7. RELATIONSHIP OF MEDIA USE TO INDIVIDUAL TRAITS

In addition to the relationship between various demographic characteristics and media behavior, we also examined how several individual characteristics of young people relate to media behavior. In particular, we looked at the relationships between academic performance and media exposure, and between self-reports of personal contentedness or social adjustment and media behavior. Finally, we examined how youngsters classified as light, moderate, or heavy users of each of four media (print, TV, computers, video games) distribute their time across all other media.

Academic performance and media exposure

Respondents were asked to indicate what grades they typically earn in school. Response options included "mostly As," "mostly As and Bs," "mostly Bs," "mostly Bs and Cs," "mostly Cs," "mostly Cs and Ds," "mostly Ds," and "mostly Ds and Fs." As noted in Chapter 2, such self-reports of students' grades likely produce somewhat inflated absolute grade estimates. For example, there is a tendency for B students to report "mostly As and Bs," for C students to report "mostly Bs and Cs," and so on. Nevertheless, empirical work has demonstrated a substantial positive relationship between self-reported grades and actual grade point average (e.g., r = .77; Dornbusch, et al., 1987). In other words, although we cannot be sure that students who claim to earn As and Bs do, in fact, score that high, we can be relatively confident that they probably earn higher grades than students who claim to earn Bs and Cs, or Cs and below, regardless of what the absolute value of the actual grades might be.

Given the tendency for self-reports of school grades to be somewhat inflated, it is not surprising that substantially more 8- to 18-year-olds (51%) claim to earn mostly As and Bs, than claimed to earn mostly Bs and Cs (35%), or Cs and below (10%). (Four percent either did not answer the question or indicated that they attend schools that do not give grades.) Keeping in mind that self-reported grades tend to skew toward the honor roll, then, Table 7-A presents average media exposure for the resulting three levels of academic achievement (see also Appendix 7.1).

Although kids reporting the lowest grades also tend to report the highest levels of media exposure, Table 7-A reveals that this relationship is not statistically significant. Those who report mostly As and Bs and those who report mostly Bs and Cs are exposed to just under 8½ hours of media exposure daily. Kids who report Cs and Ds and below spend 3/4 of an hour more with media each day (9:15), but the difference is not statistically reliable. Statistically significant differences in exposure in relation to school grades emerge for only two of the individual media. Grades are positively related to print use. That is, kids who claim to earn mostly As and Bs report 17 minutes more daily leisure reading than kids who earn Cs and Ds or lower (with kids reporting mostly Bs and Cs falling between these two groups). Conversely, grades are negatively related to video game exposure. Kids who earn mostly Cs and Ds or below spend about 20 minutes more daily playing video games than A and B or B and C students (the difference between those earning As and Bs and those earning Cs and Ds or below falls just short of statistical

TABLE 7-A

Media Exposure and School Grades

	Mostly As & Bs	Mostly Bs & Cs	Cs & Ds & below
Percentage of sample	51%	35%	10%
Medium			
TV	3:06	3:03	3:07
Videos/DVDs/movies	1:05	1:14	1:19
Print media	0:46[a]	0:39[ab]	0:29[b]
Audio media	1:39	1:48	2:08
Computers	1:05	0:58	1:03
Video games	0:48[a]	0:46[a]	1:09[b]
Total exposure	8:28	8:27	9:15

Note: Within each row, only those mean times that do not share a common superscript differ from one another with statistical reliability. Those mean times without a superscript, or those that share a common superscript, do not differ by a large enough margin to ensure statistical reliability.

significance). Exposure to TV, music, and videos/movies does not significantly differ across the three academic groups.

These findings — that is, the lack of strong negative relationships between most media use and grades — are somewhat surprising. Several earlier studies that reported a positive relationship between grades and reading, also found significant negative relationships between grades and exposure to other electronic media as well as to overall media exposure (e.g., Roberts, et al., 1999; Schramm, Lyle & Parker, 1961). It may be that as media become more and more integrated into the lives of young people, the differences once located by academic performance are attenuating. To the extent that this is the case, it appears to be because kids who earn higher grades are engaging in more media use. That is, there is no change from 1999 (cf. Roberts, et al., 1999) to 2004 in the amount of media exposure among kids reporting fair or poor grades. Among those reporting good grades, however, media exposure has increased by 43 minutes, reducing the differences between the two groups in overall media exposure to the point that it is no longer statistically reliable. The upshot is that while there still seems to be a tendency for kids who earn high grades to spend slightly less time with media, the difference is not nearly as great as has been found in previous research.

Except for time spent reading, the least contented kids report more media exposure than those classified as belonging to either the moderately or highly contented groups.

Personal contentedness and media exposure

Several early studies of young people's TV exposure reported that kids who have difficulties with friends or parents or who are otherwise unhappy or dissatisfied with some aspects of their lives devote more time to TV than do those who are happier or better adjusted (e.g. Johnston, 1974; Maccoby, 1954; Schramm, Lyle & Parker, 1961; Tangnay, 1988). Comstock (1991) writes that, "greater-than-ordinary use of pictorial media such as TV arguably has become recognized as a possible symptom of personal maladjustment" (p. 33). More recently, Roberts and his colleagues (Roberts, et al., 1999; Roberts & Foehr, 2004) found a strong, negative relationship between media exposure and scores on an index of "contentedness." The current study employs the same contentedness index used in 1999 (cf. Roberts, et al., 1999) to determine whether the relationship still holds.

The "Contentedness Index" consists of six, self-descriptive statements:

- I have a lot of friends.
- I get along well with my parents.
- I am often bored.
- I often feel sad and unhappy.
- I have been happy at school this year.
- I get into trouble a lot.

Respondents indicate the degree to which they believe each statement describes them by circling one of four responses: "A lot like me," "Somewhat like me," "Not much like me," or "Not at all like me." Items are scored such that higher values indicate more contentedness and are summed to create an index that can range from six (low contentedness) to 24 (high contentedness).

It is important to note that, for the most part, the kids participating in this study are generally fairly satisfied with their lives. That is, they report relatively high levels of contentment and social adjustment. Although the obtained scores cover the entire range possible (from a low of six to a high of 24), 75% of the youngsters score above the scale mid-point of 15; the median overall contentedness score is 18 and the mean is 18.2. In other words, most of the kids who are classified as low in contentedness for purposes of analysis are not particularly unhappy or alienated (although a few are).

The high- and low-contentedness groups are defined as comprising youngsters scoring roughly one standard deviation above and below the overall contentedness mean. Adjusting for natural break points on the index, the 18% of youngsters who scored 15 or lower are classified as belonging to the low-contented group, the 13% scoring 22 or higher are classified as belonging to the high-contented group, and the 64% scoring 16 through 21 were placed in the moderate-contented group (5% of respondents did not respond to the items).

As the mean exposure times in Table 7-B illustrate, contentedness is negatively related to overall media exposure. Except for time spent reading, the least contented kids report more media exposure than those classified as belonging to either the moderate- or high-contentedness groups. Low-contented kids report significantly more exposure to music and to video games (the moderate and high groups differ significantly only for video game exposure). Exposure to TV, other screen media and computers follow this pattern, although the differences are not statistically significant. Print exposure produces the single exception to this general pattern. Youngsters in the moderate-contentedness group report less reading than those in either the low- or high-contentment groups, which are identical in print exposure.[32]

TABLE 7-B

Media Exposure by Contentedness

	Contentedness index score		
Medium	**Low**	**Moderate**	**High**
TV	3:25	3:02	2:57
Videos/DVDs/movies	1:15	1:09	1:13
Print media	0:49	0:39[a]	0:49[b]
Audio media	2:02[a]	1:42[b]	1:36[b]
Computers	1:16	1:01	0:55
Video games	0:56[a]	0:49[a]	0:37[b]
Total exposure	9:44[a]	8:22[a]	8:07[b]

Note: Within each row, only those mean times that do not share a common superscript differ from one another with statistical reliability. Those mean times without a superscript, or those that share a common superscript, do not differ by a large enough margin to ensure statistical reliability.

TABLE 7-C

Media Exposure by Sensation Seeking

	Sensation-seeking score		
Medium	**Low**	**Moderate**	**High**
TV	2:11[a]	2:50[b]	3:17[b]
Videos/DVDs/movies	1:00	0:59	1:11
Print media	0:36	0:41	0:41
Audio media	2:02[a]	1:50[a]	2:55[b]
Computers	0:57	1:10	1:34
Video games	0:31	0:37	0:42
Total exposure	7:18[a]	8:08[a]	10:20[b]

Note: Within each row, only those mean times that do not share a common superscript differ from one another with statistical reliability. Those mean times without a superscript, or those that share a common superscript, do not differ by a large enough margin to ensure statistical reliability.

The overall result is that as we move from the high- through the moderate- to the low-contentedness groups, at each step there is a statistically reliable increase in the amount of overall media exposure. Kids classified as low on the contentedness index report 1:22 more overall media exposure than those in the moderate group, and 1:37 more exposure than those in the high-contentedness group. A large portion of the difference in overall media exposure derives from low-contented kids' greater exposure to music and video games, but the pattern of more exposure with less contentedness holds for every medium except print.

It is not possible to infer any causal sequence from these data. It may be that heavy use of media increases one's dissatisfaction with life, or that declines in contentedness or satisfaction push one to use media more, or that some other variable(s) drives both dissatisfaction and media use. And of course, the relationship may derive from some combination of these variables. Longitudinal and/or experimental studies that enable determination of antecedent and consequent variables are required to make such causal inferences. Nevertheless, these data dovetail nicely with the results of various other studies in once again demonstrating a negative relationship between young people's contentedness or life satisfaction and their media use (even when the range in contentedness tends to skew to the positive end of the index).

Sensation seeking and media exposure

Sensation seeking refers to a need for individuals to seek stimulation. Typically, research on sensation seeking is concerned with identifying and explaining risk-takers, kids who might engage in any of a variety of behaviors that could endanger their well-being (e.g., cigarette smoking, drug use, reckless driving; Arnett, 1992, 1994; Zuckerman, Eysenck & Eysenck, 1978). Given that one motivation for using media is to obtain stimulation (cf. Zillmann, 1991), and because we suspected that high sensation-seekers might be particularly attracted to video games, we decided to at least begin exploration of any relationship between sensation seeking and media exposure. To that end, we included several questions to identify sensation-seekers. Our index of sensation seeking consists of five descriptive statements:

- I like friends who are exciting, even if they are wild.
- I sometimes choose friends my parents disapprove of.
- I am often bored.
- I like new and exciting experiences, even if I have to break the rules.
- I get into trouble a lot.

Students in grades 7–12 were asked to indicate the degree to which each statement described them on four-point scales labeled "a lot like me," somewhat like me," "not much like me," and "not at all like me." Responses were reverse-scored (i.e., "a lot like me" received a value of four) then summed to obtain an index score that could range from a low of five to a high of 20. The median score on this index was 13 and the mean was 13.2.[33]

We then classified the 17% of kids who scored ten or lower as low sensation-seekers, and the 22% who scored 16 or higher as high sensation-seekers. Finally, as shown in Table 7-C, we examined the amount of media exposure in relation to groupings on the sensation-seeking index.

Sensation seeking is reliably related to TV exposure, music exposure, and overall media exposure. Both high and moderate sensation-seekers report more TV exposure than low sensation-seekers; although high sensation-seekers watch TV 27 minutes more daily than do moderate sensation-seekers, the difference is not statistically reliable. High sensation-seekers also report substantially more music listening and more overall media exposure than kids in either the low or moderate sensation seeking groups.

Box 7.1 Heavy Media Use and Other Activities

Not only do heavy users of any one medium tend to be heavy users of other media, but contrary to expectations, heavy overall media users also tend to spend more time engaged in several non-media activities than do light and moderate media users. As the following table shows, the 20% of all 8- to 18-year-olds classed as high in overall media exposure spend more time than their low- and/or moderate-exposure counterparts hanging out with parents, exercising, and participating in other activities such as clubs, music, art, or hobbies. In each instance, high-exposure kids spend significantly more time than low-exposure kids with the three non-media activities; moderate-exposure kids do not differ from high-exposure kids in time spent with parents, but do devote less time to exercise and to "other" activities.

Media Exposure Levels and Time Spent on Non-Media Activities Among 8- to 18-year-olds

	Percentage of sample	Hanging out with parents	Exercising/ physical activity	Engaging in other activities
Total media exposure[1]				
Low (3 hours or less)	18%	1:57[a]	1:21[a]	0:50[a]
Moderate (3+ through 13 hours)	62	2:16[b]	1:21[a]	0:56[a]
High (more than 13 hours)	20	2:35[b]	1:42[b]	1:18[b]

[1] Since this classification is based on overall exposure, it does not take into account media multitasking.

Note: Superscripts indicating statistically significant differences should be read within columns.

A similar picture emerges when we look at 7th- to 12th-graders' more detailed reports of the time they spend in various activities in a given day (as illustrated in the following table). Adolescents high in media exposure spend more time with their friends, more time doing chores, and more time working at a job than do those classed as low or moderate in media exposure, again indicating that high media exposure does not necessarily go hand in hand with less time devoted to other activities.

Media Exposure Levels and Time Spent on Non-Media Activities Among 7th- to 12th-graders[1]

	Percentage of sample	Hanging out with friends	Doing homework	Doing chores	Working at a job
Total media exposure[2]					
Low (3 hours or less)	16%	2:11[ab]	0:49	0:29[a]	0:32[ab]
Moderate (3+ through 13 hours)	64	2:10[a]	0:52	0:31[a]	0:30[a]
High (more than 13 hours)	19	2:41[b]	0:45	0:39[b]	0:55[b]

[1] Questions pertaining to these activities were asked only of 7th- to 12th-grade participants.

[2] Since this classification is based on overall exposure, it does not take into account media multitasking.

Note: Superscripts indicating statistically significant differences should be read within columns.

Not surprisingly, when time spent engaged in the various non-media activities is examined in relation to whether a young person is classed as a heavy, moderate, or light user of the four individual media we have been considering (TV, print, computers, and video games), there are some changes in the various relationships (see Appendix 7.5). For example, the finding that heavy overall media users spend the most time exercising also holds for reading and for video game use, but not for watching TV or using a computer. Similar variations also emerge for the questions asked only of 7th- to 12th-graders. Thus, on the one hand, kids high in overall media exposure report spending substantially more time "hanging out with friends" than kids with either moderate or low overall media exposure. However, when we look at heavy, moderate, and light users of each of the individual media, the relationship is significant only for video game users (heavy video game users spend significantly more time with friends than do light video game users; moderate users fall between, and do not differ from either group). Time spent with homework produces yet another pattern. Although there is no relationship between overall media exposure and time spent with homework, significant relationships do emerge for time spent watching TV and for time spent reading when compared with time spent with homework. Kids classed as heavy TV users spend significantly *less* time than those classed as light TV users doing homework (moderate viewers fall between and do not differ from either group). Conversely, there is a strong positive relationship between print use and time spent with homework; heavy readers spend significantly more time with homework than either moderate or light readers; and moderate readers spend significantly more time with homework than light readers (see Appendix 7.5).

In spite of these and similar variations in the pattern of findings, the overall results presented in this box, in combination with the information presented in Appendix 7.5, raises red flags against too easily concluding that time spent with media is synonymous with time taken from other activities. In some instances this may be a valid inference, but in other cases it appears that quite the reverse is true. And although we cannot tease out the various possibilities from our current data, it seems clear that the relationship between level of media use and various other activities depends on the medium (or media) under consideration, the "other" activity under consideration, and the individual youth.

TABLE 7-D

Percentage of 8- to 18-year-olds in the Light, Moderate, and Heavy User Groups for Print, TV, Video Games, and Computers

Medium/cut points	Group	Percentage
Print		
None (0)	Light	26%
5 minutes to 1 hour	Moderate	55
More than 1 hour	Heavy	19
TV		
1 hour or less	Light	34
1+ hours to 5 hours	Moderate	45
More than 5 hours	Heavy	20
Video games[1]		
None (0)	Light	58
5 minutes to 1 hour	Moderate	28
More than 1 hour	Heavy	13
Computer		
None (0)	Light	45
5 minutes to 1 hour	Moderate	38
More than 2 hours	Heavy	16

[1] Based on console video games only.

Although the differences are not statistically reliable, there are also positive relationships for each of the other media (print, videos/movies, video games, and computers); that is, as we move from the low, to moderate, to high sensation-seeking groups, the general tendency is for media exposure to increase.

It appears then, that media in general, and at least two specific media in particular (TV and audio media), hold a particular attraction for kids who score high in sensation seeking. Even though our initial expectation that high sensation-seekers would report high exposure to video games was not supported, the relatively large differences in total media exposure displayed in Table 7-C point to sensation seeking as an interesting variable to be explored in future research.

The results raise a red flag against too easily concluding that time spent with media is synonymous with time taken from other activities.

Heavy vs. light media users

A question posed in many studies of young people's media use concerns the degree to which different kinds of media exposure may be interrelated. That is, do young people who spend a lot of time with one medium spend more or less time with other media? For example, since music often seems to provide a background to teenagers' reading, might we not expect that kids who read a lot will also spend a lot of time listening to music? Or conversely, as many have speculated, does the use of some kinds of media interfere with the use of other kinds of media? For example, given the kind of attention that, at first glance, TV seems to require, should we expect TV viewing to displace time spent reading, leading to a negative relationship between print exposure and TV exposure? A more current but similar question concerns whether the increasing time that young people seem to be devoting to computers "displaces" time spent with TV or print, or any of the other media.

The "displacement" question dates at least to the introduction of TV. Maccoby (1951; 1954) asked how TV viewing affected time that children spent on schoolwork, and Schramm, Lyle, and Parker (1961) raised the issue of how much the introduction of TV influenced young people's reading, radio listening, and motion picture attendance. Mutz, Roberts, and Van Vuuren (1993) reviewed a number of displacement studies that examine how TV exposure relates to exposure to other kinds of media, and failed to find a strong case for displacement when the data were examined at an individual level. Similarly, when Roberts and his colleagues (Roberts, et al., 1999) looked at how much time light, moderate, and heavy users of TV, print, and computers devoted to each of the various media, they found little support for the displacement hypothesis, but a good deal of evidence that high exposure to one medium tends to go hand in hand with high exposure to most other media.

To explore this issue further, we classify young people as light, moderate, or heavy users of each of four media: print, TV, console video games,[34] and computers. Determination of light, moderate, and heavy use must take into account the fact that for some of the media, more than 15% of young people report zero use (e.g., 46% of our sample spent no time using a computer for leisure activities the previous day, and 58% report no time with console video games; see Appendices 4.6 and 4.8). Our solution is to define the "light," "moderate," and "heavy" user groups on the basis of what seems reasonable in terms of the exposure time young people reported for each medium. Table 7-D presents the cut-off points used to define light, moderate, and heavy use of each medium, and the proportion of young people who fall into each group for each of the four media examined. Thus, the 26% of kids who reported no reading the preceding day are classified as light in print use and the 19% who read for more than one hour are classified as heavy in print use.

TABLE 7-E

Average Daily Exposure Among Light, Moderate, and Heavy Users of Print, TV, Video Games, and Computers

Medium	Light	Moderate	Heavy
A. Amount of previous day print use			
TV	2:53	3:05	3:16
Videos/movies	0:55[a]	1:08[a]	1:45[b]
Video games	0:50	0:46	0:59
Music	1:45	1:38	1:59
Computer	0:56[ab]	0:58[a]	1:20[b]
Total media exposure (less print)	7:19[a]	7:35[a]	9:19[b]
B. Amount of previous day TV use			
Reading	0:44	0:40	0:46
Videos/movies	0:53[a]	1:07[b]	1:53[c]
Video games	0:35[a]	0:44[a]	1:26[b]
Music	1:37[a]	1:41[a]	2:02[b]
Computer	0:53[a]	0:59[a]	1:22[b]
Total media exposure (less TV)	4:41[a]	5:11[b]	7:29[c]
C. Amount of previous day video game use[1]			
Reading	0:41[ab]	0:40[a]	0:55[b]
TV	2:35[a]	3:32[b]	4:17[c]
Videos/movies	0:50[a]	1:30[b]	2:07[c]
Music	1:39[a]	1:41[a]	2:12[b]
Computer	0:53[a]	1:11[b]	1:25[b]
Total media exposure (less video games)	6:45[a]	8:52[b]	11:53[c]
D. Amount of previous day computer use			
Reading	0:42[ab]	0:40[a]	0:51[b]
TV	2:50[a]	3:02[a]	3:45[b]
Videos/movies	0:59[a]	1:05[a]	1:55[b]
Video games	0:42[a]	0:49[a]	1:09[b]
Music	1:28[a]	1:42[a]	2:38[b]
Total media exposure (less computers)	6:42[a]	7:19[a]	10:18[b]

[1] Groupings based on console video games only.

Note: Within each row, only those mean times that do not share a common superscript differ from one another with statistical reliability. Those mean times without a superscript, or those that share a common superscript, do not differ by a large enough margin to ensure statistical reliability.

Light TV users, on the other hand, includes all kids who watched one hour or less (34%), while heavy TV use is defined as watching in excess of five hours (20%). For both computers and video games the light users did not use the medium the preceding day, and for video games the heavy users used them in excess of one hour, while for computers the heavy use group used them for more than two hours.

Table 7-E presents mean daily media exposure for light, moderate, and heavy print users, TV users, video game players, and computer users. When light, moderate, and heavy users of a particular medium are considered, average total media exposure *excludes* time spent with that medium. Thus, for example, total media exposure for light, moderate, and heavy print users does not include time spent reading; total media exposure for light, moderate, and heavy TV users does not include time spent watching TV, and so on.

In our view, the most striking result to emerge from Table 7-E is that high exposure to any of the four individual media tends to go hand in hand with high exposure to most other media, a result replicating findings from 1999. Average total media exposure for each of the four comparison groups consistently shows that regardless of the medium on the basis of which they are classified, youngsters who are heavy users report substantially more overall media exposure than youngsters from the light and moderate groups, with the differences ranging from two hours to more than five hours daily. Heavy print users report two hours more exposure to all other media than light print users (and 1:44 more than moderate print users). Heavy TV users report 2:48 more exposure to all other media than light TV users (and 2:18 more than moderate users). Heavy computer users report 3:36 more exposure to all other media than light computer users (and 2:59 more than moderate users). Heavy video game users report 5:08 more overall exposure to all other media than light video game users (and 3:01 more than moderate video game users).

In addition, examination of Table 7-E also shows that of the 20 comparisons for each of the individual media (five comparisons for each of four media), there are no instances in which kids in the low exposure group report more exposure to any individual medium than kids in the high exposure group. Indeed, there are only four instances where the differences favoring heavy media users are not statistically reliable (and three of them pertain to light vs. heavy *readers*). In other words, in terms of overall media use, there is no evidence for a displacement effect, at least among kids classified as heavy users of print, TV, video games, or computers. Youngsters classed as heavy users of any of these four media do not tend to be light users of other media. To the contrary, there is good reason to infer that heavy use of any one medium is quite likely to go hand in hand with heavy use of other media.

It is important to note, however, that this pattern may not hold for all children; that is, young people classed in the light- or moderate-use subgroups generally do not differ. Kids classed as low in exposure to one of the four media differ significantly from those classed as moderate in exposure in only three instances: light TV viewers spend less time than moderate viewers watching videos and movies, and light video game users spend less

time than moderate video game users watching TV and using a computer. This general lack of differences between kids classed as light and moderate users in the amount of time spent with various individual media indicates that the relationship emerges primarily at the higher ends of the distributions of time spent with each of the various individual media.[35] Another way of saying this is that while being classed as a light or moderate user of any of these four media does not necessarily mean one will be a light or moderate user of any other media, being classed as a heavy user of one makes it a pretty good bet that you are highly exposed to other media.[36] Indeed, given that each of the subsections of table 7-E excludes time spent with the medium on the basis of which kids are classed into the light, moderate, or heavy use groups, the average total media exposure reported by each of the high exposure groups is so high as to give pause. Where could heavy video game or heavy computer users possibly find 11 or 12 hours in their day to spend with other media? The answer, we believe, lies in the kind of media multitasking discussed in Chapter 5. We will look more closely at the relationship between high media exposure and media multitasking when we cover media multitasking later in this chapter.

Heavy use of any one medium is quite likely to go hand in hand with heavy use of other media.

A second point to emerge from Table 7-E is that there are notable differences in the pattern of results for heavy, moderate and light print users compared to the patterns for heavy, moderate and light users of other media. First, while heavy use of TV, computers, and video games goes hand in hand with heavy use of almost all of the other media, this is clearly not the case for print use. Rather, although kids who read more than an hour daily also spend substantially more time with videos/movies and with computers, they *do not* report reliably more use of TV, video games, or music. Second, print is the only medium for which there is no significant difference in relation to light, moderate, or heavy TV viewing. Third, the differences in amount of print exposure in relation to light, moderate, and heavy computer use and video game use, although statistically reliable, are small relative to the differences in amount of exposure to other media. In other words, although there are some similarities among high exposure groups for all four media, the results for high print exposure are arguably different from those for the three electronic media.

Several other results emerge for differences in exposure to various individual media as a function of low, moderate, or high exposure to the four media under consideration. We are particularly struck by the high levels of music exposure reported by heavy computer users relative to light computer users — a full hour more (1:28 vs. 2:38). The differences between the low and high subgroups for other media are substantially smaller: 14 minutes for print (1:45 vs. 1:59), 25 minutes for TV (1:37 vs. 2:02), and 33 minutes for video games (1:39 vs. 2:12). We suspect that the ability to access digitized music while engaged in other computer activities facilitates multitasking for these two media.

The high level of TV viewing among kids reporting high use of either computers or video games is also noteworthy. As we saw in Chapter 4, for all 8- to 18-year-olds, daily TV viewing averages 3:04. Thus, both heavy computer users and heavy video game users exceed the overall averages in daily TV use (with heavy video game users exceeding the overall TV average by more than an hour). Finally, heavy video game use is a particularly strong predictor of all other kinds of media use. Not only do kids classed as heavy video game users report substantially more overall media exposure than any of the other high exposure subgroups, but relative to the low exposure group, their *increase* in time spent with each of the individual media is larger than any increase found for any of the other high exposure subgroups (e.g., relative to the light group, heavy video game users spend 1:42 more with TV; heavy print users, on the other hand, spend 0:23 more with TV than light print users, and heavy computer users spend 0:55 minutes more than light computer users).

Media multitaskers

The strikingly high levels of exposure reported by heavy users of print, TV, computers, and video games returns us to the distinction between media exposure and media use. In Chapter 5 we noted that the sub-set of youngsters from our sample who completed week-long media logs indicated that they spent 26% of their media time using two or more media simultaneously. The result was that six hours and 21 minutes of media use produced exposure to eight hours and 33 minutes of media content. Clearly, the high levels of overall media exposure reported in Chapter 5, and the extremely high levels seen when heavy users of each of the four media are examined separately, point to the importance of media multitasking — that is, to the use of two or more media simultaneously.

In addition to the data obtained from the sub-sample who completed the media diaries, all respondents in 7th–12th grade in the sample were also asked how often they use other media while watching TV, while reading, while using the computer, or while listening to music. For example, kids were asked, "When

TABLE 7-F

Percentage of 7th- to 12th-Graders Reporting Media Multitasking While Using Each Medium

Medium	Most of the time	Some of the time	Little of the time	Never
Reading	28%	30%	26%	16%
Watching TV	24	29	28	19
Listening to music	33	30	25	12
Using a computer	33	29	23	14
Multiple computer activities	39	25	19	14

you watch TV, how often do you do any of the following activities *at the same time*: use a computer, read, or listen to music?" We also asked a separate question about the frequency with which kids engaged in several different computer activities at the same time: "When you use a computer, how often do you do several things at the same time (such as e-mail, instant message, homework, etc.)?" Response options for all of these questions included "most of the time," "some of the time," "a little of the time," and "never." Table 7-F presents the proportion of 7th- to 12th-graders giving each answer to the question as posed for each of the four media. Depending on the medium about which they are asked, from one-quarter to one-third of adolescents report using multiple media "most of the time." The fewest kids multitask "most of the time" when watching TV (24%) and the most when listening to music (33%). It is also clear that in the context of multitasking, the computer must be viewed as a special case. Not only do 33% of kids report that when they use a computer they also use other media (i.e., read, watch TV, or listen to music), but 39% indicate that "most of the time" they use a computer, they engage in multiple activities at the same time (i.e., e-mail, instant messaging, etc.).[37] Clearly, then, the finding reported in Chapter 5 that over one-quarter of 7th- to 12th-graders often use multiple media simultaneously seems quite robust.

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The next step was to compute an overall "media multitasking" score that would enable identification of heavy, moderate, and light media multitaskers irrespective of medium. This was accomplished by scoring responses to the questions about the four media represented in Table 7-G, assigning a value of one for "never multitask" to a value of four for "multitask most of the time," then summing these scores to obtain an index of multitasking. The scores could range from four to 16. Those kids whose overall multitasking score was below eight were grouped as light multitaskers (15% of the sample). Those kids whose overall multitasking score ranged from eight through 14 were grouped as moderate multitaskers (70% of the sample). Those kids whose overall multitasking score was 15 or 16 were grouped as heavy multitaskers (15% of the sample). In other words, to be classed as a heavy multitasker, a respondent had to respond "most of the time" to at least three of the multitasking questions (see Appendix 7.4).

TABLE 7-G

Average Daily Media Exposure Among Light, Moderate, and Heavy Media Multitaskers

	Overall media multitasking level[1]		
Medium	Light	Moderate	Heavy
Reading	0:35	0:39	0:47
TV	2:43[a]	2:31[a]	3:56[b]
Videos/movies	0:50[a]	0:58[a]	1:22[b]
Video games	0:34[a]	0:33[a]	0:57[b]
Music	1:12[a]	2:03[b]	3:16[c]
Computer	0:44[a]	1:05[a]	2:30[b]
Total media exposure	6:38[a]	7:50[b]	12:49[c]

[1] Includes only 7th- to 12th-graders.

Note: Within each row, only those mean times that do not share a common superscript differ from one another with statistical reliability. Those mean times without a superscript, or those that share a common superscript, do not differ by a large enough margin to ensure statistical reliability.

In light of the findings discussed above, it is not surprising that multitasking level is positively related to overall media exposure. As Table 7-G illustrates, kids classed as light media multitaskers (i.e., as infrequently, if ever, reporting that they use several media simultaneously) report significantly less overall media exposure (6:38) than kids classed as moderate multitaskers (7:50), and both of these groups report substantially less overall exposure than kids classed as heavy multitaskers (12:49). The same general pattern holds for exposure to music (that is, exposure increases significantly with each successive multitasking level). There is no difference between light and moderate multitaskers in amount of exposure to TV, to videos/movies, to computers, or to video games, but each of these groups report significantly less exposure to those media than do heavy multitaskers. Finally, multitasking level is not related to amount of print exposure, likely because reading invites less multitasking because of the attention it requires to be successfully pursued (i.e., distraction from reading arguably interferes with information processing to a greater degree than distraction from such media activities as TV viewing or music listening).

TABLE 7-H

Media Exposure and Media Multitasking

Of light, moderate, and heavy TV, computer, video game and print users, the percentage who are heavy multitaskers

	Average exposure[1]		
	Light	**Moderate**	**Heavy**
TV	11%[a]	16%[ab]	25%[b]
Computer	8[a]	14[b]	33[b]
Video games	12[a]	21[ab]	28[b]
Print	15	15	18

[1] Includes only 7th- to 12th-graders.

Note: Within each row, only those items that do not share a common superscript differ from one another with statistical reliability. Those items without a superscript, or those that share a common superscript, do not differ by a large enough margin to ensure statistical reliability.

Finally, as noted earlier in this chapter, high exposure to TV, computers, and video games tends to go hand in hand with heavy multitasking. Table 7-H presents the proportion of 7th- to 12th-graders who were classified as heavy multitaskers in relation to whether they report light, moderate, or heavy use of each of four media: TV, computers, console video games, or print. Compared to the low and moderate exposure groups, a significantly greater proportion of kids in the high exposure group for TV, for computers, and for video games report that they use several media simultaneously "most of the time." We suspect that this is a large part of the explanation for the high overall media exposure levels produced by the heavy-multitasking groups. These percentages also tend to support our earlier speculation that print media are relatively less likely to invite media multitasking than are the various electronic media. Regardless of level of print exposure, fewer than one-fifth of 7th- to 12th-grade kids report heavy media multitasking.

Although some media invite multitasking more than others, and although people have probably always engaged in more than one activity while consuming media, it seems clear that *media* multitasking (as opposed to engaging in some media and some non-media activity at the same time) is a growing and potentially important phenomenon. As we noted in Chapter 5, the amount of time young people have available to devote to media seems to have reached some kind of ceiling, but the amount of media messages to which they are exposed apparently has not. Kids seem to be engaging one, two, three, or more media simultaneously — or at least in a manner that looks simultaneous.[38] Whether the consequences of such media behavior are good, bad, or neutral remains an open question. Does media multitasking increase or decrease the amount of information that is processed? Does it impede or facilitate understanding? Does it affect attention, and if so, how? These are only a few of the questions the multitasking phenomenon raises. The one certainty in all of this is that the phenomenon is real and the questions are important.

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Summary

Several different individual factors other than demographic characteristics are related to media exposure. Although the relationship is not as strong as that found in earlier studies, there is a tendency for exposure to electronic media to be higher among young people who report the lowest school grades. Although the difference is statistically reliable only for exposure to video games, to a lesser degree the inverse relationship also holds for TV, videos/movies, and audio media.[39]

The findings for contentedness largely replicate those reported in the 1999 study. That is, as in the earlier study, most kids in our sample are relatively content and well-adjusted. Nevertheless, when the 18% of kids who scored lowest on our index of contentedness are compared with either the 13% who scored highest or the 64% who scored in the middle, it is clear that lower contentedness goes with higher exposure to most media. (The only media for which this pattern does not hold are print and videos/movies; exposure to these media is lowest among kids in the moderate-contentedness group). Although it is not possible to infer causality, the inverse relationship between contentedness and media exposure replicates the findings of a number of earlier studies (cf. Comstock, 1991).

Also in line with the results of our 1999 study, we again find that heavy use of any one medium tends to go hand in hand with heavy use of most other media. The difference in "other" media exposure varies from two hours when light and heavy print users are compared to more than five hours when light and heavy video game users are compared. And although the difference between light and moderate groups is not always large, the increase is consistently positive across the three groups regardless of the medium under consideration. And finally, there is no medium for which the difference between the light- and heavy-user groups is not statistically significant. In short, it appears that there is a substantial group of young people who are simply heavy media users, regardless of the medium. It also

seems that, in a media world where multitasking is becoming commonplace, there is little or no evidence for displacement. That is, heavy use of one medium does not seem to displace use of any of the other media.

Media multitasking — that is, using two or more different media at the same time — is a phenomenon that appears to be increasing and that may have important implications for what young people take away from mediated messages, most of which remain to be identified and explored. Fully one-quarter of our sample claims to use multiple media simultaneously "most of the time." Moreover, those who are identified as heavy media multitaskers (i.e., those who appear to multitask regardless of the medium about which the question is asked) also report substantially higher levels of overall media use than either those who score lowest on a multitasking index or those classified as moderate multitaskers. Indeed, the difference between the moderate and heavy groups exceeds three hours and the difference between the light and heavy groups is almost five hours.

Finally, print use stands out in that it is positively related to school grades. That is, quite the reverse of exposure to electronic media, when school grades increase, so too does time spent reading.