Science*, 17, 526–534.
- Fulkerson, J. A., Story, M., Mellin, A., Leffert, N., Neumark-Sztainer, D., & French, S. A. (2006). Family dinner meal frequency and adolescent development: Relationships with developmental assets and high-risk behaviors. *Journal of Adolescent Health*, 39, 337–345.
- Garrison, M. M., Liekweg, K., & Christakis, D. A. (2011). Media use and child sleep: The impact of content, timing, and environment. *Pediatrics*, 128(1), 29–35.
- Gathercole, S. E. (1998). The development of memory. *Journal of Child Psychology and Psychiatry*, 39(1), 3–27.
- Gauffroy, C., & Barrouillet, P. (2011). The primacy of thinking about possibilities in the development of reasoning. *Developmental Psychology*, 47(4), 1000–1011.
- Gentile, D. A., Nathanson, A. I., Rasmussen, E. E., Reimer, R. A., & Walsh, D. A. (2012). Do you see what I see? Parent and child reports of parental monitoring of media. *Family Relations*, 61(3), 470–487.
- Gerrard, M., McCann, L., & Fortini, M. (1983). Prevention of unwanted pregnancy. *American Journal of Community Psychology*, 11, 153–167.
- Ginsburg, H., & Oppen, S. (1979). *Piaget's theory of intellectual development* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

- Gondoli, D. M. (1999). Adolescent development and health. In T. L. Whitman, T. V. Merluzzi, & R. D. White (Eds.), *Life-span perspectives on health and illness* (pp. 147–163). Mahwah, NJ: Lawrence Erlbaum.
- Graber, J. A., Brooks-Gunn, J., & Petersen, A. C. (Eds.). (1996). *Transitions through adolescence: Interpersonal domains and context*. Mahwah, NJ: Lawrence Erlbaum.
- Greene, K., Krcmar, M., Walters, L. H., Rubin, D. L., & Hale, J. (2000). Targeting adolescent risk-taking behaviors: The contributions of egocentrism and sensation-seeking. *Journal of Adolescence*, 23, 439–461.
- Greenfield, P. M., Bruzzone, L., Koyamatsu, K., Satuloff, W., Nixon, K., Brodie, M., & Kingsdale, D. (1987). What is rock music doing to the minds of our youth? A first experimental look at the effects of rock music lyrics and music videos. *Journal of Early Adolescence*, 7, 315–329.
- Greenfield, P. M., deWinstanley, P., Kilpatrick, H., & Kaye, D. (1996). Action video games and informal education: Effects on strategies for dividing visual attention. In P. M. Greenfield & R. R. Cocking (Eds.), *Interacting with video* (pp. 187–205). Norwood, NJ: Ablex.
- Groebel, J. (1999). Media access and media use among 12-year-olds in the world. In C. von Feilitzen & U. Carlsson (Eds.), *Children and media: Image, education, participation* (pp. 61–68). Goteborg, Sweden: UNESCO International Clearinghouse on Children and Violence on the Screen.
- Grossberg, L., Wartella, E., & Whitney, D. C. (1998). *Media making: Mass media in a popular culture*. Thousand Oaks, CA: Sage.
- Halpern, D. F. (2004). A cognitive-process taxonomy for sex differences in cognitive abilities. *Current Directions in Psychological Science*, 13(4), 135–139.
- Harris, J. R. (1998). *The nurture assumption: Why children turn out the way they do*. New York, NY: Free Press.
- Harrison, K., & Cantor, J. (1999). Tales from the screen: Enduring fright reactions to scary media. *Media Psychology*, 1, 97–116.
- Hartup, W. W., & Stevens, N. (1997). Friendships and adaptation in the life course. *Psychological Bulletin*, 121, 355–370.
- Hawkins, R. P. (1977). The dimensional structure of children's perceptions of television reality. *Communication Research*, 7, 193–226.
- Haynie, D. L. (2002). Friendship networks and delinquency: The relative nature of peer delinquency. *Journal of Quantitative Criminology*, 18(2), 99–134.
- Hiltzik, M. (2011, January 1). Comcast-NBC merger does nothing to enhance the public interest. *Los Angeles Times*. Retrieved from <http://articles.latimes.com/2011/jan/01/business/la-fi-hiltzik-20110101>
- Hoekstra, S. J., Harris, R. J., & Helmick, A. L. (1999). Autobiographical memories about the experience of seeing frightening movies in childhood. *Media Psychology*, 1, 117–140.
- Hoffner, C., & Cantor, J. (1985). Developmental difference in responses to a television character's appearance and behavior. *Developmental Psychology*, 21, 1065–1074.
- Hoffner, C., Cantor, J., & Badzinski, D. M. (1990). Children's understanding of adverbs denoting degree of likelihood. *Journal of Child Language*, 17, 217–231.
- Hoffner, C., Cantor, J., & Thorson, E. (1989). Children's responses to conflicting auditory and visual features of a televised narrative. *Human Communication Research*, 16, 256–278.
- Hudson, J. A., Sosa, B. B., & Shapiro, L. R. (1997). Scripts and plans: The development of preschool children's event knowledge and event planning. In S. L. Friedman & E. K. Scholnick (Eds.), *The developmental psychology of planning: Why, how, and when do we plan?* (pp. 77–102). Mahwah, NJ: Lawrence Erlbaum.
- Huston, A. C., & Wright, J. C. (1983). Children's processing of television: The informative functions of formal features. In J. Bryant & D. R. Anderson (Eds.), *Children's understanding of television: Research on attention and comprehension* (pp. 35–68). New York, NY: Academic Press.



- Jaglom, L. M., & Gardner, H. (1981). The preschool television viewer as anthropologist. In H. Kelly & H. Gardner (Eds.), *New directions for child development: Viewing children through television* (pp. 9–30). San Francisco, CA: Jossey-Bass.
- James, A., Allison, J., Jenks, C., & Prout, A. (1998). *Theorizing childhood*. New York, NY: Teachers College Press.
- Jessor, R. (1992). Risk behavior in adolescence: A psychosocial framework for understanding and action. *Developmental Review, 12*, 374–390.
- Jochen, P., Valkenburg, P. M., & Schouten, A. P. (2006). Characteristics and motives of adolescents talking with strangers on the internet. *CyberPsychology and Behavior, 9*(5), 526–530.
- Jordan, A., Bleakley, A., Manganello, J., Hennessy, M., Steven, R., & Fishbein, M. (2010). The role of television access in the viewing time of US adolescents. *Journal of Children and Media, 4*(4), 355–370.
- Kagan, J., & Snidman, N. C. (2004). *The long shadow of temperament*. Cambridge, MA: Harvard University Press.
- Kail, R. (1991). Developmental changes in speed of processing during childhood and adolescence. *Psychological Bulletin, 109*, 490–501.
- Kail, R. (1993). The role of a global mechanism in developmental change in speed of processing. In M. L. Howe & R. Pasnak (Eds.), *Emerging themes in cognitive development, Vol. 1: Foundations* (pp. 97–119). New York, NY: Springer-Verlag.
- Keating, D. P. (2004). Cognitive and brain development. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd ed., pp. 45–84). Hoboken, NJ: John Wiley.
- Kendeou, P., Bohn-Gettler, C., White, M., & van den Broek, P. (2008). Children's inference generation across different media. *Journal of Research in Reading, 31*(3), 259–272.
- Kistner, J., Counts-Allan, C., Dunkel, S., Drew, C.H., David-Ferdon, C., & Lopez, C. (2010). Sex differences in relational and overt aggression in the late elementary school years. *Aggressive Behavior, 36*(5), 282–291.
- Klimstra, T. A., Hale, W. W., Raaijmakers, Q. A. W., Branje, S. J. T., & Meeus, W. H. J. (2010). Identity formation in adolescence: Change or stability? *Journal of Youth and Adolescence, 39*(2), 150–162.
- Lang, A. (2000). The limited capacity model of mediated message processing. *Journal of Communication, 50*(1), 46–70.
- Larson, R., Richards, M. H., Moneta, G., Holmbeck, G., & Duckett, E. (1996). Changes in adolescents' daily interactions with their families from ages 10 to 18: Disengagement and transformation. *Developmental Psychology, 32*, 744–754.
- Lauricella, A. R., Gola, A. A. H., & Calvert, S. (2011). Toddlers' learning from socially meaningful video characters. *Media Psychology, 14*, 216–232.
- Lemish, D. (1987). Viewers in diapers: The early development of television viewing. In T. R. Lindlof (Ed.), *Natural audiences: Qualitative research of media uses and effects* (pp. 33–57). Norwood, NJ: Ablex.
- Lenhart, A. (2012). *Teens, smartphones, & texting*. Retrieved from <http://pewinternet.org/Reports/2012/Teens-and-smartphones.aspx>
- Linebarger, D. L., & Walker, D. (2005). Infants' and toddlers' television viewing and language outcomes. *American Behavioral Scientist, 48*, 624–645.
- Linn, S. (2009). *The case for make believe: Saving play in a commercialized world*. New York, NY: New Press.
- Livingstone, S. (2002). *Young people and new media: Childhood and the changing media environment*. Thousand Oaks, CA: Sage.
- Lorch, E. P., Bellack, D. R., & Augsbach, L. H. (1987). Young children's memory for televised stories: Effects of importance. *Child Development, 58*, 453–463.
- Lovett, S. B., & Flavell, J. H. (1990). Understanding and remembering: Children's knowledge about the differential effects of strategy and task variables on comprehension and memorization. *Child Development, 61*, 1842–1858.



- Mandler, J. M. (1998). Representation. In W. Damon (Series Ed.) & D. Kuhn & R. Siegler (Vol. Eds.), *Handbook of child psychology: Vol. 2. Cognition, perception, and language* (pp. 255–308). New York, NY: John Wiley.
- Mares, M. L., & Acosta, E. E. (2008). Be kind to three-legged dogs: Children's literal interpretations of TV's moral lessons. *Media Psychology, 11*, 377–399.
- Meadowcroft, J. M., & Reeves, B. (1989). Influence of story scheme development on children's attention to television. *Communication Research, 16*, 352–374.
- Melkman, R., Tversky, B., & Baratz, D. (1981). Developmental trends in the use of perceptual and conceptual attributes in grouping, clustering, and retrieval. *Journal of Experimental Child Development, 31*, 470–486.
- Metcalf, J., & Shimamura, A. P. (Eds.). (1994). *Metacognition: Knowing about knowing*. Cambridge, MA: MIT Press.
- Morison, P., Kelly, H., & Gardner, H. (1981). Reasoning about the realities of television: A developmental study. *Journal of Broadcasting, 25*, 229–242.
- Moshman, D. (1998). Cognitive development beyond childhood. In W. Damon (Series Ed.) & D. Kuhn & R. Siegler (Vol. Eds.), *Handbook of child psychology: Vol. 2. Cognition, perception, and language* (5th ed., pp. 947–978). New York, NY: John Wiley.
- National Survey on Drug Use and Health. (2010). *Results from the 2010 National Survey on Drug Use and Health: Summary of national findings*. Retrieved from <http://www.samhsa.gov/data/NSDUH/2k10NSDUH/2k10Results.htm>
- Noble, G. (1975). *Children in front of the small screen*. Thousand Oaks, CA: Sage.
- O'Bryan, K. G., & Boersma, F. J. (1971). Eye movements, perceptual activity, and conservation development. *Journal of Experimental Child Psychology, 12*, 157–169.
- Owens, J. M., McLaughlin, S. B., & Sudweeks, J. (2011). Driver performance while text messaging using handheld and in-vehicle systems. *Accident Analysis and Prevention, 43*(3), 939–947.
- Paradise, A., & Sullivan, M. (2012). (In)visible threats? The third-person effect in perceptions of the influence of Facebook. *Cyberpsychology, Behavior, and Social Networking, 15*(1), 55–60.
- Perloff, R. M. (2009). Mass media, social perception, and the third-person effect. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (pp. 252–268). New York, NY: Routledge.
- Petersen, A. C., & Taylor, B. (1980). The biological approach to adolescence: Biological change and psychological adaptation. In J. Adelson (Ed.), *Handbook of adolescent psychology* (pp. 117–155). New York, NY: John Wiley.
- Pharo, H., Sim, C., Graham, M., Gross, J., & Hayne, H. (2011). Risky business: Executive function, personality, and reckless behavior during adolescence and emerging adulthood. *Behavioral Neuroscience, 125*(6), 970–978.
- Piaget, J. (1930). *The child's conception of the world*. New York, NY: Harcourt, Brace & World.
- Piaget, J. (1950). *The psychology of intelligence*. New York, NY: International Universities Press.
- Piaget, J. (1952). *The origins of intelligence in children*. New York, NY: International Universities Press.
- Piaget, J., & Inhelder, B. (1975). *The origin of the idea of chance in children*. New York, NY: W. W. Norton.
- Pike, M. M., Barnes, M. A., & Barron, R. W. (2010). The role of illustrations in children's inferential comprehension. *Journal of Experimental Child Psychology, 105*(3), 243–255.
- Potter, W. J. (2010). The state of media literacy. *Journal of Broadcasting and Electronic Media, 54*(4), 675–696.
- Public Agenda. (1999). *Kids these days '99: What Americans really think about the next generation*. Retrieved from <http://www.publicagenda.org/specials/kids/kids.htm>
- Rekers, G. A. (1992). Development of problems of puberty and sex roles in adolescence. In C. E. Walker & M. C. Roberts (Eds.), *Handbook of clinical child psychology* (pp. 607–622). New York, NY: John Wiley.
- Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., . . . Udry, J. R. (1997). Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health. *Journal of the American Medical Association, 278*, 823–832.

- Revelle, G. L., Medoff, L., & Strommen, E. F. (2001). Interactive technologies research at the Children's Television Workshop. In S. M. Fisch & R. T. Truglio (Eds.), *"G" is for growing: Thirty years of research on Sesame Street* (pp. 215–230). Mahwah, NJ: Lawrence Erlbaum.
- Rideout, V. J. (2012). *Social media, social life: How teens view their digital lives*. Retrieved from <http://vjrconsulting.com/storage/socialmediasociallife-final-061812.pdf>
- Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). *Generation M2: Media in the lives of 8- to 18-year-olds*. Menlo Park, CA: Kaiser Family Foundation.
- Rideout, V., & Hamel, E. (2006). *The media family: Electronic media in the lives of infants, toddlers, preschoolers and their parents*. Menlo Park, CA: Kaiser Family Foundation.
- Rideout, V., Lauricella, A., & Wartella, E. (2011). *Children, media, and race: Media use among white, black, Hispanic and Asian American children*. Retrieved from <http://web5.soc.northwestern.edu/cmhd/wp-content/uploads/2011/06/SOCconfReportSingleFinal-1.pdf>
- Roth, J., & Brooks-Gunn, J. (2000). What do adolescents need for healthy development? Implications for youth policy. *Social Policy Report*, 14, 3–19.
- Rubin, K. H., Bukowski, W., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (5th ed., pp. 619–700). Hoboken, NJ: John Wiley.
- Ruble, D. N., Taylor, L. J., Cyphers, L., Greulich, F. K., Lurye, L. E., & Shrout, P. E. (2007). The role of gender constancy in early gender development. *Child Development*, 78(4), 1121–1136.
- Salomon, G. (1983). Television watching and mental effort: A social psychological view. In J. Bryant & D. R. Anderson (Eds.), *Children's understanding of television: Research on attention and comprehension* (pp. 181–198). New York, NY: Academic Press.
- Salomon, G., & Leigh, T. (1984). Predispositions about learning from print and television. *Journal of Communication*, 34(2), 119–135.
- Santelli, J., Carter, M., Orr, M., & Dittus, P. (2009). Trends in sexual risk behaviors, by nonsexual risk behavior involvement, U.S. high school students, 1991–2007. *Journal of Adolescent Health*, 44(4), 372–379.
- Scherrer, J. F., Xian, H., Pan, H., Pergadia, M. L., Madden, P. A., Grant, J. D., Sartor, C. E., . . . Buchholz, K. K. (2012). Parent, sibling and peer influences on smoking initiation, regular smoking and nicotine dependence: Results from a genetically informative design. *Addictive Behavior*, 37(3), 240–247.
- Schmidt, M. E., Pempek, T. A., Kirkorian, H. L., Lund, A. F., & Anderson, D. R. (2008). The effect of background television on the toy play behavior of very young children. *Child Development*, 79, 1137–1151.
- Schmitt, K. L., Anderson, D. R., & Collins, P. A. (1999). Form and content: Looking at visual features of television. *Developmental Psychology*, 35, 1156–1167.
- Scholz, R. W., & Waller, M. (1983). Conceptual and theoretical issues in developmental research on the acquisition of the probability concept. In R. W. Scholz (Ed.), *Decision making under uncertainty* (pp. 291–311). New York, NY: North Holland.
- Schwartz, P. D., Maynard, A. M., & Uzelac, S. M. (2008). Adolescent egocentrism: A contemporary view. *Adolescence*, 43, 441–448.
- Siegler, R. S. (2005). Children's learning. *American Psychologist*, 60, 769–778.
- Silver, J. (2011, January 18). Comcastrophe: Comcast/NBC merger approved. *Huffington Post*. Retrieved from [http://www.huffingtonpost.com/josh-silver/comcastrophe-comcastnbc-m\\_b\\_810380.html](http://www.huffingtonpost.com/josh-silver/comcastrophe-comcastnbc-m_b_810380.html)
- Simcock, G., Garrity, K., & Barr, R. (2011). The effect of narrative cues on infants' imitation from television and picture books. *Child Development*, 82(5), 1607–1619.
- Smith, R., Anderson, D. R., & Fischer, C. (1985). Young children's comprehension of montage. *Child Development*, 56, 962–971.
- Song, A. V., Glantz, S. A., Halpern-Felsher, B. L. (2009). Perceptions of second-hand smoke risks predict future adolescent smoking initiation. *Journal of Adolescent health*, 45(6), 618–625.

- Sowell, E. R., Trauner, D. A., Gamst, A., & Jernigan, T. L. (2002). Development of cortical and subcortical brain structures in childhood and adolescence: A structural MRI study. *Developmental Medicine and Child Neurology*, 44(1), 4–16.
- Sparks, G. G. (1986). Developmental difference in children's reports of fear induced by the mass media. *Child Study Journal*, 16, 55–66.
- Spear, L. P. (2010). *Behavioral neuroscience of adolescence*. New York, NY: W. W. Norton.
- Springer, K. (2001). Perceptual boundedness and perceptual support in conceptual development. *Psychological Review*, 108(4), 691–708.
- Stegge, H., & Terwogt, M. M. (2007). Awareness and regulation of emotion in typical and atypical development. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 269–286). New York, NY: Guilford.
- Steinberg, L. (2005). Cognitive and affective development in adolescence. *Trends in Cognitive Sciences*, 9(2), 69–74.
- Steyer, J. P. (2002). *The other parent: The inside story of the media's effect on our children*. New York, NY: Atria Books.
- Subrahmanyam, K., & Greenfield, P. (2008). Media symbol systems and cognitive processes. In S. Calvert & B. J. Wilson (Eds.), *The Blackwell handbook of children, media, and development* (pp. 166–187). London, UK: Blackwell.
- Tversky, B. (1985). Development of taxonomic organization of named and pictured categories. *Developmental Psychology*, 21, 1111–1119.
- Valkenburg, P., & Peter, J. (2011). Online communication among adolescents: An integrated model of its attraction, opportunities, and risks. *Journal of Adolescent Health*, 48(2), 121–127.
- Valkenburg, P., Schouten, A., & Peter, J. (2005). Adolescents' identity experiments on the Internet. *New Media and Society*, 7(3), 383–402.
- Valkenburg, P., & Vroome, M. (2004). Developmental changes in infants' and toddlers' attention to television entertainment. *Communication Research*, 31(1), 288–311.
- van den Broek, P., Lorch, E. P., & Thurlow, R. (1996). Children's and adults' memory for television stories: The role of causal factors, story-grammar categories, and hierarchical level. *Child Development*, 67, 3010–3028.
- Vandewater, E. A. (2011). Infant word learning from commercially available video in the US. *Journal of Children and Media*, 5(3), 248–266.
- Vandewater, E. A., Rideout, V. J., Wartella, E. A., Huang, X., Lee, J. H., & Shim, M. (2007). Digital childhood: Electronic media and technology use among infants, toddlers and preschoolers. *Pediatrics*, 119, e1006–e1015. Retrieved from www.pediatrics.org
- Vidmar, N., & Rokeach, M. (1974). Archie Bunker's bigotry: A study in selective perception and exposure. *Journal of Communication*, 24(1), 36–47.
- Walsh-Childers, K. (1997). *A content analysis: Sexual coverage in women's, men's, teen and other specialty magazines*. Menlo Park, CA: Kaiser Family Foundation.
- Wartella, E., & Reeves, B. (1985). Historical trends in research on children and the media: 1900–1960. *Journal of Communication*, 35(2), 118–132.
- Wartella, E., Richert, R. A., & Robb, M. B. (2010). Babies, television, and videos: How did we get here? *Developmental Review*, 30, 116–127.
- Watson, J. M., Lambert, A. E., Miller, A. E., & Strayer, D. L. (2011). The magical letters P, F, C, and sometimes U: The rise and fall of executive attention with the development of prefrontal cortex. In K. L. Fingerman, C. A. Berg, J. Smith, & T. C. Antonucci (Eds.), *Handbook of life-span development* (pp. 407–436). New York, NY: Springer.
- Weiss, A. J., & Wilson, B. J. (1998). Children's cognitive and emotional responses to the portrayal of negative emotions in family-formatted situation comedies. *Human Communication Research*, 24, 584–609.
- Whitbeck, L., Yoder, K. A., Hoyt, D. R., & Conger, R. D. (1999). Early adolescent sexual activity: A developmental study. *Journal of Marriage and the Family*, 61, 934–946.

- Wiggers, M., & van Lieshout, C. F. (1985). Development of recognition of emotions: Children's reliance on situational and facial expressive cues. *Developmental Psychology, 21*(2), 338–349.
- Wilkinson, R. B. (2004). The role of parental and peer attachment in the psychological health and self-esteem of adolescents. *Journal of Youth and Adolescence, 33*(6), 479–493.
- Wilson, B. J. (1991). Children's reactions to dreams conveyed in mass media programming. *Communication Research, 18*, 283–305.
- Wilson, B. J., & Drogos, K. L. (2009). Children and adolescents: Distinctive audiences of media content. In M. B. Oliver & R. L. Nabi (Eds.), *The SAGE handbook of media processes and effects* (pp. 469–485). Thousand Oaks, CA: Sage.
- Wilson, B. J., & Smith, S. L. (1995, May). *Children's comprehension of and emotional reactions to TV news*. Paper presented at the annual conference of the International Communication Association, Albuquerque, NM.
- Wilson, B. J., & Smith, S. L. (1998). Children's responses to emotional portrayals on television. In P. Anderson & L. Guerrero (Eds.), *Handbook of communication and emotion: Research, theory, applications, and contexts* (pp. 533–569). New York, NY: Academic Press.
- Woolley, J. D., Boerger, E. A., & Markman, A. B. (2004). A visit from the Candy Witch: Factors influencing young children's belief in a novel fantastical being. *Developmental Science, 7*(4), 456–468.
- Wright, J. C., Huston, A. C., Reitz, A. L., & Piemyat, S. (1994). Young children's perceptions of television reality: Determinants and developmental differences. *Developmental Psychology, 30*, 229–239.
- Wright, J. C., Huston, A. C., Ross, R. P., Calvert, S. L., Rolandelli, D., Weeks, L. A., . . . Potts, R. (1984). Pace and continuity of television programs: Effects on children's attention and comprehension. *Developmental Psychology, 20*, 653–666.
- Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeking*. New York, NY: Cambridge University Press.