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Article *in* Journal of Research on Adolescence · February 2011

DOI: 10.1111/j.1532-7795.2010.00717.x

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JOURNAL OF RESEARCH ON ADOLESCENCE, 21(1), 95–113

Older and Newer Media: Patterns of Use and Effects on Adolescents' Health and Well-Being

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The past decade's research on the use and effects of older (television, music, movies, magazines) and newer media (the Internet, cell phones, social networking) on adolescents' health and well-being is reviewed. A portrait of patterns of use of the media is provided and then the predictors and effects of those patterns on adolescents' mental health is discussed. Research on the effects of exposure to specific kinds of content on adolescents' aggressive behavior, gender roles, sexual relationships, body image disturbances, obesity, and substance use also are reviewed. Finally, media literacy as a promising strategy for enhancing adolescents' use of the media in the future is considered.

THE SHIFTING MEDIA LANDSCAPE

Adolescents growing up in the first decade of the new millennium came of age during the digital revolution. The traditional or older media of television, movies, radio, and magazines were all fundamentally changing in the face of the swift adoption of newer digital media such as social networking sites and music and video sharing on the Internet, MP3 players, and "smart" mobile phones. Television shows popular with teens included interactive Web sites where fans could comment and chat with others about that week's episode; video games featuring the characters in new action and adventure movies were released simultaneously; and music sales plummeted as teens customized their playlists by downloading their favorite songs for free. The newer media provided adolescents unprecedented access to thousands of channels of entertainment possibilities as well as the opportunity to be connected with friends (and family) virtually any time of the day or night. As a result, some have called this the "constant contact" generation (Clark, 2005).

Research on patterns of use and effects on adolescents' health and well-being have struggled to keep up with the rapidly shifting media terrain. Here we review what the past decade's research on both the older and newer media tells us about the role the media play in adolescents' development, focusing whenever the research will allow on the newer media. We begin with a portrait of patterns of use of the media and consider the predictors and effects of those patterns on adolescents' mental health. We then turn to what is known about how use and exposure to specific kinds of content affect adolescents' aggressive behavior, gender roles, sexual relationships, body image disturbances, obesity, and substance use. We end with a brief discussion of how the media, parents, and educators might be engaged in increasing healthy outcomes from adolescents' use of the media in the future.

Patterns of Media Use

Adolescents live in media-saturated worlds. According to a national survey of 8–18-year-olds conducted in 2009, adolescents on average were using some form of media more than 7.5 hours a day, much more time than spent in school or with parents (Rideout, Foehr, & Roberts, 2010). More than a quarter of that time was spent "media multi-tasking"—attending to more than one medium simultaneously (i.e., listening to music on earphones while surfing the Web), so overall exposure amounted to 10 hours and 45 minutes a day.

In the past few decades, the number of media channels available to consumers has exploded. In 1980, for example, the average American home had about 10 television channels; by 2004, the number was between 54 and 90 channels (Warren, 2004). The Internet offers access to virtually everything, including older media in digital form—television shows, music, and movies—as well as whole new forms of more interactive communication—blogs, chat, instant messaging, and social networking sites. By 2007, more than half (59%) of adolescents had their own computer, two thirds had access to high speed Internet at home

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DOI: 10.1111/j.1532-7795.2010.00717.x

(Lenhart, Arafeh, Smith, & Macgill, 2008), and cell phones were quickly making the Internet accessible wherever, whenever.

The proliferation of media channels requires that consumers make choices about what they will attend to. Often adolescents' media choices are based in social position as well as identity aspirations (Steele, 1999). Surveys have shown significant differences in media use patterns by adolescents' basic social identities such as age, gender, and race/ethnicity. Older adolescents, for example, tend to spend more time listening to music and more time on the Internet than younger adolescents, who spend more time watching television and movies and playing video and online games. In 2007, girls were more likely to talk on cell phones, use instant messaging, send messages on social networking sites and text messages on their cellphones, and to e-mail (Lenhart, Arafeh, et al., 2008). Boys were spending more time than girls playing computer games (Lenhart, Kahne, et al., 2008). African American, Hispanic, and White adolescents have very different music preferences that differentiate even more in later adolescence (Roberts et al., 2005), and African American teens are more likely than White adolescents to be watching television shows with Black casts (Brown & Pardun, 2004).

Newer Media Bring New Opportunities

The newer media provide unprecedented opportunities for selection and interaction that may be driven by and support identity exploration. Two decades ago teens' bedroom walls and locker doors were often where their identity experiments were expressed through tacked-on media images that symbolized who they were and who they were becoming (Steele & Brown, 1995). Today a glance at a few MySpace and Facebook profiles is all it takes to see that the newer media provide a broad repertoire of images and facilitate the process of integrating media content in identity construction in dynamic ways. On social networking sites, a teen can play her favorite music and post pictures and videos clipped from the Web. She can keep a kind of public diary of what she is thinking about, asking for guest comments, and can change her "wallpaper" (background graphics) depending on her current mood or interests (Stern, 2002).

No longer considered a passive audience, young people are the major constituency in "networked publics" (Horst, Herr-Stephenson, & Robinson, 2009). Today's adolescents actively use newer media technologies to develop niche interests that previously did not have sufficient appeal to be featured on mainstream television or in magazines. Whether instant messaging their friends or editing a sound file, young people are also developing essential social and technological competencies that will help them fully participate in the society they are creating (Horst et al., 2009).

Recent Pew Internet & American Life research illustrates the potential for new media use to facilitate teens' social engagement (Lenhart, Kahne, et al., 2008). Video game activities—such as guiding other players, thinking about ethical issues, making decisions about how a community should be run—have been called "civic gaming experiences." A survey of 12–17-year-olds showed that teens who spent more time playing video games that involved such civic experiences were also more likely than other teens to be politically and civically engaged in the real world. Indeed, as Montgomery (2007) has argued, renewed civic and political engagement among young people, in large part driven by new forms of cyberactivism, may be one of the early legacies of the first digital generation. Young people have at their disposal an increasing number of tools (e.g., social media, e-zines) through which to engage more actively in the political process (e.g., Farris-Berg & Granofsky, 2009).

Newer Media: Common Concerns

As has been true at the introduction of each new medium (Wartella & Robb, 2008), the Internet has also raised what some might call "moral panics" about possible ill effects on young users. Even as the Internet and other newer media provide new opportunities for adolescents' identity exploration and social and civic development, several trends have troubled teens' parents and caregivers. In fact, parents of teens were less likely to say that the Internet was a good thing in 2006 than 2 years earlier (Macgill, 2007).

Two Internet-specific fears that have been investigated and show some evidence for concern are compulsive Internet use and social maladjustment. The Internet appears to be addictive for only a small proportion of the population, however, and specific aspects of online communication may be more addictive than others. About 3% of European adolescents (12–18 years old) have been found to exhibit symptoms of compulsive Internet use (Johansson & Götestam, 2004; Kaltiala-Heino, Lintonen, & Rimpela, 2004). Frequent use of "real time communication functions," such as instant messaging and chatting, have been found to be associated with compulsive Internet use 6 months later. Frequent use of e-mail as well as noncommunicative uses of the Internet—surfing, information seeking, pornography, gaming—were not associated

with such problematic Internet use 6 months later, however (van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008).

Studies have found no relationship between adolescents' Internet use and negative well-being indicators such as loneliness, social anxiety, depression, or daily life satisfaction (Gross, 2004). In fact, Internet communication appears to facilitate friendship formation among introverts and extroverts alike (Peter, Valkenburg, & Schouten, 2005), suggesting that both types of teens take advantage of the Internet characteristics that best suit their personalities to augment their offline relationships. Of some concern, however, are the findings that young people who are lonely or socially anxious, as well as those who exhibit symptoms of depression, are more likely to use Internet technologies to communicate with people they do not know in "real" life (Gross, Juvonen, & Gable, 2002; Ybarra, Alexander, & Mitchell, 2005).

In short, newer media are profoundly changing the landscape of adolescence. Young people today expect to be constantly connected to a vast world of entertainment, relationships, and information through the wired devices they hold in their hands and prop on their laps. The mediated world does indeed allow unprecedented opportunities for youths' identity development. At the same time, however, while research is failing to validate some of the initial fears, it appears that some young people may be particularly vulnerable to experiencing negative Internet-related outcomes.

Aside from addiction and social maladjustment, other pervasive, well-documented risks are associated with adolescents' use of older and newer media. It is the discussion of these health-related risks to which we now turn.

MEDIA VIOLENCE AND AGGRESSION

Perhaps no topic has been as controversial or has preoccupied mass media researchers more than the effects of exposure to violent media content on children and adolescents. In the past half century, hundreds of studies have been conducted primarily focusing on the effects of violent portrayals on television and, more recently, violent videogames. All the evidence has not supported the core hypothesis that exposure to media violence leads to increased aggressive behavior in young viewers, but over the years, a number of different institutions, including The U.S. Surgeon General (1972), the National Institute of Mental Health (1982), and the American Psychological Association (1993), have concluded that media violence is a public health problem. In 2000, six professional medical associations (e.g., the American Academy of Pediatrics, the American Medical Association) issued a "Joint Statement" affirming that "viewing entertainment violence can lead to increases in aggressive attitudes, values and behavior, particularly in children" (para. 4). Despite the accumulation of evidence, efforts to reduce the frequency or kind of violence in the media have been resisted by a media industry that has found that violence is an inexpensive way to attract young audiences (Hamilton, 1998).

Here we provide a brief synopsis of the empirical evidence that is more fully discussed in several excellent reviews (e.g., Anderson et al., 2003; Huesmann, 2007; Sparks, Sparks, & Sparks, 2009). We focus on three developments since the publication of the Joint Statement: (1) refinement of the theoretical frameworks that explain and predict the effects of media violence, (2) research on the effects of playing violent video games, and (3) cyber-bullying.

Violence in Adolescents' Media

Analyses of entertainment programming on television have found consistently high levels of interpersonal, most typically gun-related, violence. One study of prime-time television programs broadcast between 1993 and 2001 showed that 61.2% of the programs contained violence and that violent acts appeared an average of 4.5 times per program (Signorielli, 2003). Due perhaps to threatened Congressional intervention in the late 1990s, the frequency of violence on prime-time television was slightly lower in the early 2000s than it had been in the mid-1990s (Hetsroni, 2007), but still frequent in other genres and media. About 15% of the music videos on cable television and music video Web sites (Aikat, 2004) include portrayals of violence, with the video's main character being depicted as the aggressor in 80% of the cases (Rich, Woods, Goodman, Emans, & DuRant, 1998). Violence is also a prominent feature of video games and an important element of how games are marketed. Scharrer (2004) reported that 56% of all the advertisements for video games in three popular gaming magazines and 38% of the ads rated E (for Everyone, ages 6 and older) contained some violent imagery or language.

Effects on Aggressive Behavior

Two longitudinal surveys illustrate the kinds of findings of the hundreds of empirical studies linking exposure to violent content with aggressive outcomes that have accumulated in the past half-century. One

of the surveys found that aggressive behaviors in adulthood (20–22 years old) were predicted by childhood (6–10 years old) exposure to violent television content, identification with violent characters, and perceptions of television violence as being realistic (Huesmann, Moise-Titus, Podolski, & Eron, 2003). In another sample, adulthood aggression, as indicated by police records for arrests and criminal behavior, was associated with the amount of television viewing, which likely included violent content, in adolescence (14 years old) and young adulthood (22 years old) (Johnson, Cohen, Smailes, Kasen, & Brook, 2002).

One field experiment suggested that a simple reduction in the amount of time children spend watching television can reduce aggression. Analyses showed that peer ratings of aggression, as well as independent observer ratings of verbal aggression, were lower among the third and fourth graders who participated in a 6-month television reduction curriculum, as compared with students in control classrooms (Robinson, Wilde, Navracruz, Haydel, & Varady, 2001).

The most recent meta-analysis of more than 200 studies that investigated the effect of television violence on aggressive and antisocial behavior (Paik & Comstock, 1994) concluded that the average correlation between violence and aggression or antisocial behavior was .37 for experiments and .19 for surveys. Bushman and Anderson (2001) argued that the correlation based on experimental work was stronger than the correlation between second-hand smoke and lung cancer, calcium intake and bone mass, and even homework and academic achievement.

In the decade since the Joint Statement was issued, researchers have continued to strengthen the case against media violence, with considerable effort directed at understanding the effects of playing violent video games. Regrettably, the scientific consensus on the issue has not been reflected in news media coverage, public opinion, or public policy (Bushman & Anderson, 2001).

Theoretical Models Linking Media Violence to Aggressive Behavior

As the empirical evidence has accumulated, the psychological mechanisms that underlie the link between media violence and aggression have been clarified. Theoretical perspectives such as priming (Anderson, Benjamin, & Bartholow, 1998), excitation transfer (Zillmann, 1991), social cognition (Bandura, 2009), and desensitization (Carnagey, Anderson, & Bushman, 2007) have been shown to explain the link between media violence and aggression (for review, see Huesmann & Kirwil, 2007).

Two emerging models aim to integrate the different explanations. The General Aggression Model (GAM) (Anderson & Carnagey, 2004) is an ecological model that simulates a single episode in which a stimulus may result in an aggressive response. The model considers a series of situational, individual, and biological variables that can influence the eventual outcome. The episode is understood to be one in a chain of similar encounters between an individual and his or her environment that together constitute a continuing social interaction. Aggressive tendencies, according to the GAM, "are most likely to develop in children who grow up in environments that reinforce aggression, provide aggressive models, frustrate and victimize them, and teach them that aggression is acceptable and successful" (Anderson, Gentile, & Buckley, 2007, p. 47).

The second significant theoretical contribution of the past decade is the Model of Reinforcing Spirals (Slater, 2007). The model integrates two of the dominant theoretical perspectives in the field of mass communication: selective exposure (Zillmann & Bryant, 1985) and media effects (Bryant & Oliver, 2009). It contends that media selectivity and media effects interact with one another in a continually reciprocal, reinforcing fashion. Empirical evidence from a longitudinal project investigating adolescents' aggressiveness, psychosocial well-being, and proclivity to engage with violent media content supports the reinforcing spirals idea (Slater, Henry, Swaim, & Anderson, 2003). The three-wave panel analysis found that middle school students' aggressiveness predicted their concurrent use of violent media (action films, video games, violent Web sites) and also showed that the students' violent media use predicted their concurrent and future aggressiveness. Subsequent analyses found that the relationship between violent media use and aggression was stronger for the adolescents who were alienated from school and for those who were victimized by their peers than for those who did not face such social challenges (Slater, Henry, Swaim, & Cardador, 2004).

Overall, the GAM and the Model of Reinforcing Spirals shed light on the complexities of the relationship between violent media and youth aggression and facilitate the identification of those youth who are most at risk for being influenced by violent media content.

Video Games and Aggression

Three trends have motivated a shift in focus in the past decade away from the older media, such as

television and movies, and toward interactive video and computer games as important sources of violent content. First, a user's involvement with video games is vastly different from his or her engagement with older media. As Carnagey, Anderson, and Bartholow (2008) explained:

> Video games are a qualitatively different form of media than television and film, primarily because video games are more interactive and immersive. Players of violent video games actually engage in virtual violent actions, receive direct rewards for those actions, closely identify with the characters they control, and actively rehearse aggressive behavioral scripts (p. 179).

Further, video and computer game playing has grown increasingly popular among young people, so that by 2007 almost all (97%) were playing electronic games, with the average 8–18-year-old playing nearly 1.25 hours daily (Rideout et al., 2010). Finally, the perpetrators in several school shootings in the United States in recent years were said to have had histories of violent video game playing (Anderson et al., 2007).

A substantial body of survey and experimental studies indicate that both level of violence and amount of violent game playing are associated with increased levels of aggression among players (see Anderson et al., 2007). For example, one survey of eighth and ninth grade students showed that violent video game exposure predicted physical aggression, as indicated by the number of physical fights (Gentile, Lynch, Linder, & Walsh, 2004). A meta-analysis of early video game research found the average correlation between violent video game play and aggression to be .19. Violent video game playing was associated with increased arousal and aggressive cognitions, emotions, and behavior, as well as with decreased prosocial behavior (Anderson & Bushman, 2001).

Experimental studies have shown that certain game features exacerbate detrimental outcomes. The amount of violence portrayed in a game has been shown to affect aggression measured by, for instance, the duration of a noise blast delivered to an opponent on a subsequent task (Anderson & Dill, 2000). Another study manipulated the amount of blood portrayed in a shooter game and the player's point of view (first-person vs. third-person) (Farrar, Krcmar, & Nowak, 2006). Results showed that players in the blood-on condition exhibited more physically aggressive intentions post-game than players in the blood-off condition, and that women who played in the third-person condition reported being more focused and more involved in the game than women who played in the first-person condition. Involvement in the game was associated with higher levels of hostility.

Use of physiological measures suggests that exposure to violent games results in desensitization to violence over time (e.g., Ballard, Hamby, Panee, & Nivens, 2006). Carnagey et al. (2007), for example, found that those who played a violent video game for 20 minutes exhibited less arousal, as indicated by their heart rate and skin conductance, when they were subsequently shown footage of real violence. In another study, experienced violent video game players exhibited less brain activity in response to photographs depicting violence (Bartholow, Bushman, & Sestir, 2006).

Despite such findings that underscore the detrimental effects of violent video game play, young people and their parents fail to perceive risk in playing video games. A survey of 12- and 13-year-olds found that adolescents tend to see themselves as the least susceptible to the negative outcomes associated with violent video games, as compared with same-age and younger peers (Scharrer & Leone, 2008). Likewise, a majority of parents (62%) said that playing video games had no effect on their children (Lenhart, Kahne, et al., 2008). According to young people, parental restrictions on video games are rare. In a survey of eighth and ninth graders, 31% reported that their parents did not understand video game ratings; only 15% reported that their parents regularly checked game ratings before the teens purchased new games (Gentile et al., 2004). Parents disputed such claims: 72% said that they always or sometimes checked the ratings on their children's games, and 90% said that they always or sometimes knew what games their children played (Lenhart, Kahne, et al., 2008).

In short, video games appear to have upped the ante on the possibility of negative outcomes of exposure to mediated violence. Games provide immersion and engagement in violent environments that apparently over time increase desensitivity as well as hostile cognitions, both preconditions for behaving inappropriately or aggressively in real life. The disconnect between what parents and their children think they are doing about monitoring game use suggests more should be done to educate both parents and adolescents about the role these games may play in their lives.

Cyber-Bullying

In 2008, Megan Meier, 13, hanged herself after receiving a message saying "The world would be a better place without you" from a fake MySpace

profile set up by the mother of her nemesis (Steinhauer, 2008). Although an extreme example of the threat of cyber-bullying, the case brought into sharp relief the capacity of the Internet to facilitate what is now being called cyber-bullying.

Behaviors of varying severity may be categorized as cyber-bullying, or online harassment, which has been defined as "creating Web sites or sending e-mail or text messages . . . intended to embarrass or harass a peer and/or to threaten physical harm" (David-Ferdon & Hertz, 2007). The broad definition complicates the assessment of the frequency of cyber-bullying. In one study 24% of 10–15-year-olds reported that they received "rude or nasty" online comments less than monthly; 4% said they received "threatening or aggressive" comments more often than monthly (Ybarra, Diener-West, & Leaf, 2007). Another study reported that in the majority (57%) of incidents, the harassment was single-episode, not recurring cycles of torment that typically characterizes bullying in schools (Wolak, Mitchell, & Finkelhor, 2007). These findings suggest that while cyber-bullying does occur and should be of concern, acute and chronic forms of this harassment may be rare.

Perpetration of cyber-bullying appears to be most prevalent in mid-adolescence and on instant messaging, with girls being more likely than boys to report being victims as well as perpetrators (Kowalski & Limber, 2007; Williams & Guerra, 2007). The behavior also seems to be a symptom of particularly troubled youth. In one cross-sectional survey, having experiences with online harassment was associated with substance use, offline aggression, and a negative relationship with a caregiver (Ybarra, Espelage, & Mitchell, 2007). Additionally, youth who were harassed online were more likely to skip school, carry a weapon, be assigned to detention, or be suspended (Ybarra et al., 2007). It was not clear from those studies, however, whether the harassment was a result of or contributed to the other problematic behavior. Research and educational programs that target online harassment should take into account that it is likely a component of broader patterns of negative behavior among at-risk youth.

To summarize, violence is pervasive in the media that adolescents consume. A compelling body of research has unequivocally established a link between viewing mediated violence, playing violent video games, and increased aggressive thoughts and actions. For some adolescents, the Internet has provided a new avenue for aggressive bullying. Sadly, the everyday risks posed by mediated violence draw public attention only when tragedy strikes. A robust public conversation is needed about the effects of media violence and how the negative consequences for adolescents can be diminished.

ROMANTIC AND SEXUAL RELATIONSHIPS

Even before young people engage in real life romantic experiences, they have developed "cultural models"—perceptions, expectations, and scripts about sexuality and romantic love (Milbrath, Ohlson, & Eyre, 2009). These models of romance and sexual relationships can come from personal sources (e.g., family, peers), as well as from the media (Rivadeneyra & Lebo, 2008). The media adolescents attend to are flooded with scripts of how romantic and sexual relationships unfold and serve as models for adolescents' own behavior in relationships. In one qualitative study, for example, Bachen and Illouz (1996) found striking parallels between television portrayals of romance and adolescents' dating schemas. Television and movies may be especially compelling sources of information about romance because sexual and romantic content is accessible, more explicit, and less judgmental than other sexual socialization agents such as parents, teachers, and religious leaders (Ward, 2003).

Romantic and sexual socialization is the process by which knowledge, attitudes, and values about romance and sexuality are acquired (Ward, 2003, p. 348). Content analyses, primarily of prime-time television and movies, have found that sexual portrayals are frequent and sex is portrayed as risk free and recreational, with little to no mention or depiction of negative physical consequences such as sexually transmitted diseases or pregnancy (Kunkel et al., 2007). The young women in children's movies frequently fall in love at first sight with handsome men and ultimately ride off into the sunset (Tanner, Haddock, Zimmerman, & Lund, 2003). Sexual behavior is more likely between unmarried couples than married couples (Pardun, L'Engle, & Brown, 2005), and physical attractiveness is key for both sexes, but especially for females (Ward, 2005). Such depictions are consistent across prime-time programming, reality dating shows (e.g., Zurbriggen & Morgan, 2006), and soap operas (Rivadeneyra & Lebo, 2008) as well as in movies shown on television (Ward, 2003).

Although portrayals of nonheterosexual relationships are increasing in the older media, they still are relatively rare in all but a few genres (i.e., some movies and situation comedies), and gay and lesbian characters rarely appear in sexual situations in television programming (Fisher, Hill, Grube, & Gruber, 2007). Some have suggested that such "symbolic

annihilation'' may result in viewers believing that homosexuality is abnormal or extremely rare (Gross, 1994) and reinforce a ''heterosexual script'' for sexual behavior (Kim et al., 2007). A few studies suggest that exposure to more realistic portrayals on television and film can help increase adolescents' acceptance of gays and lesbians (Mazur & Emmers-Sommer, 2002; Rossler & Brosius, 2001).

Conventional gender roles also prevail in much of the media adolescents attend to. Women appear in visual media much less frequently than in real life (in movies two to three males occur for every female character; on prime-time television only 34–40% of speaking roles are filled by women). When they do appear, women typically are scantily clad, with large breasts and small waists (Smith & Granados, 2009). Although women are as likely as men to be depicted in professional and white collar occupations (Signorielli & Kahlenberg, 2001), men in primetime are more likely to be portrayed as powerful leaders (Lauzen & Dozier, 2004). Men are also more likely to be physically aggressive and women more likely to be affectionate and show concern (Glascock, 2001).

Studies suggest that such media content patterns are related to young viewers' ideas of gender roles, romantic relationships, and sexual behavior. Frequent exposure to sexual content on television has been linked to more traditional gender roles (Herrett-Skjellum & Allen, 1996); dysfunctional beliefs about relationships (e.g., ''fate brings soul-mates together,'' ''disagreement is destructive to a relationship,'' ''partners should be able to sense each other's thoughts and feelings'') (Holmes, 2007); and support of sexual relationship stereotypes (e.g., ''sexual relationships are recreational,'' ''men are sex-driven,'' and ''women are sexual objects'') (Ward, 2002; Ward & Friedman, 2006).

Early Sexual Behavior

A set of longitudinal studies published in the past decade provide some of the best evidence that adolescents' exposure to sexual content in the media is related to subsequent sexual behavior. In a three-wave nationally representative sample of adolescents (12–17 years old at baseline), Collins et al. (2004) found that more frequent viewing of television programs that included sexual content increased the likelihood of the initiation of sexual intercourse 1 year later and the risk of pregnancy 3 years later (Chandra et al., 2008). Analyses of the same panel found that more frequent exposure to sexually degrading music lyrics also predicted earlier transition to intercourse (Martino et al., 2006).

In a two-wave longitudinal sample in North Carolina, Brown et al. (2006) similarly found that adolescents (12–14 years old at baseline) who had heavier sexual media diets across four media types (television, music, movies, and magazines) were more than twice as likely as those with lighter sexual media diets to have initiated sexual intercourse by the time they were 16 years old. Bleakley, Hennessy, Fishbein, and Jordan (2008) found similar patterns of early exposure to sexual content (in television, music, video games, and magazines) and progression to sexual activity in a three-wave survey and also provided evidence that the relationship is nonrecursive. As they put it, ''sexually active adolescents are more likely to expose themselves to sex in the media and those exposed to sex in the media are more likely to progress in their sexual activity'' (p. 443). Thus, evidence is accumulating that at least the older media play an important role in the sexual socialization of adolescents.

Research suggests that the newer media are also important sexual socialization agents. The Internet, especially, has provided unprecedented access to more explicit sexual content than is available in the older media. Surveys have found relatively high exposure to pornography (defined as depicting genitals and sexual intercourse), especially among males and older adolescents. In one survey among U.S. adolescents (12–14 years old) two thirds (66%) of males and more than one third (39%) of females had seen at least one form of sexually explicit media (Internet sites, X-rated movies, adult magazines) in the past year (Brown & L'Engle, 2009). In the Netherlands, more than half (55%) of adolescents (13–18 years old) had seen at least one of five types of sexually explicit content on the Internet in the past month (Peter & Valkenburg, 2006). Some of the Internet exposure may not be sought. More than one fourth (28%) of Internet users aged 10–17 in one U.S. survey said they had experienced unwanted exposure to online pornography in the previous year (Wolak et al., 2007).

Recent longitudinal analyses have found that exposure to such sexually explicit media in early adolescence is related to less progressive gender role attitudes and having oral sex and sexual intercourse by the age of 16 for both males and females. Males who had seen pornography by the time they were 14 years old were also more likely than those who had not seen it to have more permissive sexual norms and to have engaged in sexual harassment 2 years later (Brown & L'Engle, 2009). Similarly, a study of Dutch adolescents (aged 13–20) found that more frequent exposure to sexually explicit Internet content was

associated with more positive attitudes toward uncommitted sexual exploration (i.e., one night stands) (Peter & Valkenburg, 2008b) and predicted sexual "preoccupancy" (i.e., a strong cognitive engagement in sexual issues) (Peter & Valkenburg, 2008a).

Only a few studies have investigated the mechanisms of the link between adolescents' exposure to sexual media content and sexual behavior. They suggest that exposure may increase perceived self-efficacy for engaging in sexual behavior (Martino, Collins, Kanouse, Elliott, & Berry, 2005), and the more explicit media portrayals may arouse viewers and increase their interest in engaging in sexual behavior (Peter & Valkenburg, 2008a). More work on how the connection unfolds is warranted.

Sexual Predators

Concerns that young people in this age of digital media are particularly vulnerable to sexual predators have been popularized by the Internet's unique capacity to connect users with people they have not met in real life, media news reports of sexual abductions, and television programs such as "To Catch a Predator." Surveys of adolescent Internet users and law enforcement agencies have suggested, however, that the Internet is not the sexual predator-laden minefield some might imagine (Finkelhor, Mitchell, & Wolak, 2000; Wolak, Mitchell, & Finkelhor, 2003, 2006). According to these data, 13% of youth aged 10–17 received unwanted sexual solicitations in the previous year, and 4% received aggressive solicitations in which they were propositioned for an offline encounter (Wolak et al., 2006). While it is certainly a cause for concern that some young people receive unwanted sexual advances as part of their online contacts, most adolescents seem not to be exposed to the threat of online sexual solicitations. The approximately 7% of the statutory rapes in 2000 that were initiated by online contact were characterized as a "salient but small proportion of statutory rape offenses and a relatively low number of the sexual offenses committed against minors overall" (Wolak, Finkelhor, Mitchell, & Ybarra, 2008, p. 115).

Of course even relatively "small proportions" of rape are unacceptable, so it is important to help adolescents navigate the Internet safely. Researchers have identified individual and behavioral characteristics that increase the likelihood of young people being victimized on the Internet. Being a female, being a gay male, questioning one's sexual orientation, or having a history of offline sexual or physical abuse are all characteristics associated with increased risk of falling prey to online predators. The same characteristics are associated with being more likely to experience sexual victimization overall (Wolak et al., 2008). Youth with depression symptoms are also more likely than others to engage in risky Internet behaviors, such as talking to strangers online and disclosing personal information (Ybarra et al., 2005).

Finally, some online behaviors appear to be associated with an increased likelihood of receiving online sexual solicitations from strangers. Young people who send personal information to strangers, communicate with strangers about sex, or frequent chat rooms—online venues in which people tend to communicate with individuals they do not know offline—are more likely to receive aggressive sexual solicitations than young people who do not engage in such behaviors (Wolak et al., 2008). In one intriguing and disturbing experiment, adolescent girls who had been abused as children were more likely than matched girls who had not suffered abuse to choose sexualized avatars (digital representation of oneself) to represent themselves in an online virtual world (i.e., Second Life). The girls who chose sexualized avatars were, in turn, more likely to be approached in sexual ways by other characters in the online environment and to have met someone offline (Noll, Shenk, Barnes, & Putnam, 2009).

In short, both the older and newer forms of media contribute to the sexual development of adolescents. Adolescents are learning gender roles and romantic and sexual cultural models and scripts from the media and appear to be acting on what they are learning. Some adolescents may be more likely than others to suffer negative consequences of their mediated sexual explorations. We have much more to learn about the intervening mechanisms in exposure to sexual media content and adolescents' sexual behavior, and the extent to which teens seek and then are affected by what they find in an increasingly sexualized media world.

BODY IMAGE AND EATING DISORDERS

Cultural models of the impossibly slim female body and muscular male may also contribute to mental and physical problems among adolescents, ranging from preoccupation with thinness, to excessive exercising and dieting, to sometimes fatal eating disorders. A great deal of research has been conducted in the past decade on the media's role in adolescents' body dissatisfaction and eating disorders. The research has found, in general, that the frequent positive portrayals of thin models and negative attributes of heavier characters on television and in magazines

reduces adolescent girls' satisfaction with their own bodies immediately and over time and contributes to disordered eating symptoms for both males and females, but especially for girls (for reviews, see Harrison & Hefner, 2008; Levine & Harrison, 2009).

In magazines, television, movies, and on the Internet, content analyses have found that "thin is normative and attractive" and "fat is aberrant and repulsive" (Levine & Harrison, 2009, p. 494). Although more than half of U.S. women and men are overweight, a considerably smaller percentage of female (13%) and male (24%) characters are overweight on prime-time television (Greenberg, Eastin, Hofschire, Lachlan, & Brownell, 2003). Male characters are more likely to insult overweight female television characters than thin ones (Fouts & Buggraf, 2000), and male characters who are overweight are more likely than thinner male characters to make fun of themselves (Fouts & Vaughan, 2002).

Such media representations appear to have an effect on adolescents' satisfaction with their own bodies and, ultimately, on their eating behaviors. One meta-analysis of 25 experiments that tested the effects of exposure to ideal-body media imagery on various indices of body image found an average effect size of $d = -.36$ (standardized difference between control and experimental conditions) for girls <19 years old. The effect size was slightly higher for younger as compared with older women ($d = -.31$), suggesting that adolescent girls may be most susceptible to such imagery (Groesz, Levine, & Murnen, 2002). Another meta-analysis of 77 correlational and experimental studies found similar effect sizes for women's body dissatisfaction ($d = -.28$), internalization of the thin body ideal ($d = -.39$), and eating beliefs and behaviors ($d = -.30$).

The media's impact on adolescents' body image may differ by race and gender. Although some initial studies suggested that African American girls were less affected by the thin body ideals portrayed in the media, the most recent studies suggest that the "ethnic gap" is closing, perhaps because African American women's bodies in mainstream media are getting thinner, too (Baker, 2005). For young men, the media appear to stimulate a drive for muscularity. In one study, for example, boys and men (ages 17–27) were more depressed and more dissatisfied with their own muscles after seeing advertisements featuring muscular men than they were before (Agliata & Tantleff-Dunn, 2004).

Studies designed to articulate the mechanisms involved in the effects of media exposure to thin and muscular body ideals on disordered eating behavior point to a kind of vicious cycle especially for young media users. Early exposure to the thin body ideal contributes to body image disturbances that then increase vulnerability to subsequent thin-ideal media images. Studies have found that girls with body and eating problems seek out thin-ideal media (Thomsen, McCoy, Gustafson, & Williams, 2002), and adolescent girls who are motivated by social comparison are more likely to internalize the thin-ideal, which over time can lead to disordered eating (Harrison & Hefner, 2008).

As Harrison and Hefner (2008, p. 382) summarize: "the media's chief role is helping to create a social environment that (1) normalizes dieting and excessive thinness, and (2) encourages young people to repeatedly evaluate their bodies, to find them wanting, and to engage in extreme dieting, over-exercising, and other health-compromising behaviors in an effort to relieve perceptions of inadequacy."

Food Marketing and Obesity

Ironically, the same media environment that promotes a thin body ideal may contribute to the current epidemic of obesity among children and adolescents in the United States and, increasingly, around the world (Popkin, 2009). Being underweight or overweight are both departures from healthy eating patterns (Harrison & Hefner, 2008). In the past four decades, the obesity rate has more than tripled among adolescents (12–19 years old) from 4.6% to 17.6% (Ogden, Carroll, & Flegal, 2008). Many characteristics of modern life other than the media, including reliance on cars and availability of inexpensive and high calorie foods, have been implicated in the increase in obesity. The media, however, appear to play an important role, primarily through the promotion of nonnutritious foods to children and adolescents.

In the past decade, the marketing of fast-food restaurants and high caloric, nutrient-poor food and beverages aimed at children and adolescents has increased dramatically, even as health organizations have raised alarm about the potentially negative impact (Vandewater & Cummings, 2008). More than one fourth (26%) of product advertisements viewed on television by U.S. adolescents are for food or beverage products or restaurants; commercials for candy, snacks, cereals, and fast food are viewed most often (Powell, Szczypka, & Chaloupka, 2007). The average adolescent will see about 17 food ads daily and 41 hours of food ads yearly (Gantz, Schwartz, Angelini, & Rideout, 2007). In 2003, the World Health Organization and the Food and Agriculture Organization reported that there was sufficient evidence

to conclude that such advertising was a ''probable'' causal factor in youth obesity. In 2006, the U.S. Institute of Medicine drew similar conclusions based primarily on correlational data and called for limiting food marketing aimed at children (Vandewater & Cummings, 2008).

Most of the research investigating the link between food marketing and obesity has focused on younger children and advertising on television because young children may be more susceptible to advertising claims than adolescents due to their less developed cognitive processing capacities. Research has shown, for example, that children <4 years old have trouble differentiating programs from commercials. Children younger than 7 years old may not perceive that the advertisement is trying to sell them something and may think it is simply more entertainment or a kind of information (Kunkel, 2001). Marketers are interested in appealing to children and adolescents to increase brand loyalty and because children affect their family's purchases as well as spend a lot of money themselves. Teens' spending money, accumulated through jobs, allowances, and gifts, was estimated at US$80 billion in 2006 and was expected to rise to US$91 billion by 2011 (MarketingVOX, 2007). In 2006, more than US$1.6 billion was spent marketing food products to children and teens (Federal Trade Commission, 2008).

The whole new ''marketing ecosystem'' (e.g., cell phones, mobile music devices, instant messaging, video games, and virtual three-dimensional worlds) that is being developed to appeal to the online generation suggests that it will be important to pay attention to adolescents as audiences, too. Food brand-sponsored Web sites that include interactive games (i.e., ''advergames'') also include chances to win prizes and coupons for unhealthy food products. In 2005, more than 500 advergames featuring one or more food brands were on the Web (Moore, 2006). On such sites, teens are encouraged to log on with an e-mail address that then can be used to deliver more promotional materials and to track their other online activity. Some teens have been recruited to serve as promoters of brands among their friends as part of ''viral'' or ''stealth'' marketing campaigns (Calvert, 2008). Youth health advocates are concerned that children and even adolescents will be more vulnerable to these kinds of persuasive strategies because the selling intent is not obvious, and the young consumer can be reached in multiple ways once initial contact has been made (Chester & Montgomery, 2007).

It will be important to investigate the extent to which these new marketing strategies affect adolescents' food preferences, purchases, and health. Experimental and longitudinal studies of teens in these new marketing environments are urgently needed.

In sum, the media world is populated by thin, beautiful women and muscular men who apparently can eat the advertised foods without suffering the consequences of obesity or excessive dieting. Such portrayals are especially compelling to early adolescents who are looking for models to emulate as their own bodies develop and as they begin to have more choice about what and when they will eat. The simultaneous epidemic of body dissatisfaction, eating disorders, and obesity among adolescents is especially troublesome because it suggests a fundamental lack of understanding about healthy lifestyles. As the new media provide even more engaging ways to promote low nutrition food to adolescents, it is vitally important that we learn more about how these marketing ploys work and develop strategies to help young people learn to love and nurture the bodies they have.

SUBSTANCE USE: ALCOHOL, TOBACCO, AND ILLICIT DRUGS

Although considerable effort has focused on curbing adolescents' tobacco, alcohol, and drug use, many of the mass media that young people consume continue to portray the use of these controlled substances as normative. Alcohol is the predominant substance featured in television programs. An analysis of the programs broadcast during the 1998–1999 season found that 75% of the episodes of top-rated shows featured alcohol use, with tobacco and drug use being shown in about one fifth of the episodes (Christenson, Henriksen, & Roberts, 2000). In music videos that aired on MTV and BET in 2001, 35% featured alcohol, 10% tobacco use, and 13% drug use (Gruber, Thau, Hill, Fisher, & Gruber, 2005). In 2007, the alcohol industry's ads ran more than 340,000 times on television (Center on Alcohol Marketing and Youth, 2008). Underage youth appeared to be part of the target demographic for these ads. Of the alcohol ads viewed by underage youth, 40% were broadcast within the context of programs whose audiences were composed of proportionally more 12–20-year-olds than the general population.

Movie characters also are frequently shown consuming risky substances, even in movies meant for children. Nearly half (47%) of the G-rated animated features released in the 20th century featured alcohol and 43% showed tobacco use (Thompson & Yakota, 2001; see also Ryan & Hoerrner, 2004). Of the teenage main characters portrayed in the top movies released between 1999 and 2001, 40% drank alcohol, 17%

smoked cigarettes, and 15% used drugs (Stern, 2005). A longitudinal analysis of movie smoking portrayals showed that, after declining in the 1980s, the amount of smoking in the movies in the early 2000s was equal to that of the early 1950s (Glantz, Kacirk, & McCulloch, 2004).

We know relatively little, however, about the extent to which adolescents are exposed to controlled substances on the Internet. One report indicated that more than one third of middle school students (34%) and high school students (39%) reported seeing tobacco products on the Internet (Bloch et al., 2005). Social networking Web sites are one new media venue from which young people may glean information about substance-related social norms. A content analysis of 500 MySpace profiles belonging to users who identified themselves as being 18 years old found that 41% of the profiles contained substance use (Moreno, Parks, Zimmerman, Brito, & Christakis, 2009).

Effects of Media Portrayals of Alcohol and Tobacco

Tobacco. Despite the restrictions placed on tobacco marketing in the last decades, tobacco brands continue to be featured prominently in some mass media, as well as at points-of-purchase, on clothing, and on various other branded items. Studies consistently show a positive link between tobacco marketing and adolescents' attitudes toward, and the likelihood of, smoking initiation.

The potency of tobacco marketing is illustrated in the findings of a longitudinal study that explored the relationship between parenting style and teens' receptivity to tobacco marketing (Pierce, Distefan, Jackson, White, & Gilpin, 2002). An authoritative parenting style was shown to be a protective mechanism against teens' smoking initiation. Teens of authoritative parents who were highly receptive to tobacco marketing, however, were three times more likely to smoke than teens of authoritative parents who were minimally receptive to tobacco marketing. These teens' receptivity to tobacco marketing also had a considerably larger effect on their likelihood to smoke than whether their parents or friends smoked.

Other findings are equally compelling. Surveys have shown that teens' attention to magazine tobacco ads is positively related to their smoking frequency (Aloise-Young, Slater, & Cruickshank, 2006), that having a favorite cigarette advertisement in adolescence predicts being a smoker in young adulthood (Gilpin, White, Messer, & Pierce, 2007), and that teens who watch more movies that portray smoking are twice as likely to smoke 2 years later than teens who watch fewer such movies (Sargent et al., 2007). Tobacco advertising may also indirectly influence adolescents' susceptibility to smoking initiation by prompting them to overestimate ad susceptibility and smoking prevalence among their peers (Gunther, Bolt, Borzekowski, Liebhart, & Dillard, 2006). (Two comprehensive reviews of the effects of tobacco portrayals in movies [Charlesworth & Glantz, 2005] and tobacco marketing [Wellman, Sugarman, DiFranza, & Winickoff, 2006] are available.)

Alcohol. Studies likewise have provided considerable evidence linking alcohol media exposure to behavioral outcomes. A recent longitudinal study, for instance, found that early adolescents who had not had an alcoholic drink before but who watched more alcohol-depicting movies were more likely to start drinking within 2 years than their peers who watched less alcohol-depicting movies (Sargent, Wills, Stoolmiller, Gibson, & Gibbons, 2006).

Several studies have underscored the effect of alcohol advertising on youth drinking (Austin, Chen, & Grube, 2006; Collins, Ellickson, McCaffrey, & Hambarsoomians, 2007; Stacy, Zogg, Unger, & Dent, 2004). One recent study compared the alcohol advertising figures from the top media markets with longitudinal survey data of adolescents and young adults living in locations covered by these markets. Findings showed that every extra per capita advertising dollar was associated with the consumption of 3% more alcoholic drinks per month, and every additional self-reported ad exposure was associated with a 1% increased risk of drinking among 15–20-year-olds (Snyder, Milici, Slater, Sun, & Strizhakova, 2006).

Media play an important socializing role in shaping young people's substance-related attitudes and behaviors. From entertaining beer commercials aired during popular television shows, to teen-authored YouTube videos containing bong-smoking instructions, to government-sponsored campaigns urging teens to stay "above the influence" (http://www.abovetheinfluence.org), adolescents are inundated with mediated messages about alcohol, tobacco, and drugs. Continuing research efforts are needed to help curb alcohol and tobacco marketing to youth, to design effective prevention programs, and to help adolescents navigate the labyrinth of conflicting substance-related messages with which they are faced every day.

ADDRESSING NEGATIVE MEDIA EFFECTS

Given the accumulating evidence that adolescents' use of media contribute to a range of potentially unhealthy behaviors, including aggression, body

image disturbance, bad nutrition, early sexual intercourse, and tobacco and alcohol use, a number of remedies have been proposed and some evaluated. Two of the most promising are using the media for health promotion and educating young people about how to be more literate media consumers.

Use of Media for Promotion of Adolescents' Health

The media have been used to promote healthy behavior for many decades. In the past decade more attention has been paid to using the media to promote adolescents' health and to evaluating the effectiveness of such efforts (e.g., Brown, 2009), and guidelines have been developed to help ensure effective campaigns (Noar, 2006; Randolph & Viswanath, 2004). Two meta-analyses of media campaigns for health have found that on average, 4–8% of people exposed to such campaigns will change their health-related behavior (Derzon & Lipsey, 2002; Snyder & Hamilton, 2002). This may not seem like a large proportion, but when distributed across the large audiences that media can reach as compared with afterschool programs or one-on-one counseling, the impact can be sizeable.

As a result of a sizeable influx of funding from a series of legal settlements between states and tobacco manufacturers in the 1990s (Farrelly, Niederdeppe, & Yarsevich, 2003), a growing body of research has focused on optimizing the design of media campaigns designed to keep adolescents from smoking. An ongoing campaign against marijuana use has also been evaluated. These evaluations reinforce a fundamental principle that media campaign messages must be carefully crafted to appeal to the target audience. Some research has found, for example, that messages emphasizing the social risks of smoking (e.g., smoking harms others, people look down on smokers) are most effective in reducing adolescents' intentions not to smoke (Pechmann, Zhao, Goldberg, & Reibling, 2003). Other research found that ads that evoked emotions such as fear or sadness and that emphasized the serious health effects of smoking, were most memorable (Biener, Ji, Gilpin, & Albers, 2004).

The effectiveness of various format characteristics has also been tested. Building on the idea that high sensation seeking adolescents are at greater risk of substance use, messages with a high number of scene cuts, intense images, loud and fast music, and surprising endings have been shown to be positively related with ad recall (Niederdeppe, Davis, Farrelly, & Yaresevich, 2007). A series of campaigns designed to reduce drug use as well as risky sexual behavior among adolescents has successfully used such high sensation messaging to reach at-risk youth (Noar, 2006). Researchers have also focused on psychological reactance—the level of defensiveness that a campaign message generates—as a key mechanism predicting the success of an antismoking message among adolescents (Miller, Burgoon, Grandpre, & Alvaro, 2006). This line of research suggests that prevention campaigns should aim to reduce adolescents' perceptions that the communicator is biased (Shen, Monahan, Rhodes, & Roskos-Ewoldsen, 2009).

Campaigns also have to be careful of potential boomerang effects. The National Youth Anti-Drug Media Campaign is one of the largest media campaigns targeting adolescents ever run in the United States. The third phase of the Campaign ran from 1999 to 2004 and consisted primarily of television, radio, print, and some online advertising aimed at reducing drug use among youth. Given the extensive reach and frequency of ad images, a majority of U.S. adolescents recalled seeing the ads (Orwin et al., 2004). Alarmingly, however, evaluations showed that more frequent exposure to the campaign's ads was associated with stronger perceptions that peers were using marijuana, lower intentions to not use marijuana, and higher initiation of use. Evidence suggested that the campaign generated a ''meta-message'' that marijuana use was widespread among adolescents, which, in turn, stimulated an increase in youths' marijuana use. A follow-up analysis suggested, however, that the Marijuana Initiative, a component of the larger campaign, was effective in reducing marijuana use and attitudes at least among the higher sensation-seeking adolescents (Palmgreen, Lorch, Stephenson, Hoyle, & Donohew, 2007).

In short, funding dedicated especially to tobacco and drug prevention among young people has allowed researchers in recent years to conduct high-quality studies aimed at articulating best practices for prevention media campaigns and message design. These studies have clarified that the reception of messages is always the result of an interaction between message features and audience characteristics, and that some messages are more appropriate for some audiences than others.

Media Literacy

Media literacy is another promising strategy for mitigating some of the potentially harmful effects of media use among adolescents. In the past decade momentum has developed in the United States for

teachers and after-school programs to include media literacy principles in their curricula. Media literacy is seen to consist of a series of communication competencies, including the ''ability to access, analyze, evaluate, and communicate information in a variety of forms, including print and non-print messages'' (National Association for Media Literacy Education, n.d.). The basic idea is that youth will be more intelligent and critical media consumers and less susceptible to unhealthy outcomes if they understand that media are constructed and sell values as well as products.

Although more evaluations of the array of curricula now available are needed, initial results are encouraging. Pinkelton, Austin, Cohen, Miller, and Fitzgerald (2007), for example, showed that a media literacy curriculum was successful in stimulating reflective thinking about tobacco use among students who had had experience with tobacco as well as with those who had not. Others have found that adolescents who know more about the intent and strategies of cigarette advertising are less susceptible to smoking (Primack, Gold, Land, & Fine, 2006). Some suggest that having a media production aspect to the media literacy training is especially effective. Banerjee and Greene (2006, 2007), for example, found that media literacy workshops that combined media analysis with a production component in which students created their own antismoking messages were more effective in reducing teens' positive attitudes toward smoking and their intentions to smoke than workshops that included media analysis only. Others have found, however, that even a one-session media literacy lesson can increase early adolescents' skepticism of advertising (Austin, Chen, Pinkleton, & Johnson, 2006).

CONCLUSIONS

In the past decade, a great deal of new research has focused on the role the media play in the lives of adolescents. This review shows that clearly the media are a frequent and important aspect of adolescents' lives. Not only do adolescents spend a great deal of time with a wide variety of media, they are also learning about and interacting with a wide variety of other people and ideas through the media. This generation of adolescents is growing up with unprecedented access to the larger world. Some of what they can do with the media has great promise: they can connect with others with common interests regardless of geography and time; they can learn about anything they are interested in, whenever, wherever they are at the moment; and they can express themselves publicly and connect with others who have similar interests and passions and with those who want to take action.

And, the research shows, both the older and newer media come with risks as well. Here we have seen that, depending on patterns of use, the media contribute to aggressive behavior, disordered eating, distorted ideas about relationships, earlier sexual behavior, as well as underage drinking and tobacco and drug use. We also have seen that some of the early fears about adolescents' use of the Internet, such as addiction, cyber-bullying, and sexual predators, may not be as problematic as initially thought, but can be problematic for some, especially those already at high risk.

Much work remains to be done as the newer media environment continues to evolve. It will be especially important to develop new measures of exposure. Much of the current research has focused on one medium, often only television or even a specific genre within television, rather than the array of media adolescents use. As much of media content converges onto the Internet it will be important to learn if the platform and/or context matters and to what extent selective choice of and interaction with the content, as is possible with many of the newer forms of media, affects the likelihood of effects.

In at least three of the health domains discussed here (i.e., violent media and aggression, sexual media and sexual behavior, and thin-ideal media and body-image disturbance), research findings are pointing to reciprocal, nonrecursive models of selection and effects. This suggests that to fully understand the process of media effects on adolescents, longer-term longitudinal studies that include accurate measures of media use as well as other contextual and individual difference variables are necessary.

In some domains (e.g., media and body-image disturbance, obesity, and sexual behavior, especially) we still have much to learn about the mechanisms in the links between exposure and effects. We do not know, for example, why seeing sexual content in the media predicts earlier sexual behavior for some adolescents and not for others. A number of possible mediators and moderators have been advanced, but no clear explanation has surfaced as yet. The work on violent media content and aggressive behavior probably comes closest to painting the nuanced picture of why some adolescents will be more negatively affected by what they do with media than others. More theoretical integration that takes a socioecological perspective will probably be most

fruitful since adolescents' media use is often a part of their personal identity work as well as motivated by what is happening in their families, peer networks, and schools.

Finally, given the remarkable ubiquity of and teens' access to the media, it is vitally important that adolescents learn how to use media in intelligent and healthy ways. The media can include health-reinforcing messages, and adolescents can learn media literacy skills that will help ensure that the media are positive rather than negative forces in their lives.

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