

# THE IMPACT OF NEW MEDIA TECHNOLOGIES

## CHAPTER II

### THE REVOLUTION IN NEW MEDIA TECHNOLOGY

When I think about new media technology, I frequently recall the words to a song from my favorite musician, Paul Simon. A few of the lyrics from his song “The Boy in the Bubble” (*Graceland* album, Warner Brothers) serve as a poignant reminder of the incredible age in which we live: “These are the days of lasers in the jungle—lasers in the jungle somewhere—staccato signals of constant information—a loose affiliation of millionaires and billionaires and baby...these are the days of miracle and wonder—this is the long distance call—the way the camera follows us in slo-mo—the way we look to us all.” For a scholar of media effects, the age in which we live today is truly a spectacular one. Nevertheless, over the past 75 years, media effects researchers have usually lagged behind in studying the impact of the latest media. As late as 1960, when TV had exploded on the scene, the prevailing wisdom among researchers was that electronic media had limited effects. You might recall from Chapter 3 that this “wisdom” was mainly the consequence of a single study—a large survey conducted during the 1940 presidential campaign, before the days of television. It wasn’t until the mid-1960s, almost 25 years after the survey that ushered in the era of limited media effects, that researchers began systematically studying the effects of TV.

Of course, it makes some sense that research on a given medium would lag a bit behind. Any new technology has to be in place and in use by a reasonable proportion of the population before the research community deems it worthwhile to focus on the impact of that new technology. Consequently, when we ask questions about the effects of new technology, it makes sense that the number of studies at our disposal is not nearly as great as when we ask questions about the effects of a well-established medium such as TV or movies.

As a student in a university course on media, the chances are good that you’ve heard about the virtual environment Second Life. On the Internet, you can visit the Second Life Web site, download the software and then create an avatar (a visual representation of yourself) and do most anything in “second life” that you can do

in your regular life. Maybe you already have an avatar in that environment and meet friends regularly in different places around the world. Even though Second Life may seem like second nature to you, when I mention it to general audiences of older adults during some of the speeches I give around the country, I still get furrowed brows and quizzical looks. I have to explain exactly what Second Life is all about. Sometimes after I finish explaining, I still get looks of confusion. When I explain that some people are earning six-figure salaries selling virtual art, clothes, and hair for your avatar, people either become intrigued or they give up trying to understand. If you're not familiar with Second Life, you can Google it and get up to speed quickly. One executive told me recently that corporations are increasingly embracing the technology to hold important meetings as an alternative to having to travel thousands of miles to meet clients face-to-face. As I write these words, a college in Texas has just announced that they will offer the first academic certificate program in a curriculum that is delivered entirely online through Second Life. Even though many people have never heard of this new technology, educators are using it to take their students on virtual tours of places like the Alamo in San Antonio, Texas, or the Louvre in Paris. Of course, the students never leave their classrooms. They simply tour these places on their computer screens, where they find that they appear with startling similarity to their appearance in real life.

Needless to say, the new technology that surrounds us today is changing rapidly. The pace of change sometimes seems overwhelming. When I wrote the previous edition of this text, only about 25% of my students reported that they had a personal *Facebook* page. That's all changed in just a few short years. Last year, one student who sat in the back of the class and rarely spoke a word the entire semester, perked up when I asked who had a *Facebook* page. He bluntly pronounced, "If you don't have a *Facebook* page, you're a nobody." The rest of the class agreed. There wasn't a single student in the room who was willing to report that they weren't on *Facebook*. The incredible pace of technological change nearly guarantees that by the time you read these words, the situation will be different than it is at the moment these words are written.

When we talk about the impact or effects of new media technology, there are a host of effects that we might potentially contemplate. Computers and the World Wide Web have certainly changed the way we behave in many domains. People shop online, trade stocks online, get their news online, initiate friendships online, and so forth. Children spend time playing the latest computer games. The potential effects that we could discuss might easily turn into a separate, book-length volume.

What is all of this new technology doing to us? One thing that it is doing is encouraging traditional media effects scholars to ask new questions and design new research paradigms. One of the old labels used in media curricula at various universities is "mass communication." If you think about some of the new technologies that are emerging today, it seems clear that they challenge the traditional concept of mass communication. According to the old definition, the source of a mass communication message was a large organization. The message was sent out to large, heterogeneous, scattered audiences.<sup>1</sup> Today, single individuals use the Internet to set up Web sites that millions can view. Some sites get huge amounts of traffic, but other sites may get none. All of this seems to blur the lines between the traditional notion of mass communication and the new communication environment. Consequently, scholars

who were trained under the assumptions of the old environment are finding that they have to make some adjustments in their thinking about what counts as a legitimate phenomenon to examine. In the confusion, however, there is also much excitement about conducting research on media that are brand new and may be affecting us in different and undiscovered ways.

Two media scholars, Jane Brown and Joanne Cantor, outlined a series of crucial questions surrounding new technology that researchers need to study in future years. They framed these questions in terms of the concept of **perpetual linkage**, the new tendency for youth to be constantly connected with each other through some type of technology. The authors asked the following questions:

What is the impact of the connectedness that the newer media promote, i.e., the almost constant technological links that youth have with each other, using their cell phones, beepers, e-mail, and other devices soon to be developed? What about the relationships young people have with others they have met only via technological links? Do youth, for example, have stronger social ties to their peers because they are in virtual contact for so much more of the time? Or are they more alienated because this technological contact comes at the expense of potentially richer face-to-face interaction?<sup>2</sup>

These questions are ones that are beginning to define the new research literature, and there are few certain answers at the present time.

Another area of research that has caught the attention of researchers and public health officials in the past few years is the impact of video games on youth. You will recall from Chapter 5 that there has been a modest amount of research on games that involve graphic violence and permit the player to take the role of a “first-person shooter.” In these games, the player handles a gun and fires directly at characters on the screen in an attempt to “kill” them. But violence in video games is not the only issue. Like the questions raised by Brown and Cantor, the questions that arise about the general impact of video games still demand more research before a consensus emerges among scholars. Even though questions about computer use and video games have not yet yielded clear answers in the research literature, there have been studies published in the past few years that begin to address some of the issues. This chapter introduces you to some of the studies that have been done in each of these areas and outlines some of the current controversies and issues that remain for future studies.

## COMPUTERS AND THE INTERNET: CONNECTION OR ALIENATION?

Media Metrix, an organization that monitors Internet use, released a report in August 2000 that surprised many analysts and media researchers. For the first time in its brief history, the Internet was being used by more women than men. In addition, every day more women than men go online for the first time. Some surveys report that more than three-quarters of the U.S. population (80%) uses the Internet daily and the average American spends about 11 hours each week online. Amazingly, 90% of the children between 5 and 17 years old now use a computer.<sup>3</sup> Recent estimates indicate that broadband connections are now in about 70% of

American homes that are connected to the Internet. Clearly, the late 1990s and early years of the new millennium will go down in media history as the years when the Internet exploded onto the scene, much as TV did between 1950 and 1960.

With such tremendous growth at such a rapid pace, the question of the effects of this new technology is obviously one that people are curious about. But because the technology is so new, the media effects community is unable at this point to provide definitive answers. Nevertheless, there have been a few major studies that took aim at Internet technology to try to figure out what was going on.

### THE CARNEGIE MELLON STUDY

A decade ago, a research team at Carnegie Mellon University, led by Robert Kraut of the Human Computer Interaction Institute, published one of the first major studies on the impact of Internet use. The researchers titled their study with a provocative question: “Internet Paradox: A Social Technology That Reduces Social Involvement and Psychological Well-Being?”<sup>4</sup>

The question gives a strong clue to the answer that their research provided. One thing that emerges quite quickly upon reading the original research report is that studying the impact of the Internet is not an easy proposition. The researchers had to put in a lot of effort to set up their study in a way that would yield meaningful results. As you will see, even after all of this effort, the study was severely criticized.

One of the positive features of the Carnegie Mellon study (sometimes referred to as the HomeNet study) was the fact that the researchers employed a longitudinal design. Recall from Chapter 2 that a longitudinal study is one in which data are collected at several points in time. In this case, the study involved 256 people in 93 different households during their first two years of being online. Each family actually received a computer, a free telephone line, and a free Internet connection. The families who participated had a high school student in the household or belonged to at least one community group in the Pittsburgh area. In return for the freebies, the families agreed that the researchers could track their Internet use with special software and periodically ask them survey questions during the time of the study.

Despite the fact that the researchers found that the people in the study used the Internet to engage in communication with others, they also found evidence of a rather alarming state of affairs. Use of the Internet was associated with a general decline in communication with family members who lived in the household. In addition, those who used the Internet more frequently tended to report that the number of people in their social circle declined over the years of the study. Finally, Internet users tended to report greater levels of depression and feelings of loneliness than they did before the study began.

If using the Internet is really associated with these negative psychological effects, what specifically is it about using the Net that causes them to occur? According to Kraut and his associates, there were two main possibilities. First, the data might reveal an **activity displacement effect**. This sort of effect was discussed in Chapter 4 in connection with TV. People have a limited amount of time during any day to engage in their various activities. Once family members are hooked up to the

Internet, perhaps they tend to spend more time in isolation from others, using the Internet for private entertainment and Web surfing. Second, perhaps the data reveal that the Internet **displaces strong social ties**. According to this explanation, when people go online, they often end up talking to people in chat rooms and even occasionally make new friends. But overall, the kinds of relationships that are formed online tend to be more superficial and are characterized by weaker ties than the relationships that people tend to have with family members and significant others who appear in one's life face-to-face on a daily basis. When people use the Internet, they may be depriving themselves of the richness of their deeper, strong ties with family and other significant friends in favor of relationships that simply are not nearly as deep or involving.

After considering these two alternatives, the authors clearly seemed to prefer the second option to the first. The main reason that they rejected the activity displacement explanation is that their data showed that so many people in their sample used the Internet for social purposes. Clearly, if the reason for increasing isolation and loneliness was the fact that the Internet was displacing social contact, the data would have to show that social contact on the Internet was much lower than it was before use of the Internet began. But the data didn't show that at all. People used the Net for exchanging e-mail, going to chat rooms, and so forth. Moreover, the authors claimed that some of their data actually showed that those who used the Internet for social purposes were more likely to suffer the negative social effects than those who used the Net for less social purposes. If the negative effects were due only to social displacement, we probably wouldn't observe that particular pattern in the data.

The authors preferred to focus on the possibility that, rather than displacing social activity, Internet use tends to encourage a particular type of social relationship at the expense of another. They suggested that Internet users form more superficial relationships instead of connecting deeply to other human beings. If you take a moment to think about it, this view does make some sense. If the extent of your involvement with a person is through e-mail, there is much about that other person that you don't know. Online relationships also don't tend to encourage the kind of mutual help and service that characterize most close friendships. When I think of the people in my own life who are closest to me, they all tend to be people who would feel comfortable calling me on the phone and asking me to run an errand for them. And I would feel equally comfortable calling them for the same. It may be that the deep intimacy that comes with relationships is built on a kind of involvement and mutual service that online connections simply don't tend to produce. And if people spend time online in these more superficial relationships, they are using up time that they would otherwise have for relationships of the deeper variety.

You may be skeptical of the "weak ties" idea. We have all heard about people who met through using the Internet and eventually decided to get married. The popular 1998 movie *You've Got Mail* was based on this premise. But the stuff of Hollywood and media feature stories may not be the stuff of normal life. Although there are some people who may have discovered deep intimate friendships while using the Internet, Robert Kraut and his colleagues pointed out that the best data seemed to refute this pattern as normative. They note that their own data

appear to converge with data collected by two other researchers, James Katz and Philip Aspden. In a national survey conducted by these authors, they found that only “22% of the respondents who had been using the Internet for two or more years had ever made a new friend on the Internet.”<sup>5</sup>

On the other hand, some experimental work on Internet interaction suggests that even communicating with strangers can induce strong feelings. In one study, the amount of communication between participants in a chat room was positively correlated with the nature of the statements that people were making. The researchers examined both positive statements and negative statements made during chats. Positive statements were ones that complimented another person, expressed agreement with the other, expressed approval of some idea or behavior, expressed a positive emotion, and so forth. Negative statements were ones that criticized another person, expressed disagreement with the other, expressed disapproval, or expressed a negative emotion. Intuitively, you might think that the more positive the comments, the more communication took place. Actually, the correlation was in precisely the opposite direction. The more negative the comments, the more communication took place. At least in chat rooms, positive comments don’t seem to get many takers. People seem more willing to argue and engage in various forms of hostility.<sup>6</sup> Study Box 11-1 focuses on some experimental work on Internet communication that confirms that people experience intense feelings in Internet interactions. Clearly, the research community is just beginning to scratch the surface in its attempts to discover the relational dynamics of Internet communication.

### APPLYING THE LESSONS OF HISTORY

You might recall from Chapter 5 on media violence that one of the earliest theorists who conducted research on the impact of televised violence was Seymour Feshbach. His theory of symbolic catharsis actually received some initial support from a few studies, and in the early 1960s many researchers thought that this idea would become a dominant one in the literature. Alas, as often happens in science, some ideas that receive initial support turn out to be wrong. In interpreting the results from the Carnegie Mellon study, we should be careful. The study is not without its critics. Donna Hoffman, editor of the journal *Marketing Science*, was quoted shortly after the study’s release as saying, “Speaking as an editor, if this had crossed my desk, I would have rejected it.... The mistakes are so bad that they render the results fairly close to meaningless.”<sup>7</sup> What mistakes is Hoffman referring to? After all, the study was published in a major journal, *American Psychologist*. In the final analysis, the Carnegie Mellon study suffers from three key limitations that should lead us at least to be cautious in interpreting the study’s results.

First, the sample of people used in the study was not chosen randomly. This is certainly an important limitation: It means that we can’t be confident that the results pertain to any general population of people other than the specific people who participated in the study. Kraut and his colleagues acknowledge the fact that the sample was not random, but they defend their technique. In choosing families who were involved in a community group or had a high school student living at home, they made sure that they included people in the study who already had some social connections with others in the community. Starting with a group who

## STUDY BOX 11-1

## VIRTUAL RELATIONSHIPS CAN INDUCE STRONG EMOTIONS

Researchers are now using the Internet to set up various kinds of experiments. Although there are some limitations to this type of research, psychologists and communication researchers will undoubtedly use the Internet to collect valuable data in future years. In one recent experiment, three researchers set up an Internet study that had nearly 1,500 participants from 62 countries. When the participants arrived at the Web site, they were told that the purpose of the experiment was to see if computers could be used as a tool in mental visualization. They were asked to engage in a relatively simple exercise in which they would virtually toss a flying disk to one of two other players who they thought were playing the game online at the same time. Actually, the other two players were generated by the computer software and were controlled by the program. During the task, the players were asked to visualize themselves throwing the disk and catching it. No disk actually appeared on the screen. The computer program informed the players when the disk was tossed, who caught it, and who should throw it next. Each player was represented on the screen with a color. The participants had to push a button when they were in possession of the disk to throw it to one of the other players. They also could select which of the other players (colors) to throw it at.

After two throws, the computer program assigned each participant to one of four experimental conditions. In two of the conditions, the participants were ostracized—they were almost never on the receiving end of a throw from the other two players. In one of these conditions, they were *never* thrown the disk. In the other condition, they were thrown the disk only 20% of the time. In the other two conditions, participants were either included in the game at a rate equal to the other two players, or they were overincluded—receiving the throws 67% of the time.

Following the game, participants reported their feelings. As levels of ostracism increased, so too did the respondents' reports of bad feelings, perceptions of less control, and feelings of a loss of belonging. Even though the supposed players could not be seen, were complete strangers, were unlikely ever to be engaged in future interaction, and were throwing a virtual disk that was only imaginary, the participants in the experiment felt a dampening of their mood when they were excluded from the game. The authors concluded that "As our global society moves closer to worldwide use of the Internet, opportunities for exacerbating these feelings through real or perceived ostracism clearly exist and demand our attention" (p. 760).

Unfortunately, the authors' conclusion foreshadowed a recent tragedy when a 13-year-old girl, Megan Meier, took her own life after the young boy she thought she had been communicating with online for a month ("Josh") terminated the relationship and told her that he had heard that she was cruel. In the aftermath of the suicide, authorities discovered that Josh was actually a fictitious person that had been invented by Megan's former friend and family members as a prank. Not every victim of such a prank would decide to commit suicide, but this sad incident serves to illustrate the powerful emotional consequences that can result from online communication with an unseen and relatively unknown other.

*Source:* Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality & Social Psychology*, 79, 748–762; MSNBC: "Mom: Girl killed herself over online hoax" [Online]. Available: <http://www.physorg.com/news69341086.html>.

had connections meant that they had the possibility of observing some changes. Consequently, they had to control who participated to a much greater extent than a random sample would have permitted. True random samples permit no control at all about who gets into the study. The selection process is strictly by chance.

Second, there was no control group in the Carnegie Mellon study. Critics argue that the data would have been much more valuable if the results for those using the Internet could have been compared to those for a control group of people who did not use the Internet. Perhaps, the critics argue, there was some change across the entire society during the two years of the study such that even those without Internet connections would have reported more depression and loneliness. Again, Kraut and his colleagues counter that the use of a control group was simply not possible. There was no acceptable incentive to offer people in a control group for their continued cooperation in answering questions over a two-year period.

Finally, critics have complained that Kraut and his colleagues went too far in suggesting that their data supported a **causal claim**. Recall from the earlier chapters on research methods and the chapters on specific effects that surveys suffer from an important limitation. In principle, they simply cannot be used to argue unequivocally for causal relationships. The experiment is the only method that really solves that problem. Because Kraut's data are based on the survey method, it is always possible that the relationships observed are due to some other unmeasured variable. So what's the bottom line?

Since the time when Kraut conducted his initial study, his research team and unrelated teams of other researchers have published more data on the impact of Internet use. The amount of data that we now have is increasing, and a complicated picture appears to be emerging that isn't well understood at present. Kraut's first study after the one described here "revisited" the negative effects of the original study by following up on the participants after three years. The results of this follow-up suggested that "the negative effects dissipated over the total period." Specifically, the authors stated the following:

The original HomeNet sample began using the Internet in 1995 or 1996. Our follow-up of participants remaining in the sample in 1998 showed that, overall, the previously reported negative outcomes associated with more use of the Internet had all but disappeared, except for the association with increased stress.<sup>8</sup>

A visit to Kraut's Web site (<http://www.cs.cmu.edu/~kraut/RKraut.site.files/pubs/articles.html>) shows that he has remained interested in this topic and has continued to produce new research. In a longitudinal study that he reported in June 2004, Kraut's conclusions again seemed to point toward negative social effects for Internet use. He and his coauthors concluded:

Longitudinal analyses from a large panel of Internet use suggest that using the Internet may lead to declines in visiting with friends and family and perhaps phoning as well. In addition, the data suggest that while visiting a family member stimulates exchanging email with that person and phoning him or her stimulates visiting, emailing doesn't increase the likelihood of either visiting or phoning.<sup>9</sup>

In his most recent research, Kraut and his colleagues (led this time by Katherine Bessiere) return to one of the basic questions raised in the HomeNet study: Does

use of the Internet cause increasing levels of depression among users?<sup>10</sup> The researchers began by noting a long-established empirical fact that people who live in close social networks with numerous friends and community ties tend to have a higher level of overall psychological well-being. They tend to be happier and less stressed.<sup>11</sup> One hypothesis the researchers wanted to test is the **social augmentation hypothesis**, which holds that people who use the Internet to communicate with others should expand their social networks, thus permitting them to derive many of the relational benefits that come with being more connected to other people. In contrast, the **social displacement hypothesis** is the notion that every minute spent on the Internet is a minute that one cannot use to engage in social relationships with family and friends. Consequently, heavy use of the Internet should cause one to communicate less with the people immediately around them and this should lead to the loss of the positive benefits that those social networks provide. According to this idea, heavy Internet users should become more depressed, less connected, and more isolated from others. Part of this hypothesis is the idea that time spent communicating online is not the same as time spent communicating face-to-face. Consistent with the notion outlined in conjunction with the HomeNet study, use of the Internet should displace strong social ties. A final hypothesis suggested in the literature<sup>12</sup> is the **social compensation hypothesis**. According to this view, the effects of the Internet on social and psychological well-being are positive—but only for certain individuals. For people who are impoverished socially and have few people in their social networks, use of the Internet may expand social horizons and lead to a greater sense of connection—thus increasing a person's emotional and psychological well-being. The idea here is that people who don't enjoy a rich set of social connections are able to compensate for their situations by going to the Internet. For those who are already well connected, this hypothesis doesn't really make any definite predictions about effects. One communication theorist who introduced ideas about computer-mediated communication that are consistent with both the social augmentation and the social compensation hypotheses is Joseph Walther. His **social information processing theory** emphasizes the notion that even though communication using computers lacks the rich set of non-verbal cues available in face-to-face interaction, people can still use the available verbal cues to establish intimate relationships that rival the ones formed in the face-to-face context. These relationships may form at a slower pace, but they can eventually arrive at a place of high intimacy.<sup>13</sup>

Given these various hypotheses about the effects of Internet communication, which ideas seem to be best supported? To find out, Bessiere, Kraut, and their colleagues used a random sample of households from the United States and surveyed more than 1,200 adults. They followed the first survey with a second one—6 to 8 months later. With respect to the key hypotheses, all three were supported in some measure. In support of social augmentation, those who used the Internet to communicate with family and friends reduced their levels of depression over time. The social displacement hypothesis was also supported—but only for those who used the Internet primarily to meet new people or talk in online groups. Perhaps the time these people invested in trying to find new relationships lead to subsequent elevations in depression because the time spent on the Internet was time that couldn't be spent interacting with others face-to-face. The fact that the strongest evidence for

the social displacement idea emerged mainly for people who had high levels of social resources to begin with (well connected with friends and family) supports the idea that existing relationships were actually displaced by Internet time. Finally, there was also some support for the social compensation hypothesis. Those with more limited social resources who used the Internet did not suffer increased depression over time. But they didn't show any real improvement in depression levels either. One of the main contributions of this study is to highlight the complexity of the effects of using the Internet to communicate with others. The role of **individual differences** needs to be taken seriously in sorting out the effects. Internet use may be beneficial for some and not so good for others when it comes to forming and maintaining social relationships. It appears as if the authors of this study plan to continue their research so that they can untangle these contingent effects of new technology in more detail.

With respect to social information processing theory, Joseph Walther's current position is that the empirical data so far seem to support some aspects of the theory but not others. For example, his initial view was that relationships developed more slowly when they took place through computer mediated communication. The data don't seem to support that idea and Walther is in the process of making various modifications to some of the things that he first thought when he posed the theory years ago. You should note one striking feature about Walther's attitude toward his theory. Instead of trying to defend his theory in spite of evidence that points in a different direction, Walther is willing to go where the data take him. His attitude is truly commendable because it exemplifies the way science should always be conducted—as a genuine dispassionate search for the truth despite one's initial commitments. Consistent with some of the positive effects of Internet use anticipated by Walther, other researchers have found evidence that using the Internet leads to positive effects—including the formation of a new social circle,<sup>14</sup> the development of deep and significant new relationships,<sup>15</sup> and the provision of a new social space for existing communities to flourish.<sup>16</sup>

Although it may be frustrating to encounter complexities in the data that defy easy summaries, it is probably a good lesson to learn that science can often be frustrating. But the flip side of that frustration is excitement. As we stand on the frontier of new research on the impact of the Internet and other new technologies, there is an excitement about doing more research and homing in on the ultimate answers to the important questions. Does Internet use cause more social isolation, depression, and loneliness? Perhaps you or one of your fellow classmates will go on to do graduate work in communication and help us to answer these important questions with a greater sense of certainty.

## THINKING ABOUT NEW TECHNOLOGY

When professors around the country who were using the first edition of this book were asked to provide an evaluation of its content, one reviewer commented that this chapter on new technologies ought to be eliminated. His point was that nearly all of the material in the chapter could be moved to other chapters in the text. He went on to suggest that the history of media effects shows that we tend to replay the same issues over and over again when any new technology is

introduced—violence, sex, displacement effects, advertising, and so on. Why devote a separate chapter to new technology when the essential research that emerges can easily be placed under other, more traditional rubrics? As I pondered this reviewer's comment, I was nearly persuaded. In fact, I decided to move the material on violent video games, which formerly appeared in this chapter, to Chapter 5 on media violence. In the final analysis, most of the research issues that emerge with new technology do lead us back over familiar ground. The main reason that I decided to keep a chapter on new technology was that it seems to reflect more accurately the way most scholars are currently thinking about the area of media effects. A chapter dedicated to new technology also seems to offer a unique peg on which to hang some of the most recent research that might be difficult to place otherwise. For example, during the summer of 2008, new research was presented at the academic meeting of the American Psychological Association on some of the positive effects of playing video games. One finding reported was that laparoscopic surgeons who played video games were 27% faster in learning advanced surgical techniques and made 37% fewer errors compared to a group that didn't play video games. A major conclusion at the academic meeting was that the effects of video games can be either positive or negative—depending on the content of the game and the particular skills being exercised.<sup>17</sup> Nevertheless, a casual survey of other media effects texts for undergraduate students reveals that the chapter on new technology is often the shortest chapter and contains the smallest amount of material on studies that actually seek to document media effects.

In thinking about what's really *new* about new technology, William Eveland contributed a helpful conceptual scheme that encourages scholars to integrate their thinking about traditional media with their thinking about media that are newer. He refers to this scheme as the **mix of attributes approach** to the study of media effects.<sup>18</sup> Eveland contends that some researchers tend to react to a new technology with the attitude that it “changes everything.” As he puts it:

Virtual reality, these researchers might argue, requires new theories and new concepts, which then require all new research. Similarly, the Internet and its World Wide Web are somehow supposed to be fundamentally different from all that has come before, and thus research and theory must start from scratch.

In contrast to an approach that would emphasize that everything must change with a new technology, Eveland likes to think of all media in terms of a common set of attributes. Differences between media can then be discussed in terms of differences in these attributes. For example, he proposes that we might think of some of the common attributes as **interactivity**, **structure**, **channel**, **textuality**, and **content**. *Interactivity* refers to the extent to which a person is actually able to interact with the technology in a meaningful way. *Structure* might refer to the extent to which a medium is linear or non-linear. A newspaper article takes you from the beginning to the end in an uninterrupted, linear fashion. But an article on the Web might have various hyperlinks that divert you from the main text to explore other tangents. The Web article is more non-linear. The *channel* might refer to whether information is presented visually, acoustically, or in both channels at once. *Textuality* refers to how much of the information in a medium is communicated in text form. Finally,

*content* refers to the actual information conveyed by the medium, such as violence, sex, persuasive messages, or information.

To illustrate Eveland's point, let's take interactivity and textuality as examples. When the Internet exploded on the scene, some scholars hailed this new medium as a complete and total innovation, unrelated to anything that had come before. One of the qualitatively different things about the Internet was its interactivity. That is, on the Internet, people had nearly complete control over what information they were exposed to and what information they wanted to screen out. Unlike TV, which was thought of as a relatively one-way, non-interactive medium, the Internet was something completely different. But instead of thinking of these two media as qualitatively different, Eveland encourages us to simply think of them as occupying different places on the continua of common attributes. Although it may be true that the Internet typically has a higher level of interactivity than conventional TV, by thinking of interactivity as something that theoretically characterizes *all* media to some degree, we are now better prepared to talk about TV as being more or less interactive. Depending on where you live, you may find that you now have the capacity to order a movie "on demand" and control it just as if you were watching a videotape. Consequently, your TV has become *more* interactive than it once was. The traditional label of the Internet as "interactive" and TV as "non-interactive" doesn't really apply. Each medium has a certain level of interactivity. The Internet may have more, but TV has changed over the past few years so that, at times, it has a higher level of interactivity than it did in the past.

Similarly, a traditional approach might refer to newspapers as a "print medium" and TV as a "visual medium." About 15 years ago however, the cable news channels introduced something new: They started to scroll text at the bottom of the screen that reported various stories that were not being discussed by the news commentator. By taking the position that *textuality* is one dimension of all media that can hold different values, scholars can talk about how certain programs have *increased* in textuality over what they were before. Likewise, if you pick up a magazine from the 1950s, you might be struck by the density of text on the page compared with today's typical news magazines. Perhaps magazines have decreased in textuality.

One consequence of the mix of attributes approach is that the advent of a new technology does not necessarily revolutionize the study of media effects. Instead of thinking about new technology as qualitatively different, we can think of it as simply having different values on the common set of attributes that all media share. This may result in a more sophisticated understanding of the differences between various media because we can precisely identify how media differ in terms of the core set of attributes.

In support of Eveland's contention that the so-called revolution of new technology seems to take us back over familiar ground, consider some of the various research topics that are being investigated as part of the revolution of new technology. As Chapter 5 points out, one of the hot topics is the effects of violent video games. Although the technology is newer, concern about media violence has produced hundreds of studies over several decades. Similarly, concern about the effects of sexual material on the Internet, particularly when seen by children, echoes the concerns reviewed in Chapter 6 about the impact of sexual content in the media.

A recent review of the effects of new technology by Norbert Mundorf and Kenneth Laird reveals that with a few exceptions, the topics in the research are really not “new” at all. See Study Box 11-2.

### SPECULATION ABOUT NEW TECHNOLOGY EFFECTS

As you will see in the last chapter of the book, some fairly provocative theoretical thinking is going on today about the impact of electronic media—thinking that doesn’t have much to do with the actual content of the media itself. After studying the effects of media messages for well over 25 years, I confess that I’ve been somewhat attracted to at least considering this line of thought myself. A few years ago, I teamed up with Dr. Will Miller, the former spokesperson for Nick at Nite. We wrote a book for the layperson called *Refrigerator Rights: Our Crucial Need for Close Connection*. The book has had a much longer life than I anticipated. It has just been published again with a new publisher, a new chapter, and a new subtitle.<sup>19</sup> In that book, we engage in a kind of informed speculation about the effects of new technology. Consider how our social environments have changed today just in terms of the importance of looking at screens. If you’re like me, your daily screens are important. I spend time looking at my TV screen at home, so I want that screen to be

#### STUDY BOX 11-2

#### THE RESEARCH TOPICS ASSOCIATED WITH NEW TECHNOLOGY

The five areas mentioned in this box have been summarized recently as areas of current research on new technology. For each one, I illustrate the fact that although the technology is new, the area of research has been around for a quite a while.

1. **Uses and Gratifications of Internet Use.** Researchers study the ways people use the Internet and the gratifications they derive from such use. As discussed in Chapter 4, the uses and gratifications perspective has been around for a long time and has been applied to conventional media such as newspapers and TV for years.
2. **Effects on Social Interactions.** Chapter 4 discusses how one of the early concerns about TV had to do with the possibility that TV use displaced other important social activities. With the advent of the Internet, this concern is appearing again as a major theme in the media effects literature.
3. **Internet Addiction.** Chapter 4 discusses the notion of addiction to TV and reviews some research on TV addicts. The idea of addiction to media has been around for several decades. The only difference is that scholars are now discussing it as a possible effect of the Internet.
4. **Individual Differences.** Just as past studies on media effects show that the impact of media may depend on the individual, so studies on new technology are tending to show the same thing.
5. **Effects of Age and Gender.** Most media effects studies undertaken in past years have investigated the effects of age and gender. Today, these variables are also used to study video games and Internet use.

*Source:* Mundorf, N., & Laird, K. R. (2002). Social and psychological effects of information technologies and other interactive media. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 583–602). Mahwah, NJ: Erlbaum.

sufficiently large and as clear and vivid as possible. Today, many people want HDTV (I didn't have HD when I wrote the second edition of the text—now I have two HDTVs). At the office and at home, I also spend lots of time staring at my computer screen, as I'm doing right now. Sitting beside my computer monitor is a much smaller PDA screen that I'll drop into my pocket and take with me tonight when I leave campus. The chances are good that on the way home, I'll spend some time staring at my cell phone screen in an attempt to send or receive a message or phone call. The newest automobiles feature built-in DVD and video screens, either for entertainment or for monitoring one's global position while on the road.

What is the collective impact of all of this screen time? This is not an easy question to answer, but it may be an important question to ask. As our society spends increasing amounts of time looking at virtual images on screens, are we spending less time looking at human faces in the context of face-to-face, in-person encounters? If so, what are the implications of this shift in how we spend our time? Are children who grow up in the electronic environment being socialized away from cultivating the social skills that we emphasized 50 or 60 years ago? Does this mean that people growing up today may be more inclined to be rude to others or lack the civility that used to characterize polite social interactions? Are professors treated with less respect in the classroom today because students are so accustomed to being in the mode of processing "entertainment," where laughter, ridicule, and boredom are responses that need not be inhibited?

I don't know the answers to these questions. Perhaps your class can explore them in a discussion. Although these questions may hold provocative and important implications, gaining answers through the traditional methods of media effects research will probably be quite difficult. These questions do not lend themselves to carefully controlled experiments in laboratory settings. Nevertheless, the inability to study an effect doesn't mean the effect isn't taking place. Perhaps in future years the scholarly community will find some creative ways to begin to provide insights on these sorts of questions.

#### WILL OUR OLD BRAINS CATCH UP TO THE NEW TECHNOLOGY?

More than a decade ago, Byron Reeves and Clifford Nass published a provocative book that I believe was way ahead of its time. My hunch is that media scholars will be mining the insights in this book in future years and expanding them in all sorts of fruitful directions. The book is called *The Media Equation: How People Treat Computers, Television and New Media Like Real People and Places*.<sup>20</sup> You may remember that you read a little about this book back in Chapter 4 when the topic of discussion was the formation of parasocial relationships with media characters. In the opening pages of the book, Reeves and Nass explain "the media equation": "In short, we have found that individuals' interactions with computers, television, and new media are *fundamentally social and natural*, just like interactions in real life." They go on to explain that for a few hundred thousand years, Homo sapiens learned to react to the things in their environments as if they were real. Then, in the twentieth century, along comes an electronic revolution that essentially "tricks" our brains. In Chapter 7, you read personal accounts of people who became frightened

of images that existed on pieces of celluloid and were projected onto a large screen. Why would someone actually become scared of these images? After all, they're not real. The answer from **the media equation** is that our new brains have not yet been able to overcome the deeply ingrained processing rules from our old brains that tell us to react to what we see as if it is real.

In an article published after his book, Clifford Nass and his colleague Youngme Moon reviewed a large body of evidence from experimental studies that show how extensive the media equation is across a broad range of different types of phenomena.<sup>21</sup> In one fascinating experiment, participants were randomly assigned to interact with a computer that asked them questions requiring some self-disclosure. For example, the computer might ask, "What have you done in your life that you feel most guilty about?" In one of the conditions, this question was presented only after the computer said, "There are times when this computer crashes for reasons that are not apparent to its user. It usually does this at the most inopportune time, causing great inconvenience to the user." The results of the experiment revealed that participants were much more likely to disclose to the computer details and feelings about something that they felt guilty about if they had first heard the computer disclose information about its tendency to crash! If you're like me, these results might strike you as strange. Everyone knows a computer isn't a real person. Why should your decision to disclose sensitive personal information be dependent on what a computer reveals about the tendency to crash? The point is that people tend to obey the same disclosure rules when interacting with computers that they do when they interact with people. If someone makes a personal disclosure, it invokes a rule of reciprocity. It is only appropriate to respond with a similar personal disclosure. The media equation asserts that people treat media (in this case, a computer) just like they treat other people. When I think of the conversations that my family has in the car with the global positioning system, the truth of the media equation begins to sink in. Some of us refer to the GPS unit as "the lady" (we usually have the system set on the female voice) and we often respond to her directions and comments with comments of our own. It is almost as if the GPS is another passenger in the car—and a knowledgeable passenger at that! Like any good theorists, Reeves and Nass have been about the business of trying to discover the limits of the media equation. In an interview with Em Griffin for Griffin's text on communication theory,<sup>22</sup> Nass remarked that there are obviously some limits to the phenomenon. For example, "people don't let computers marry their sister." But so far, Reeves and Nass believe that most scholars have underestimated just how true the media equation is for many of our encounters with media in everyday life.

#### POTENTIAL MEDIUM EFFECTS ON HEALTH

In closing this chapter, I offer two more provocative and unexplored areas of research on new technology for consideration. A few years ago, a friend and colleague, Jan Van den Bulck, who works at a university in Belgium, surveyed more than 2,500 adolescents about their media habits. One of the things he discovered was how intrusive cell phone text messaging was for many of the adolescents in the study. Nearly 14% of the sample reported that they were woken up at night 1–3 times per month by an incoming text message on their cell phones.<sup>23</sup> Based

on this study, Van den Bulck believes that text messages may constitute a serious source of sleep disturbance for young adolescents. A second provocative area of future research concerns the possible link between exposure to the light of a computer at night and the reduction of the body's natural production of a chemical called melatonin. If this link really does exist, then exposure to the light of a computer screen at nighttime may affect melatonin levels. Why is this of any concern? The answer to that question is simple: melatonin seems to be a natural weapon that the body uses to fight cancer. TV sets could also be culprits in reducing melatonin if they are viewed at close distances. I find this possible relationship to be so important that I'm collaborating with Jan Van den Bulck to study the issue.<sup>24</sup>

## SUMMARY

This chapter has examined some of the newest research on the impact of the Internet. One of the central questions being explored concerning the Internet is whether this technology increases social alienation, depression, and loneliness. The Carnegie Mellon study suggested that this was the case. But the study has its critics. The research studies that followed have found evidence for the importance of individual differences in studying the effects of Internet use. In the coming years, we can expect to see more research that will help to provide insight and clarify the impact of the Internet on individual relationships. In considering the impact of new technology, it may be more helpful not to think in terms of qualitatively different media. Instead, it may be better to think of all media in terms of a mix of attributes. Regardless of how we think about it, there are still provocative questions for researchers to address in future research. One such question has to do with the media equation and is raised by Clifford Nass and Byron Reeves. What are the limits of our tendency to treat new media just like we treat people? Quite apart from this sort of theoretical question, there are other fundamental questions about the possible effects of electronic media (apart from their content) on our personal health.

## KEY TERMS AND CONCEPTS

perpetual linkage	individual differences
activity displacement effect	mix of attributes approach
displaces strong social ties	interactivity
causal claim	structure
social augmentation hypothesis	channel
social displacement hypothesis	textuality
social compensation hypothesis	content
social information processing theory	the media equation

To learn more about the topics in this chapter, enter the Key Terms and Concepts found in this chapter as subject and keyword searches on your InfoTrac<sup>®</sup> College Edition.

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