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The Use and Experience of the New Video Media Among Children and Young Adolescents

The media habits and experiences of 483 subjects whose ages ranged from 9 to 15 years were studied via the Experience Sampling Method. Respondents carried electronic paging devices and reported on their activities and subjective experiences when signaled. General descriptive findings on the use and experience of three forms of new video entertainment, music videos, video games, and videocassettes, are reported. For boys, these new video media were associated with higher reports of arousal and more positive affective states than was the case for the activities of television viewing, reading, and listening to popular music. Relative to boys, girls reported lower affect and arousal, especially during video games and music videos.

In the past decade, the miniaturization and mass production of microprocessor technology have helped bring videocassette recorders (VCRs) and video games into the great majority of U.S. homes with children. In 1988, VCR penetration in Boston was estimated at 85% for households with children (Hughes & Dobrow, 1988). Other factors such as the record industry slump and the diffusion of cable television provided both a catalyst and outlet for music videos, which, although not representing a distinct technological advance or "medium," do represent a new opportunity for a particular kind of video experience.

As was the case for broadcast television, movies, radio, popular music, and comic books, the child and adolescent audiences are once again thought to be at greatest psychological risk with the new video media for the very reason that young people are considered to be more impressionable and less mature than adults (Dorr, 1980). For this reason and because video games and music

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videos—as well as many movies and other content available on videocassette—are specifically designed to appeal to children and adolescents, it is important that we begin to understand how these new video media (or video forms) are used and experienced by the young. And precisely because these media are new, research on how they are used and experienced is very much in its infancy.

The purpose of this article, then, is to provide descriptive information on how the new video media are used by children and adolescents. This study examines how often the new video media are used, in what social contexts, and how young people feel during engagement. The study also compares the uses and experiences associated with music videos, videocassettes, and video games with those of traditional (i.e., non-VCR-aided) television viewing, as well as with music listening and reading. The data were obtained using the Experience Sampling Method (ESM), in which respondents carry electronic pagers for a week and fill out self-reports on their activities and experiences when they are signaled.

Time Investment

Gauging the amount of time that people spend with a particular medium is among the most basic steps in understanding the potential impact of new media technologies. But our present knowledge about the frequency of use of the new video media is quite limited and researchers' estimates of time use vary substantially. Knowledge about how much time children spend with these media is limited, in part, because audience-rating services are still struggling with how to measure VCR use, have little interest in video games, and generally do not break-out music video viewing as a separate category.

MUSIC VIDEO VIEWING

As with the other new video media, there is considerable disparity among the few studies focusing on music videos, with most measuring only viewing of MTV. A. C. Nielsen has recently measured MTV viewing in response to MTV's specific request for such data. For 1988, Nielsen estimated about 25 min per day of MTV viewing for respondents in grades 7-12 who watch some MTV (A. C. Nielsen, personal communication, December 1988). Deiter and Heeter (1989) arrived at a similar estimate of a little over 30 min per day of MTV viewing for eighth and ninth graders. Sun and Lull (1986), however, in

a survey of 603 California students in grades 9-12, reported four to five times more MTV viewing than in these two studies.

VIDEOCASSETTE VIEWING

There are now a handful of studies on child and adolescent VCR use, but estimates of time use vary considerably as a function of how recently the study was conducted as well as the age and nationality of respondents (Greenberg & Heeter, 1987; Greenberg & Lin, in press; Hughes & Dobrow, 1988; Roe, 1987; Wartella, Heintz, Aidman, & Mazzarella, this issue). In the two studies with respondents closest in age to our subjects, Greenberg, Lin, and Harong (1989) report 5.5 hours weekly of VCR use for both 6th and 10th graders, whereas Levy and Gunter (1988) estimate 2 hours per week for children.

VIDEO GAME PLAY

There are also relatively few time estimates of home video game play, and previous studies generally focus on arcade play or combine time spent at arcades with actual play. During the height of the early 1980s' arcade fad over "Pac Man," "Defender," and other games, Dominick (1984) estimated less than an hour of arcade play a week for 10th and 11th graders and less than an hour a day of home play for the majority of his sample. Selnow (1984), on the other hand, estimated under 30 min per week at arcades for light video players of nearly the same age as our sample and 4.5 hours per week for the heavy users.

QUALITY OF EXPERIENCE

Although it is important to establish how much time young people are spending with the new video media, it is also critical to study how a particular medium is experienced. Although the ESM permits rough comparative estimates of the amount of time devoted to different activities, the method's greater strength is in obtaining subjective experiential reports from respondents in the normal flow of everyday life.

Understanding media experiences (or gratifications) is particularly important because the immediate experience of engagement helps explain why people gravitate to a medium in the first place as well as to what ends a medium is used. Indeed, previous ESM studies have helped build on and

evaluate some of the basic assumptions of the uses and gratifications approach as well as informing the debate on whether audiences are "passive" or "active" (Csikszentmihalyi & Kubey, 1981; Kubey, 1986; Kubey & Csikszentmihalyi, in press). Measuring viewers' reports of cognitive and affective state during engagement can be particularly valuable in understanding uses and gratifications, in that retrospective reports of most any phenomenon are prone to greater error than immediate reporting (Thomas & Diener, 1989; Yarmey, 1979). Furthermore, studying the nature of experiences that typically accompany the use of a particular medium can help us understand that medium's structural features as well as effects beyond immediate exposure (Kubey & Csikszentmihalyi, in press; Larson & Kubey, 1983).

To be sure, a number of issues concerning the nature of experience associated with the new video media have already emerged. It has been suggested, for example, that video game play may provide the kind of intellectual challenge and opportunities for active and complex cognitive involvement that some contend other media activities lack (Greenfield, 1983; Malone, 1981; Panelas, 1983). On the other hand, former U.S. Surgeon General C. Everett Koop is not alone in suggesting that video games might be hazardous to the mental health of young people whom he sees as becoming addicted "body and soul" ("Surgeon General," 1982). As for the videocassette recorder, it is widely observed that the VCR permits the user greater opportunity for choice and control over what is being experienced, leading to the assumption that television viewing via VCR might involve a more enjoyable and active experience than that associated with broadcast or cable, that is, "traditional" television (Levy, 1987).

In addition to the audience-activity controversy, there is also much concern about the kinds of values and attitudes that may be inculcated by exposure to certain kinds of content, especially violence and sex and the "male orientation" of music videos (Aufderheide, 1986; Brown, Campbell, & Fisher, 1986; Deiter & Heeter, 1989; Sherman & Dominick, 1986; Vincent, Davis, & Boruszowski, 1986), movies on videocassette (Brummett, 1988), and video games (Chandler, 1984; Panelas, 1983).

Given the consistent finding that music videos tend to be male oriented, it could be predicted that boys will find viewing of them more enjoyable than will girls. Or given the premium placed on competition, control, and destruction in many video games, are there corresponding differences in how boys and girls experience video games?

There is also growing concern about girls' comparatively low level of interest in computers and "high tech" equipment generally. Much of this

concern focuses on differential socialization patterns by gender and to what degree much of the existing software available for viewing, learning, or playing, is oriented to males rather than females (Chandler, 1984; Lewis, 1987). Although ESM findings do not focus on such issues directly, they can address how children and adolescents of both sexes report actually feeling during engagement with these new media.

*The Social Context of
Media Use and the
Development of Autonomy*

In addition to experiential measures and frequency-of-use estimates, past ESM research has also shown that social context is particularly salient to understanding media behavior. Media use has social implications and is conditioned by the social context in which it is used.

In general, use of media associated with the family occurs more frequently in childhood but becomes somewhat less common in adolescence, as a result of growing autonomy and separation from the family. Popular music is often closely tied to the adolescent's reference group activities and grows in importance relative to television, which is still largely tied to the family and to parents (Larson & Kubey, 1983; Larson, Kubey, & Colletti, in press; McLeod & Brown, 1976; Roe, 1983).

In another paper examining the data set employed in this study, significant age trends in the experience of traditional television, music, and reading were reported (Larson et al., in press). These analyses showed a decline in the frequency of television watching over this age period (fifth to ninth grade) and an increase in music listening. Lower affective states for older respondents during TV viewing were also observed for both sexes, as was declining affect with age during music listening for girls.

The current study uses these traditional media as a standard of comparison for examining the new video media. One might safely hypothesize that music video viewing, as was the case with music listening, will increase with age whereas video game use will decline with age for girls. It is more difficult to predict VCR use. Because of the growing autonomy associated with increased age, however, it is expected that the proportion of time spent alone (vs. with the family) with the new video media will be greater for older subjects.

Owing to the greater personal selectivity and general activity associated with the use of the VCR and video games especially, it is expected that these

new video media will be reported as involving more attention and being more enjoyed (higher affect ratings) than traditional television viewing. As noted earlier, boys may be particularly likely to enjoy video games and music videos.

Method

Sample

Participants in the study were 483 children and young adolescents from the fifth to ninth grades (ages 9 to 15). These students came from a total of eight schools in two white, suburban-Chicago communities (one middle class and one working class) chosen from census data on the basis of their representative demographic composition (see Larson, in press, for details). The sample was drawn randomly from the school populations, with stratification to obtain equal numbers of students by grade, sex, community, and time of year (approximately equal numbers of students participated in the autumn, winter, spring, and summer).

The final sample represents 70% of the 688 randomly selected students who were initially invited to participate. Of those invited, 116 (16.9%) declined the invitation to take part, 46 (6.7%) were not permitted to take part by their parents, and 39 (5.7%) participated but were eliminated from the final sample because their ESM data were deemed unusable.

In two of the schools, a short anonymous survey was administered to everyone in the student body—asking at the end whether they had been invited to be in the study and whether they had taken part. The findings from this survey indicate that the final sample is quite representative of the population from which it was drawn (Larson, in press). There were no significant differences in participation rate by sex, grade, or school; nor were those who took part significantly different from those who did not on a six-item version of the Rosenberg Self-Esteem Scale or in the status of their reported mothers' and fathers' occupations as rated on the Hollingshead Scale.

Differences were observed between the final sample and the 39 students who participated but were eliminated from analyses because of poor or unusable data. On average, these 39 students had lower grade point averages, were rated as less mature by their teachers, and came from families of lower socioeconomic status (Larson, in press). The implication is that students who function poorly in school may also experience difficulty complying with the requirements of the ESM. This group constitutes 6% of those who were invited to participate. Those excluded were not distinguished by grade,

sex, school, parents' marital status, or maternal employment from the rest of the sample. In general, then, subject loss appears to have introduced relatively little bias in the final sample.

The study was conducted between May 1985 and March 1987. During this time all of the communities had been wired for cable television for 2 to 3 years. Information from parents of the 165 students in the last three waves of the study revealed that 35% of households were receiving cable TV, 85% had VCRs, and 39% had a computer that the child could use. Households in the middle-class community were more likely than those in the working-class community to have cable hookups (42% vs. 31%) and own computers (49% vs. 31%), but there was no difference in VCR ownership.

Procedures

Subjects took part in the study in one of eight waves over the 2-year period. Respondents were paid \$8 for their participation.

Subjects carried electronic pagers and a small booklet of self-report forms for 1 week, filling out reports on their activities and psychological states when signaled at random times by the pagers. The pagers were equipped with an optional vibrate setting that was used to receive signals in school, church, and other places where audible beeping might be disruptive. Students were instructed to carry the pager with them at all times and keep it turned on, unless they went to bed. Signals occurred once every 2 hours between 7:30 a.m. and 9:30 p.m.

In total, subjects responded to 18,022 signals by filling out self-reports, an average of 37.3 per person. The response rate to the signals, excluding those missed because of sleep and mechanical failure of the pagers, was 86%. Separate analyses suggest signals were missed most when respondents were away from home (Larson, in press). Questioned at the end of the week, subjects rarely mentioned media use as an activity during which they were likely to have missed signals.

Obviously, some media use was missed after the 9:30 p.m. end of the beeping schedule. Subjects reported staying up until 9:55 p.m. on average on weekdays and until 11:15 p.m. on weekends. By surveying subjects at the end of the week about their media activities after 9:30 p.m., it was estimated that approximately half of this time, or roughly 25 min per day, was additional media activity that went unmeasured. During video game play, it should be added, subjects were more likely to report a delay of a few minutes between receiving the signal and filling out the report.

Completed self-report books were screened for questionable or inadequate data. To be included in the final sample, a subject must have responded to at least 50% of the signals and provided at least 15 self-reports. Subjects who quit responding to the signals after 3 or 4 days could still be included, providing they met the 50% criterion for that period. Subjects displaying a pattern of highly repetitive or implausible data or who reported falsifying data at the end were also eliminated. These criteria resulted in the elimination of the 39 respondents identified in the Sample section above.

Measures

At the time of each signal, respondents used self-report forms to record their objective situation, that is, what they were doing, where they were, and who they were with, as well as their subjective state. Occasions of media use were identified by responses to the open-ended question, "What were you doing?" Responses were further clarified by an additional media question that asked subjects to specify precisely the television, musical, print, or game content to which they were attending. In order to maintain comparability across the media activities under study, all use of media at school, as well as times when homework involved the use of media was excluded. Media use that was secondary (or background) to some other primary activity was also excluded.

Three categories of traditional media use were coded: television watching, reading, and music listening (radio, record, tape player, compact disc player). Three categories of new video media use were coded: music video, VCR, and home video games. Five cases in which subjects were watching a music video on a VCR were grouped with music video rather than with VCR. Finally, an additional small category of other media collapsed watching a movie in a theater, playing a video arcade game, nongame computer use, and nonmusic radio listening into one category.

A number of studies (Csikszentmihalyi & Graef, 1980; Kubey & Csikszentmihalyi, in press; Larson, in press) have shown that the ESM produces valid and reliable estimates of time use when compared with estimates generated by more traditional methodologies (Robinson, 1977; Szalai, 1972). A question may be raised regarding the measure of VCR use, which is probably underestimated because some subjects failed on occasion to report that they were watching television via a VCR. This also suggests a slight overestimation of traditional television viewing. Also keep in mind that nationwide penetration of VCRs at the beginning of the study was roughly

half of what it was at the end of the study and that only 35% of households were receiving cable during the final three waves of the study.

Respondents also rated their subjective state at the time of each signal. Some of the analyses in this report employ a scale of Arousal computed from subject ratings of three 7-point semantic differential items (alert-drowsy, excited-bored, strong-weak; $\alpha = .60$) and a scale of Affect (happy-unhappy, friendly-angry, cheerful-irritable; $\alpha = .76$). Responses to three 10-point items that dealt with attention ("How well were you paying attention?"), initiation of the activity or choice ("How much choice did you have about doing this activity?"), and motivation or wish (did the subject wish to do what he or she was doing?) were also measured. The reliability, validity, and rationale underpinning these measures have been discussed elsewhere (Csikszentmihalyi & Larson, 1987; Kubey, 1986; Kubey & Csikszentmihalyi, in press; Larson, in press).

In order to control for individual differences in the use of these subjective scales, the raw responses have been standardized to z scores. All of the raw responses for each self-report variable provided by each person have been adjusted such that a value of .00 corresponds to the person's mean for the respective scale and values of -1.0 and $+1.0$ correspond to values that are one standard deviation above or below the person's mean. This transformation is achieved by subtracting the person's mean from each raw score and then dividing by the person's standard deviation. Use of these z scores allows the comparison of self-report levels across contexts using each individual's mean on a variable ($z = .00$) as the standard of comparison.

Data Analysis

Because the focus of this article is upon new video media, most analyses contrast each new media form with television, the "traditional" video medium. When comparing means, two-tailed t tests were used to measure differences and evaluate significance. When comparing percentages, a test based on the standard error of a percentage was employed (Loether & McTavish, 1974).

It should be noted that not all participants indicated using each medium, thus our findings reflect the experience not of the sample population but of those who actually used each medium. It should also be noted that many individuals provided reports from more than one use of a particular medium; hence data points for each medium are not fully independent, and therefore significance estimates do not provide strict measures of probability but only

guidelines as to the strength of an effect (see Larson & Delespaul, in press, for a complete discussion of these issues.)

A reanalysis of those instances where 1 or 2 heavy-using individuals could conceivably alter results was conducted. For the music video sample, for example, 2 subjects of a total of 42 accounted for 9 signals, or 15% of all reports; and for video game playing, 1 of 67 individuals accounted for 10 reports, or 9% of the total pool of video-game-playing observations. Analyses without these subjects resulted in virtually no differences in any of the findings. In other ESM reanalyses for television and reading, no impact on the results was found to be caused by slightly greater contribution by a few subjects (Kubey & Csikszentmihalyi, in press).

Results

Rates of Use

Of a total of 18,022 random time samples, media use was reported as the primary activity on 3,172 occasions, representing 17.6% of the total hours under study (see Table 1). Traditional, or non-VCR-aided, television viewing was by far the dominant media activity, accounting for three fourths of all primary media time and 13.1% of all signals responded to.

The next most frequent media activity behind television viewing was voluntary reading, which was one-eighth as frequent. Music listening, almost all of which was rock and roll, accounted for just slightly less time than reading, although not surprisingly, music listening was more frequently reported as a secondary background activity than any other media activity.

By comparison to these traditional media, the new video media accounted for very little of these children's and adolescents' time. Home video game play accounted for only 3.3% of all media time, watching music videos only 1.8%, and watching television via VCR only 1.7%. Seventy-two percent of the VCR reports involved the viewing of movies.

Media use was not equally distributed by age and sex (see Table 2). The seventh to ninth graders of both sexes watched less television (boys: $z_{prop} = 4.38, p < .001$; girls: $z_{prop} = 2.55, p < .05$) and listened to music (boys: $z_{prop} = 4.29, p < .001$; girls: $z_{prop} = 4.51, p < .01$) more often than the fifth and sixth graders. During both age periods, girls watched significantly less television (fifth and sixth graders: $z_{prop} = 4.66, p < .001$; seventh and ninth graders: $z_{prop} = 3.10, p < .01$) and listened to more music (fifth and sixth graders: $z_{prop} = 2.43, p < .05$; seventh and ninth graders: $z_{prop} = 2.58, p < .05$) than did boys.

Table 1
Frequency of Media Use

	Number of reports	Percentage of all media time	Percentage of all time
Traditional media			
TV	2,355	74.3	13.1
Music	267	8.4	1.5
Reading	288	9.1	1.6
New video media			
Music video	56	1.8	.3
VCR	55	1.7	.3
Video games	105	3.3	.6
Other media ^a	46	1.4	.2
Total media	3,172	100.0	17.6

Note: Based on a total of 18,022 random time samples.

a. Includes attending a movie at a theater ($N = 19$), playing a video arcade game ($N = 13$), using a computer for something other than playing a game ($N = 10$), and listening to the news or advertisements or the radio ($N = 4$).

There were also significant age and sex differences in the use of the new video media. Closely paralleling the increase in music listening with age was a twofold age increase in music video watching (boys: $z_{\text{prop}} = 1.33$, *n.s.*; girls: $z_{\text{prop}} = 2.28$, $p < .05$). Although boys and girls did not differ significantly in rates of watching music videos, there were differences in what they watched. Boys generally viewed their music videos on MTV, whereas the majority of girls viewed a local UHF broadcast program called "MV60," which featured fewer heavy-metal videos and more ballads and Motown hits than MTV.

VCR use exhibited no significant age or sex differences as main effects. However, significant sex differences did emerge when social class was considered. The middle-class boys accounted for nearly 70% of total VCR usage, even though rates of VCR ownership among middle- and working-class boys were nearly identical.

Use of video games was significantly higher among boys than among girls at both age periods. Nearly 80% of video game play was by boys. This activity was over 3 times as frequent for the younger males as for the younger females ($z_{\text{prop}} = 3.92$, $p < .001$), and 10 times greater for the older males than the older females ($z_{\text{prop}} = 5.92$, $p < .001$). Sixty-three percent of video game playing occurred among the middle-class versus the working-class boys.

Contexts of Use

The respondents' reports on where they were each time they were signaled indicate differing physical milieu for media activities. Over 90% of television

Table 2
Frequency of Media Use by Sex and Grade

	Boys		Girls	
	Grades 5 and 6	Grades 7-9	Grades 5 and 6	Grades 7-9
Number of reports	3,891	4,713	4,036	5,382
Traditional media				
TV	16.4	13.0 ^a	12.7 ^b	11.0 ^{a,b}
Music	.6	1.6 ^a	1.1	2.3 ^{a,b}
Reading	1.1	1.7	1.6	1.9
New video media				
Music video	.2	.4	.2	.4 ^a
VCR	.3	.2	.4	.3
Video games	1.0	1.0	.3 ^b	.1 ^b
Total media	18.6	17.8	16.3	16.0

Note: Table shows the percentage of all reports that involved use of the indicated media.

a. Percentage is significantly different ($p < .05$) than that for the younger age group, based upon a two-tailed test of proportions.

b. Percentage is significantly different ($p < .05$) than for boys in this age group.

viewing and music video viewing was reported at home. In comparison, only 82% of VCR viewing was done at home. Eighty percent of reading, 77% of video game play, and 72% of primary music listening took place in the home. Clearly, television viewing was the most home based of the media activities, whereas video games and VCRs were more frequently used by young adolescents outside the home—most typically at a friend’s house.

These differences in locale are reflected in whom subjects were with when they used different media (see Table 3). Just as television viewing was the most home-bound activity, so over half of such viewing was done with the family—virtually the same proportion as for VCR use. In contrast, the majority of music video watching was done alone, a pattern that is similar to that for listening to music and reading, which were done with the family only 25.4% and 35.7% of the time, respectively. Video games were frequently played alone (46.5%), and infrequently played with the family (17.8%), but they were played with friends (35.6%) more than twice as often as engagement in any other media activity.

The social context for use of all these media appears to change with age, likely reflecting the greater behavioral autonomy and independence of adolescence. As can be seen in Figure 1, for all media the rate of use alone increased substantially with age and use with the family declined. These shifts in solitary and family use between the two age groups were significant in every instance except for music videos. The significance levels tend to be

Table 3
Percentage of Media Use by Social Context

	Number of reports	Alone		Family		Friends	
		Mean	z^a	Mean	z^a	Mean	z^a
Traditional media							
TV	2,262	35.7	—	55.0	—	9.2	—
Music	265	58.1	7.03***	25.4	-9.06***	16.5	3.72***
Reading	277	58.5	7.36***	35.7	-6.07***	6.1	-1.71
New video media							
Music video	55	54.5	2.87**	36.4	-2.75**	9.1	-.04
VCR	50	30.0	-.84	54.0	-.15	16.0	1.62
Video games	101	46.5	2.21*	17.8	-7.34***	35.6	8.52***

Note: For 116 media self-reports (93 during TV viewing) respondents reported being with someone other than a family member or friend. These self-reports are excluded from this table. Percentages add across to 100.

a. Two-tailed test of the difference between proportions evaluates significant difference from TV.

* $p < .05$; ** $p < .01$; *** $p < .001$.

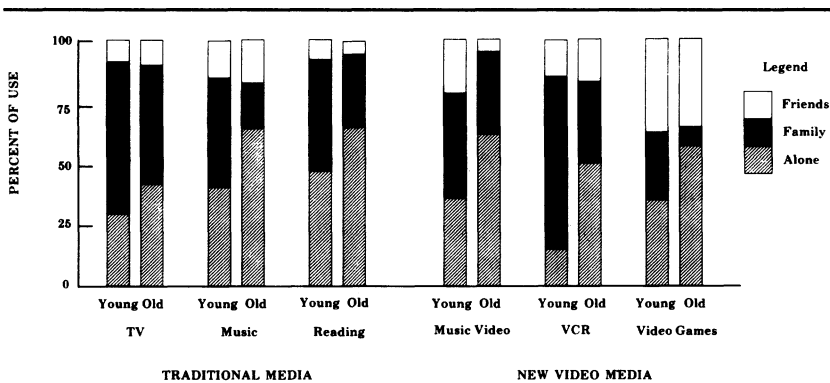


Figure 1: Media use by social context. *Young* denotes fifth- and sixth-grade students. *Old* denotes seventh-, eighth-, and ninth-grade students.

lower for the new media than for the traditional media, because of the smaller numbers involved.

The shift in the social context of media use was particularly striking for all of the new media under study. For example, the younger respondents watched music videos alone only one third of the time, whereas the older respondents—the actual “adolescents” in the sample—were alone for 62% of their music video use, $z_{prop} = 1.71, p < .10$.

Seventy percent of VCR use by the fifth and sixth graders was done with the family, whereas the seventh to ninth graders spent only one third of VCR time with the family, $z_{prop} = 2.64, p < .01$. Again, most of this shift from family

viewing was to solitary viewing, $z_{\text{prop}} = 2.64, p < .01$. Likewise video-game playing alone increased with age, $z_{\text{prop}} = 2.19, p < .05$, at the expense of a decrease in video-game playing with the family, $z_{\text{prop}} = 2.60, p < .01$. With music videos there was also a shift from viewing with the family but a more pronounced shift from viewing with friends, $z_{\text{prop}} = 1.89, p < .10$. Put another way, a greater proportion of fifth- and sixth-graders' viewing of music videos appears to be related to ties to the peer group.

Experiential Differences

Because television is employed as the standard for comparison, it is important to first consider how it was experienced (see Table 4). The average z score on affect during TV viewing was $-.05$ —in other words, television was typically experienced just below the overall affect mean (0.0) for the respondents' week of self-reports across all activities. The mean for arousal during TV viewing was $-.15$. In other words, television viewing was experienced as less arousing (i.e., less alert or more drowsy, less excited or more bored, less strong or more weak) than the respondents' other activities on average.

Although watching television was not a positive experience affectively, the z scores for choice ($z = .46$) and wish-to-be-doing ($z = .27$) during TV use were a good deal higher than the overall mean. Relative to many other activities, then, television viewing was something respondents chose to do and something they wanted to do, although, as can be seen, all of the other media activities were rated about as high or higher on these same measures.

Examining Table 4 further reveals that VCR viewing, $t(2,277) = 2.16, p < .05$, and video game play, $t(2,328) = 3.13, p < .01$, especially were reported as being significantly more arousing than traditional television viewing. The level of attention was also greater during video game play than with any other media activity, and this was especially so relative to the viewing of traditional television, $t(2,328) = 4.35, p < .001$, and music videos (*n.s.*). VCR viewing stands out as being associated with the most positive affective experience and was rated significantly more positively on this measure than traditional television viewing, $t(2,277) = 2.69, p < .01$. Video game play was associated with greater wish-to-be-doing than television viewing $t(2,328) = 2.43, p < .05$.

Among the new media, music videos appeared to elicit much the same subjective ratings as television viewing. The only notable, albeit nonsignificant, differences were on arousal and choice, both of which were higher for music videos than for traditional television viewing.

Table 4
Subjective States During Media Use

	Number of reports ^a	Affect	Arousal	Attention	Choice	Wish
Traditional media						
TV	2,227	.05	-.15	.12	.46	.27
Music	393	-.05	-.02*	.20	.42	.42**
Reading	279	-.13	-.18	.21	.47	.28
New video media						
Music video	56	.02	.01	.02	.61	.24
VCR	51	.23**	.13*	.22	.69*	.43
Video games	102	.09	.17**	.48***	.44	.45*

Note: Asterisks indicate significance of difference from TV using a two-tailed *t* test. Positive values indicate more positive affect, arousal, and so on.

a. *N*s are somewhat smaller than those in Table 1 because of cases in which participants identified media use but failed to report on their subjective states.

p* < .05; *p* < .01; ****p* < .001.

However, notable differences in these self-reports of music video experience did emerge as a function of social context. In contrast to the overall mean, music videos were associated with better than average affect when viewed with friends (.29) and siblings (.24), but videos were associated with incredibly low affect (-1.19) during the small handful of occasions (*N* = 5) when they were watched with parents. The most arousing music video experience occurred when respondents were alone (.25), a context typically associated with lower arousal. The few instances of teenagers dancing by themselves and simultaneously watching music videos alone help explain this finding.

VCR viewing was associated with significantly higher affect and arousal than television viewing, and the level of reported choice was also significantly greater. It is important to understand the source of these differences. As noted earlier, 72% of the VCR reports involved viewing of movies. However, the experience of VCR movie viewing versus viewing movies on television without a VCR is virtually indistinguishable on variables such as affect (.24 versus .25), arousal (.11 versus .04), and wish (.44 versus .42). In other words, at least for this sample and for these variables, viewing via a VCR did not seem to change the way young people experienced similar content on television. The one reported difference between watching a movie on a VCR and in a traditional television mode was on the variable choice (.69 vs. .44). Not surprisingly, the VCR permits a heightened sense of control, even with relatively similar content.

It is noteworthy that watching a movie at a movie theater was associated with a more cognitively involving experience than watching a movie via VCR.

For the small number of instances obtained ($N = 19$), the students reported levels of attention (.83, $t[69] = 2.03$, $p < .05$) and wish (.80, $t[71] = 2.58$, $p < .05$) that were significantly above those for VCR viewing. Affect was not markedly different (.25), but arousal was higher (.33), though not significantly so. It should be noted that the students were with their families for half these occasions, and it seems unlikely that these results are attributable to differences in companionship.

Video game play was also related to significantly higher arousal, attention, and motivation than was traditional television viewing. Two of the items that compose the arousal scale exhibited particularly dramatic differences between the experience of video games and television viewing: excited, $t(2,328) = 4.46$, $p < .001$, and alert, $t(2,328) = 2.50$, $p < .01$. Because simply being with friends—regardless of activity—was associated with more positive ratings on several of these scales and because video games were played more with friends than was any other media activity, it is also worth noting that all of the significance tests for video game playing remain significant, even when all occasions with friends are eliminated (not shown). In other words, it is not simply the social context, but the experience of playing the game itself that accounts for these elevated states.

Still, video game states do vary by social context. Video game play with siblings was not associated with positive affect, but it was quite arousing. By contrast, video games elicited higher affect when played with parents or with friends.

The pattern of subjective states associated with home video games was magnified for the small number of 13 instances when students were signaled while playing video arcade games. Compared to states while playing at home, the average states reported during these instances were significantly higher on affect (.66, $t(114) = 2.44$, $p < .05$); arousal (.93, $t(114) = 3.10$, $p < .05$); and wish (.71, $t(114) = 2.24$, $p < .05$), reflecting a state of extremely positive engagement.

Summarizing these findings, the new media were all experienced above average on arousal, whereas the traditional media were all experienced below average. It is critical, however, that these patterns be disaggregated by sex. Boys responded more positively to the new video media than did girls (see Table 5).

Television was reported as a more positive affective experience by boys than by girls, $t(2,185) = 2.52$, $p < .05$, and was associated with lower arousal, $t(2,185) = 2.15$, $p < .05$. Nonetheless, boys reported substantially higher affect during use of all three new video media than during television viewing,

Table 5
Subjective States During Media Use by Sex

	Number of reports		Affect		Arousal	
	Boys	Girls	Boys	Girls	Boys	Girls
Traditional media						
TV	1,149	1,037	-.02	-.12	-.11	-.20
Music	169	230	-.09	-.05	-.02	.02*
Reading	119	158	-.20*	-.06	-.24	-.11
New video media						
Music video	25	31	.20	-.12	-.04	.05
VCR	22	31	.34*	.16	.11	.14*
Video game	78	19	.17	-.11	.25**	-.15

Note: Asterisks indicate significance of difference from TV based on a two-tailed *t* test.
 p* < .05; *p* < .01.

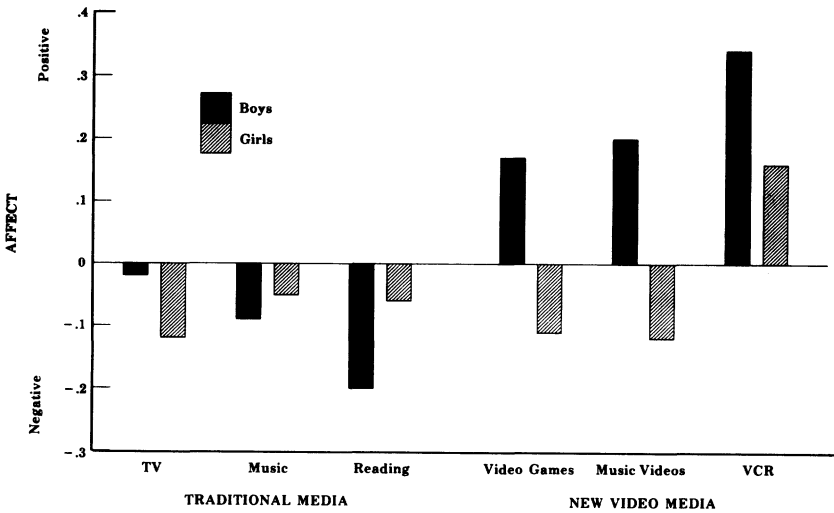


Figure 2: Affect during media use.

although this difference was significant only for VCR watching, $t(1,170) = 2.11, p < .05$. Boys also reported higher arousal during VCR use and video game playing than during television viewing, with a significant difference for the latter comparison, $t(1,226) = 3.17, p < .01$. For girls, only VCR use was associated with higher affect, $t(1,067) = 1.89, p < .10$ and arousal, $t(1,067) = 2.66, p < .05$.

Figure 2 shows that boys' mean affect was higher than girls' during video game play, $t(96) = 1.93, p < .10$. For music videos, although girls watched them as often as boys, they reported much less positive affect during viewing.

This result was not significant, due to the relatively small number of observations composing each mean, $t(55) = 1.13$, *n.s.* In contrast, boys' and girls' affect and arousal levels during music were quite similar.

Discussion

The application of the Experience Sampling Method in this study permitted an examination of the use and experience of the new video media that is generally not possible via traditional methodologies. The results show that traditional television viewing remains the dominant, primary mass media form used by preadolescents and young adolescents, accounting for far more time than all other media combined. In short, traditional television viewing remains highly attractive to viewers of this age—indeed to viewers of all ages—regardless of the recent revolution in video technology.

The new video media absorbed a relatively small part of most youths' lives, even though some of these new forms are directly marketed to the age group under study and are associated with higher affect and arousal states, especially for boys. The generally low frequency of use among this age group raises questions about how concerned one realistically needs to be about the dangers these new media forms allegedly present. Indeed, these subjects reported spending more time reading voluntarily than watching music videos or videocassettes or playing video games.

The low amount of daily music video viewing relative to other studies of MTV viewing needs to be explained. First, even at the end of this 2-year study, only 35% of homes were receiving MTV. Second, previous studies have focused on older respondents who report watching MTV. Third, a substantial portion of MTV content is not music videos. Still, over 2 hours a day of MTV viewing was reported in one study (Sun & Lull, 1986). It may be that subjects overestimate MTV viewing, or most any activity, in studies in which the behavior under study is the main focus.

Although new video media use did not increase with age, the percentage of time spent alone with these new media did grow, suggesting that they offer new opportunities for adolescents to explore and express their independence from the family. The large shift from familial use to solitary use of the VCR with age may also be attributable to older respondents' greater ability to operate the machine and greater resources for and access to rented and purchased tapes.

Greater solitary involvement with all the media also means that as children grow older, they spend less media time supervised by their parents.

In this regard, particularly negative affective states were associated with the small handful ($N = 5$) of occasions when a few respondents watched music videos with parents. It is probably no accident that such occasions are infrequent and the associated experiences so negative. As suggested elsewhere, part of the function of music listening is differentiation from one's parents. It seems plausible that enjoying watching music videos with one's parents is antithetical to this goal (Larson & Kubey, 1983; Larson et al., in press).

There was little difference in subjective experience between watching a movie on television versus via a VCR. Content is likely to be a far better predictor of subjective response than aspects of the technological means by which it is received (Levy, 1987). By itself, the VCR does not make for a substantially different experience. But because the VCR has enabled viewers to view more movies and other preferred content, the overall experience of television among households with VCRs has almost certainly improved.

Clearly, playing video games involves far more attention than any other media activity. But it is noteworthy that the more sophisticated arcade games were associated with a much more affectively rewarding and arousing experience than home video game play. This is probably due to the combined factors of more sophisticated and novel games being available in arcades, the money one pays for each play, and the public environment. Similarly, watching a movie in a public theater was substantially more involving than movie viewing with a VCR. As with arcade video game play, the more sophisticated, public version is more psychologically involving. Such findings, when considered in tandem with the adolescent's need to develop autonomy, assure that, even with more sophisticated entertainment becoming available in the home, there will always be an interest in entertainment in public environments.

Among the findings that require a more complete discussion is that boys experienced much more positive states than did girls during engagement with the new media, especially video games and music videos. There are three likely explanations, each of which is likely to interact with the other.

First, boys and girls are socialized in substantially different ways and toward different activities (Gilligan, 1983; Lewis, 1987; Maccoby, 1966). Second, much of the available content in the new video media is deliberately targeted to boys (Chandler, 1984). Third, there may well be innate biological differences underlying some of the cognitive and behavioral media preferences of males and females. According to Lewis (1987), "biological factors cannot be ruled out" in explaining sex differences in computer use and participation in the new technologies (p. 273).

Higher levels of the androgen testosterone appear to predispose males to greater aggression and competition than females (Freedman, 1979; Money & Ehrhardt, 1972; Wilson, 1975), and it is quite plausible that an affinity for the action and mock violence of video games and media violence generally may be related to this substrate. Innate differences between the sexes in combination with sex role socialization may also help explain why males tend to be more readily aroused sexually by visual imagery than females are (Money & Ehrhardt, 1972; Schmidt & Sigusch, 1970), and this may be particularly relevant to male preferences for music videos and for sexual content in some movies available on videocassette.

It is important to consider how the sexes are portrayed in music videos, particularly in that girls reported feeling affectively better than boys during music unaccompanied by pictures. In other words, what is it specifically about the imagery in music videos that might result in different responses by sex?

Research on the gender portrayals and gender orientation of music videos consistently shows that music videos present a good deal of violent and sexual imagery, leading a number of researchers to conclude that they are "male-oriented" and in harmony with male interests (Brown et al., 1986; Deiter & Heeter, 1989). Furthermore, many girls recognize that music videos are "pitched" more to boys' desires than to their own (Brown et al., 1986; Zillmann & Mundorf, 1987). Because of such an orientation and because music videos frequently present women as sex objects and in various states of undress (Sherman & Dominick, 1986), females may find them less pleasant to watch. Suggestive, male-oriented sexual imagery of the type presented in many videos may be particularly threatening to girls such as those in this sample who are just coming to terms with their own sexuality. Indeed, other researchers have found that males enjoy music accompanied by sexual imagery more than do females (Zillmann & Mundorf, 1987).

Of course, many of the movies available on videotape and marketed to teens are also thick with violence and sexual content, much of which is designed to appeal directly to boys. This may also help explain some of the difference between boys and girls in affective response during VCR viewing.

As regards playing video games and VCR use, boys tend to be much more attracted to and interested in electronics, computers, and technology generally than are girls (Chandler, 1984; Lewis, 1987; Miura, 1982). But it is notable that the frequency of girls' video game play drops from .3% of all time in grades 5-6 to .1% in grades 7-9. This suggests that some changes during this period motivate girls to shun video play. Just as it has been argued that

girls shy away from mathematics after they reach puberty (Fox, 1981), not because of pubertal changes so much as because of matters related to gender typing, courtship, and role enactment, so too may girls reduce their involvement in video game play and other such activities (Gilligan, 1989).

Furthermore, video games reward a penchant for control, competition, and destruction. It can be safely said that in the United States, boys, more than girls, are socialized toward these “modes of being,” whereas girls, relative to boys, are socialized toward nurturant roles and oriented to social network maintenance and “kin-keeping” (Gilligan, 1983; Neugarten, 1968). Studies of young people’s computer use, for example, demonstrate that girls become more involved in software that is intellectually and emotionally meaningful to them, whereas boys are more attracted by action-orientation, competition, and requirements for eye-hand coordination (Miura, 1982).

The foregoing discussion points to the need for developing a more complete understanding of why industries design and market media products as they do and why there seems to be a decided preference toward—and what the implications are of—marketing certain media materials to boys and not to girls.

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