An Exploration of Audience Behavior with Digital Video Recorders (DVRs)

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This paper explores how early adopters of DVRs are using them as functional replacements for VCRs and as tools for enhanced viewing of live television. A national sample of 199 users completed an online survey that measured TV uses and gratifications, viewing satisfaction, and attitudes toward DVR functions. DVR owners reported watching television, live and recorded, with more enjoyment and greater control. DVR behaviors and attitudes were more strongly associated with instrumental viewing motivations than with ritualistic ones.

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From a functional point of view, the evolution of the television viewing experience has been slow. Since the first fundamental design of the television set, there have been few enhancements to actual use that go beyond the basic functions (on/off, channel change, volume control, etc.). But the advent of the digital video recorder (DVR), also known as the personal video recorder (PVR), may represent a revolution in TV functionality that will eventually change the way most people watch television. This paper expands on an earlier examination of the features of DVRs (Ferguson and Perse, 2001) .

Bold claims have surfaced before, notably when the analog VCR promised viewers the ability to time-shift the program schedule. In reality, the VCR's other main function (playing/pausing/fast-searching recorded tapes) took precedence, thanks to the widespread availability of inexpensive tape rentals. Klopfenstein (1989) found that most VCR users found the time-shifting function only occasionally useful. Anyone who has tried to keep track of unlabeled VHS tapes knows that programming the VCR requires a more dedication and precision than most viewers are willing to supply..

Other attempts to enhance the functionality of the television set have been studied. The remote control device (RCD) moved the usual functions of the VCR and TV closer to the user and greatly sped up the selection process, a momentuous change for viewers, but did not add new functionality beyond the last-channel button and the mute button (Eastman and Newton, 1995) . Picture-in-picture capability allowed the viewer to watch two or more shows at once, but the remote control could often flip between shows just as easily. After the advent of digital

capabilities like the Internet and two-way cable, interactive features have permitted the user to select different streams "on demand" and create an asynchronous viewing experience in real-time.

The key to understanding the added functionality of the DVR is the asynchronous nature of the recordings (Negroponte, 1995). Unlike the ordinary VCR that uses videocassette tape, the DVR uses a hard-disk to store compressed video, thus allowing simultaneous recording and playback of the same program without regard to linear time. For example, the DVR allows a viewer to record an hour-long program while watching live a half-hour program, and then *immediately* begin watching the recorded show from the beginning, even while the remaining minutes of the show are still being recorded. Many DVR owners have reported being able to watch the same number of shows in less time, because they can watch any archived program while other shows are being recorded. The concept of "real time" is controlled by the user.

Even when not instructed to make a recording, the DVR is always recording the current channel onto its hard-drive buffer. Thus, the user can pause live TV or ask for instant-replays. The pause feature on recorded programs has been particularly useful when the viewing experience is interrupted by a phone call or some other intrusion, but now the pause can take place during live shows in progress.

Another key distinction between the VCR and the DVR is the hassle-free selection of shows. DVRs feature a choice of two menu systems similar to those found on digital cable systems: (1) an IPG (interactive program guide), which is a searchable menu of programs, alphabetized or sorted by time and genre, and (2) an EPG (electronic program guide), which is an overlay program schedule to consult during live TV. Every DVR is connected to a centralized

computer database via a telephone connection over which the program schedules are downloaded or updated daily.

Either system of program menus is available to the viewer who decides the following: (1) which shows to record, (2) how long to store recordings, (3) what picture quality is needed (lower quality increases storage capability), and (4) how often to record (a "season pass" records all programs of a given title without regard to fluctuations in scheduling). If a viewer decides not to watch an archived show, there is no need to rewind the tape because the show is automatically deleted after a certain interval (usually two days) which can also be chosen.

The DISHplayer has the most units in use, but it is only available to subscribers of the satellite service owned by Echostar. Similarly, the UltimateTV DVR by Microsoft is bundled with WebTV and DirecTV satellite services. This study focused on the two commonly available "standalone" DVRs made by TiVo and ReplayTV, even though the latter bowed out of the marketplace briefly (and will launch a 320-hour model by December 2001). TiVo does not include a lifetime subscription fee in its price as the more-expensive Replay does, leading some to think that Replay has a "free" membership for the downloading of program schedules. Without the membership, both units have the same base price and the lifetime membership is effectively $249 for both. In 1999, the first DVRs debuted at well over $500. By September 2000, DVRs were discounted after rebates at close to $99 (not including membership). The device was expected to penetrate 25 percent of all television homes by 2002 (Dickson, 2000a), but has still not reached one percent.

TiVo has some unique features, such as thumbs-up/thumbs down buttons that interact with network promos or build a "suggestions" file of upcoming shows. TiVo users can "teach"

their DVR about their preferences. The users can thus rely on the TiVo DVR, if they choose, to be a "robotic VCR" that records programs that it "thinks" the viewers will like. The TiVo remote control has a instant-replay button and a pause button, along with the usual slow-motion and fast-search buttons. TiVo offers network showcases where TV-content partners can highlight upcoming shows or special events. TiVo users select a program by using their remote controls to click on an icon that appears on their TV screens during promos. The TiVo unit automatically records this pre-selected show at the time it airs (Brown, 2000). The latest TiVo feature rolling out by the end of 2001 is "sneak previews" where clips of upcoming shows are automatically recorded onto unused disk space during late-night hours using unused cable channels, allowing networks to offers promos-on-demand.

The Replay unit has a "skip 30" button for avoiding commercials. The latest version of the TiVo software allows the user to request a skip-30 feature but the upgrade will not be available to everyone until late 2001. Forrester Research projects that DVRs will kill $18 billion in television advertising revenues by 2005 (Dickson, 2000b). Both units have "save to VCR" features that permit permanent archival of recorded programs.

Viewing Behavior

What is not known about DVRs is how all these additional functions are affecting the way that viewers are using television. Many early studies of the standalone VCR (e.g., Levy, 1981; Levy 1983) described how viewers were using them for time-shifting. Proprietary consumer research (e.g., NextResearch) has been done to decide which DVR features might be popular, but only a few findings have been released that show how the features are actually being used. Our first question, then, was:

RQ_1: How do TiVo and ReplayTV owners use the various DVR functions?

Second, it would be interesting to know if DVR owners report any substantial changes in their behavior or their attitudes toward watching TV with added functionality. Perse and Courtright (1993) found that media users select among functional alternatives, or media that can fill similar goals. Just as cable television and VCRs both became functional alternatives to broadcast television, the DVR may be a functional replacement to the VCR. The second research question of this study became:

RQ_2: Is the DVR a functional replacement to the VCR?

Next, we sought to examine what non-archival functions DVRs offer viewers during live television shows. It would be useful to see if viewers take full advantage of the features that allow manipulation of real-time, and whether they detect a difference in their viewing habits. Our third research question, then, was:

RQ_3: Does the use of a DVR increase the benefits of "enhanced" television viewing?

Furthermore, we wanted to know if any of these functions are related to traditional uses and gratifications variables (e.g., Rubin, 1984) and to standard measures of viewer satisfaction (Perse and Ferguson, 1993, 2000). The final research questions became:

RQ_4: Is viewing satisfaction linked to the use of DVR functions?

RQ_5: How are viewing motivations associated with DVR behaviors and functions?

Method

The number of standalone DVR units was estimated at fewer than 300,000 in September 2001, more than two years after the introduction of the two dominant brands, TiVo and

ReplayTV. A random sample was deemed impractical for obtaining enough participants, as there are too few owners (less than one percent of all TV homes). Because this is an exploratory study, a self-selected sample of DVR owners completed an anonymous online survey at http://www.cofc.edu/~ferguson/survey.htm.

The sample was composed of those early DVR adopters who participate in internet forums linked at http://www.avsforum.com. Forum participants were invited to complete the survey for the purposes of academic research. Non-owners were also solicited from newsgroups (e.g., rec.arts.tv) at http://www.google.com, but t-tests indicated no significant differences between owners and nonowners beyond the unsurprising higher affinity for television among DVR owners.

Over a 4-week period in October 2000, a total of 121 DVR owners completed the survey. A second wave of respondents completed a similar survey during October 2001, producing an additional 78 DVR owners. TiVo owners accounted for 134 (67.3%) completed surveys and ReplayTV owners comprised the remaining 65 (32.7%).

Demographics

Respondents were overwhelmingly male (174, with 22 females and three missing).[1] Age ranged from 14 to 60 ($M = 37.08$, $SD = 11.17$). The sample was well educated. The greatest proportion had completed college or some education beyond college (55.6%).

Television Viewing

Respondents were asked how many minutes they watched television yesterday morning, yesterday afternoon, and last night. The average minutes of TV watched per day (summed from these three measures) ranged from 0 to 1320 minutes ($M = 234.97$, $SD = 178.75$). Nielsen

(2000) estimates 241.86 minutes per day per average person (236.14 minutes for men age 25 to 54, which more closely matches our male-dominated sample). Total viewing excluding female DVR users averaged 234.62 minutes (SD=182.02). Thus, male DVR owners watch slightly less television than average male adult viewers without DVRs.

DVR Functions

Owners completed a set of 9-point Likert statements about their use of the various DVR functions. These items asked how often (0 = never, 8 = always) they paused live programs, recorded and watched programs scheduled at inconvenient times, used on-screen interactive program guides (IPGs) to select programs to watch, used electronic on-screen schedules (EPGs) to choose programs to record, fast-forwarded past commercials, fast-forwarded past unwanted program segments, fast-forwarded past unwanted people, used the instant-replay button, instructed the DVR which programs they like, and used the slow-motion button. Using the same format, we asked how often owners used four brand-specific features: ReplayTV Skip 30, TiVo Suggestions, TiVo Thumbs, and TiVo Showcase.[2]

Respondents completed several questions about their use of their DVR for VCR-like functions. These questions asked how often they recorded programs with the DVR (0 = never, 8 = always), whether they found recording programs with the DVR easier than with the VCR (0 = disagree, 8 = agree), whether they record more programs now with the DVR than before with only the VCR, and whether they transfer programs to more permanent storage on a VCR.

Perceptions about Enhanced Television Viewing

Several survey questions assessed DVR owners' perceptions about how their television viewing has changed. These nine-point Likert items (0 = disagree, 8 = agree) included if they

feel greater control with the DVR, if they do less channel surfing with the DVR, and if they are less likely to watch commercials with the DVR.

Several sets of questions focused on the benefits of watching television with the DVR. First, respondents indicated their agreement with the statement "I find watching TV more enjoyable with my DVR than before I started using one" (0 = disagree, 8 = agree). Respondents also completed three questions about how satisfied they are with television viewing derived from prior research (e.g., Perse & Ferguson, 1993, 2000).[3] Responses to these three questions were summed and averaged to create a television satisfaction score. Television satisfaction ranged from 0.0 to 8.0 ($\underline{M}$ = 5.04, $\underline{SD}$ = 1.38, α = .86).

Respondents indicated their agreement (0= disagree, 8= agree) with 16 statements about their own reasons for watching television. The 16 statements were drawn from larger sets of television viewing motivations (Rubin, 1983). These statements were selected because they were items that loaded on instrumental and ritualistic motive factors in previous research.[4] Eight items concerned watching television for ritualistic reasons, pass time, habit, companionship, and escape. Eight items focused on instrumental reasons, entertainment, excitement, learning, and social utility. A principle components analysis with varimax rotation identified two factors that accounted for 39.9% of the variance and supported the conceptual distinction between ritualistic and instrumental motives. Item responses were averaged to create scale scores.

Finally, we asked respondents about the specific benefits they derive from television viewing. These five benefits focused on the most common ritualistic and instrumental uses of television (e.g., Rubin, 1984) and have been used in prior research on soap operas and television satisfaction (Perse & Ferguson, 1993, 2000; Perse & Rubin, 1988). Respondents indicated their

agreement (0 = disagree, 8 = agree) with five statements about receiving learning (M = 4.28, SD = 2.40), pastime (M = 4.45, SD = 2.17), relaxation (M = 4.95, SD = 2.19), entertainment (M = 5.71, SD = 1.90), and arousal (M = 2.56, SD = 2.24) benefits from watching television.

Statistical Analysis

We answered the study's research questions using three basic statistical techniques. We used descriptive statistics to assess the importance of various DVR features and paired t-tests to identify any significant differences among the use of those features. We used descriptive statistics to explore if the DVR is being used in ways that might displace use of the VCR. Next, we used descriptive statistics to explore how satisfied DVR owners were with their television viewing. Then, we used Pearson correlations to explore how the use of different DVR features was linked to enjoyment of watching television, satisfaction with television viewing, and specific benefits derived from watching television. Finally, we used Pearson correlations to explore the link between instrumental and ritualistic viewing motivations and key DVR behaviors and functions.

Results

The data presented below in Tables 1 and 2 summarize the findings for the first wave of DVR respondents in October 2000 (n=121). Variable means from the additional 77 respondents was compared with the original respondents using *t*-tests, but there were very few significant differences (e.g., stronger gratifications obtained). The new data (n=198) was used for the correlations presented in Table 3.

Functions of the DVR

Our first research question asked about DVR owners' use of DVR functions. Means for each function are presented in Table 1.

Table 1 about here

The most widely used DVR functions were using it to fast-forward past commercials (M = 7.27, SD = 1.11) and to record and watch programs scheduled at inconvenient times (M = 7.17, SD = 1.1). Use of these two functions were not significantly different from each other, but they were significantly more commonly used than any of the other eight functions. The next most used DVR function was the on-screen schedule for choosing programs to record (M = 6.73, SD = 1.72). It was significantly more used than the remaining seven functions. The next most used functions were the use of the on-screen program guides (M = 6.18, SD = 2.23) and using the DVR to skip over unappealing program segments (M = 6.07, SD = 2.02). Use of these two functions did not differ significantly, but both were used significantly more often than the remaining five. Using the DVR to pause live programming (M = 5.57, SD = 2.22), to teach program preferences (M = 5.40, SD = 2.72), and replay program segments (M = 5.25, SD = 2.31) were the next most widely used functions. The amount of their use was not significantly different. Next, owners reported to use the DVR to fast-forward past unappealing people (M = 5.00, SD = 2.69). This use was significantly lower than the use of the DVR for pausing live programs, but was not significantly different than using the teach or replay functions. The slow-motion function was the least used function (M = 3.37, SD = 2.24). Its mean was significantly lower than all the other functions.

Of the brand-specific features, ReplayTV's Skip30 was used quite often (See Table 2, $M = 7.46$, $SD = 0.99$). TiVo suggestions was also somewhat widely used ($M = 5.45$, $SD = 2.23$) as was the TiVo Thumbs feature ($M = 5.07$, $SD = 2.12$). The TiVo Showcase, however, was not particularly well used ($M = 3.16$, $SD = 2.36$). TiVo owners used the Showcase feature significantly less than the Suggestions feature ($t[73] = 6.99$, $p < .001$) and the Thumbs feature ($t[73] = 5.40$, $p < .001$).

Table 2 about here

DVR and VCR

The most endorsed function according to DVR owners was using the devices to record and watch programs scheduled at inconvenient times (see above and Table 1). This suggests that, for DVR owners, the DVR might replace the VCR. In order to explore VCR displacement, we explored DVR owners perceptions about using the DVR for recording. Consistent with the prime use of DVRs to record and watch programs, our sample reported to record programs with the DVR quite often ($M = 7.35$, $SD = 2.31$). In general, DVR owners believe that it is easier to record programs with the DVR. They report that they record more with the DVR ($M = 7.35$, $SD = 1.64$). Moreover, they rarely transfer programs to the VCR for more permanent storage ($M = 2.31$, $SD = 2.23$).

Perceptions about Television Viewing

There is some indication that the DVR has the potential to change people's feelings about television. Our sample reports feeling more in control with their DVR ($M = 7.48$, $SD = 1.34$);

They report to do less channel surfing now that they own a DVR (M = 6.26, SD = 2.49), and they believe that they are less likely to watch commercials with the DVR (M = 6.93, SD = 1.92).

Our sample does believe that the DVR makes television viewing more enjoyable (M = 7.34, SD = 1.45). But, as they report only moderate satisfaction with television viewing (M = 14.37, SD = 4.18), we explored which DVR functions are linked to greater enjoyment, satisfaction, and benefits of television viewing.

DVRs ability to allow owners to record and watch programs aired at inconvenient times is a feature that is linked to greater satisfaction (see Table 1). This feature is linked to reporting greater enjoyment from watching television (r = .52 p < .01), to television viewing satisfaction (r = .41, p < .01), and to all benefits of watching television: learning (r = .20, p < .05), pastime (r = .24, p < .01), relaxation (r = .28, p < .01), entertainment (r = .35, p < .01), and arousal (r = .18, p < .05). Using the on-screen program schedule select programs to record is also linked to greater satisfaction. Use of this feature is positively related to greater enjoyment from television viewing (r = .35, p < .01), greater televison viewing satisfaction (r = .27, p < .01), and receiving greater learning (r = .23, p < .05), pastime (r = .32, p < .01), and arousal benefits (r = .29, p < .01). Using the DVR to pause live programming is also linked to satisfaction. This feature is positively correlated with reporting greater enjoyment with television viewing (r = .30, p < .01), higher television viewing satisfaction (r = .31, p < .01), and greater learning (r = .22, p < .05), entertainment (r = .20, p < .05), and arousal benefits (r = .29, p < .01). Using the teaching function to instruct the DVR to recognize programs preferred by the viewer is also related to greater satisfaction. This feature is linked positively to enjoyment of television viewing (r = .27, p < .01), viewing satisfaction (r = .31, p < .01), and receiving relaxation (r = .32, p < .01) and entertainment benefits (r = .24, p < .01). Other features were linked only modestly to viewing satisfaction. Being able to avoid commercials was linked to greater television viewing enjoyment (r = .29, p < .01), greater television viewing satisfaction (r = .23, p

< .05), and receiving entertainment benefits from watching televison (r = .19, p < .05). The on-screen program guide feature was linked to greater television viewing satisfaction (r = .24, p < .01) and receiving pastime benefits from watching television (r = .22, p < .05). The ability to fast-forward past unwanted program segments was related positively to enjoyment of television (r = .31, p < .01) and television viewing satisfaction (r = .19, p < .05). Being able to fast-forward past unwanted people was positively related to enjoyment of television (r = .20, p < .05) and relaxation benefits (r = .19, p < .05). The instant-replay function was linked only to greater enjoyment of television (r = .34, p < .01). The slow-motion function was unrelated to any measures of satisfaction.

Motivations

Table 3 summarizes the relationships between the DVR features and a few key motivational and satisfaction variables. All of the features were more strongly linked to instrumental motivations for using television than to ritualistic motives. For example, zipping commercials was associated with instrumental motives (r = .20, p < .01) but not to ritualistic motives (r = .11, n.s.). Channel repertoire was the only item to which ritualistic motives were related (r = .15, p < .05) where instrumental motives were not (r = .05, n.s.). Neither kind of motivation were associated with the use of specific buttons (e.g., instant replay, slow motion, thumbs up/down, skip-30).

Table 3 about here

More significant, our television satisfaction scale was strongly linked to instrumental uses (r = .61, p < .001) and not much to ritualistic uses (r = .12, n.s.). Satisfaction was also associated with being able to record at inconvenient times (r = .35, p < .001), having the DVR learn the

respondents' favorite shows ($r = .26$, $p < .001$), and grazing over fewer channels ($r = .25$, $p < .001$).

Also, the item that measured DVR enjoyment was correlated with feelings of control ($r = .54$, $p < .001$), recording shows at inconvenient times ($r = .42$, $p < .001$), and overall satisfaction ($r = .35$, $p < .001$). Use of the instant-replay button was the DVR feature with the strongest association with DVR enjoyment ($r = .28$, $p < .001$).

Finally, the item that measured feelings of greater control with the DVR was associated with recording shows at inconvenient times ($r = .40$, $p < .001$), watching fewer commercials ($r = .51$, $p < .001$), grazing over fewer channels ($r = .41$, $p < .001$), and zipping past commercials ($r = .24$, $p < .001$). Having a larger channel repertoire, however, was negatively correlated with control ($r = -.33$, $p < .001$) and enjoyment ($r = -.25$, $p < .001$).

Discussion

From these exploratory findings, it appears that early adopters of DVRs are quite fond of using them. DVR owners reported watching typical amounts of television, but with more enjoyment and greater control. Even though respondents in this study do not time shift very much, it seems that they really appreciate being able to do it more easily with the DVR than with their VCRs. Timeshifting is the feature that was linked to most measures of satisfaction.

The data show a positive relationship between use of the DVR and enjoyment with television. All the features except for slow motion are linked to some measure of satisfaction. Perhaps taking longer to watch video segments with slow-motion is not viewed as a satisfying way to watch television. Future research should explore how effort and activity are linked to enjoyment of technology.

These DVR owners are clearly early adopters (Rogers, 1995), so they are not typical of the population as a whole. They are probably better educated, make more money, and perhaps

might not even be opinion-leaders, although these variables were not measured in this study. Future research should explore DVR owners over time to explore how the demographics, social characteristics, and even attitudes about television change. Length of ownership is likely to play a factor, as it done with VCR research (see Klopfenstein, Spears, and Ferguson, 1991).

The increased time-shifting functionality of TiVo and ReplayTV suggests that the DVR will eventually displace the VCR (especially as DVDs costing $99 become as plentiful as VCRs costing $99). Among the most valued features of the DVR is the ability to record programs that are aired at inconvenient times. Availability of menu-driven program schedules helps explain the appreciation for features that allow easier "one-button" recording, especially the TiVo thumbs-up button. It is clear that DVR owners find their new machines much easier to use than the VCR. Although other technologies have been developed to help consumers program their VCRs (e.g., VCR+ Plus), none of them has enabled easy playback and keeping track of recorded materials.

The viewing motivations associated with DVR behaviors and functions produced some interesting findings. Clearly, DVR users have primarily instrumental motivations. With the exception of the use of showcases, none of the technology features played a role. But satisfaction, time spent viewing, enjoyment, and the feeling of control were all associated with instrumental motivations. Multiple regressions are needed to further test our data, and such work is forthcoming in a journal article submission.

Perhaps the real significance of studying DVRs now is that many observers expect these standalone devices to quickly evolve into integrated solutions for delivering multichannel services to set-top boxes (STBs). The direct-to-home satellite services already offer the DISHplayer and the DirectTV-TiVo receivers, with cable system operators presently exploring alliances with DVR services. It makes sense for a cable operator to move some of its video-on-demand program content to secure home-based storage, away from centralized disk space. When all 80 million cable and satellite million homes eventually have DVR capability built into their

STBs in the not-too-distant future, the changes in viewing/recording behavior studied here will become even more important to the study of television viewing behavior. The cable industry has begun in 2001 to experiment with "sidecar" stand-alone devices that link to present-day cable boxes using a serial cable (Baumgartner, 2001). In October 2001, TiVo signed a deal with Sony to include PVR features in such devices as video games and television sets (Wong, 2001).

This study is, of course, limited by the nature of the self-selected samples. Familiarity with web surfing in a sample recruited on the Internet may have biased the amount of reported channel use on television. The mostly-male forum participants likely reflect viewpoints of the afficionado rather than the causal user. Lindstrom (1989) noted that early adopters of the VCR were heavy TV viewers. He observed, "In general, recording activity follows TV activity, with lighter television usage roughly translating into lighter VCR recording activity" (p. 44).

The ultimate importance of studying DVRs may lie in the threat these devices pose to advertisers whose messages will become easier to avoid as viewers learn to manipulate real-time. Prognostications on the future of television advertising in a DVR world have speculated that empowered viewers may see fewer commercials (e.g., Brown, 2000). Future research should look at the economic impact of altered viewer behavior, if only to track the rate of diffusion, changing uses over time, and whether the novelty will wear off. Whether DVRs themselves will remain viable standalone devices or not, we cannot predict. But it is clear that the added functions are here to stay, in some form or another.

Notes

[1]We cannot assess if this imbalance reflects a male-dominated ownership and use of DVRs or our method of data collection. Gender differences in use of DVRs should clearly be an area for future research.

[2]ReplayTV's Skip30 function moves the program ahead 30 seconds. TiVo Suggestions is a menu option that displays a personalized list of the programs that might be interesting to the viewer, based on their use of the Thumbs feature. TiVo Thumbs feature is a teaching function that displays programs and lets the viewer rate it "Thumbs up" or "Thumbs Down." TiVo Showcase is a menu option that includes network promotions for their programs.

[3]Satisfaction items were: "How valuable did you find your television viewing in the past week," "How pleasing was your television viewing during the past week," and "How satisfied were you with your television viewing during the past week." All items used nine-point response options.

[4]The eight ritualistic statements were: (I watch television) "Because it gives me something to occupy my time," "Just because it's on," "When I have nothing better to do," "When there's no on else to talk to be with," "Because it passes the time away, particularly when I'm bored," "So I can get away from the family or others," "Because it makes me feel less lonely," and "Because it's a habit, just something I do. The eight instrumental reasons were: (I watch television) "Because it helps me learn things about myself and others," "Because it entertains me," "Because it's thrilling," "Because it's enjoyable," "So I can talk with others about what's on," "Because it's exciting," "Because it amuses me," and "So I can learn about what could happen to me.

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Table 1: Features of DVRs. Means and Correlations with Television Viewing Satisfaction										
	DVR Features									
Benefits	Zip	Record Inconvenient Show	IPG	EPG	FF Program	Pause	Teach	Replay	FF People	SlowMo
Enjoyable	.29**	.52**	.07	.35**	.31**	.30**	.27**	.34**	.20*	.13
Satisfaction	.23*	.41**	.24**	.27**	.19*	.31**	.31**	.15	.13	.06
Learn	.01	.20*	.10	.23*	.08	.22*	.18	.11	.16	.11
Pastime	.00	.24**	.22*	.32**	.04	.08	.17	-.04	.04	-.11
Relax	.06	.28**	.16	.15	.17	.17	.32**	.13	.19*	-.09
Entertain	.19*	.35**	-.03	.15	.14	.20*	.24*	.14	.13	-.13
Arousal	.12	.18*	.16	.29**	.12	.29**	.16	.11	.16	-.07
M	7.27_{a}	7.17_{a}	6.73	6.18_{b}	6.07_{b}	5.57_{c}	5.40_{cd}	5.25_{cde}	5.00_{de}	3.37
SD	1.11	1.10	1.72	2.23	2.02	2.22	2.72	2.31	2.69	2.24
Note. Means with common subscripts do not differ significantly by paired t-tests. ** $p < .01$, * $p < .05$.										

Table 2: Specific Brand Features. Means and Correlations with Viewing Satisfaction

	Brand Features			
Benefits	ReplayTV Skip30	TiVo Suggestions	TiVo Thumbs	TiVo Showcase
Enjoyable	-.05	.29*	-.14	.24*
Satisfaction	-.13	.38**	.22	.18
Learn	-.16	.06	.10	.10
Pastime	.14	.21	.06	.23
Relax	-.09	.35**	.25*	.15
Entertainment	-.04	.33**	.02	.23*
Arousal	-.08	.20	.12	.33**
M	7.46	5.45	5.07	3.16
SD	0.99	2.23_a	2.12_a	2.36

Note. For TiVo features only, means with common subscripts do not differ significantly, $p < .001$. ** $p < .01$, $p < .05$.

Table 3: Correlations of Viewing Motivations and Attitudes						
	TV Min	Instr	Ritual	Enjoy	Control	Satis
TV Minutes						
Instru	.14*					
Ritual	.25**	.32**				
Enjoy	.01	.35***	.16*			
Control	.00	.17*	.13	.54***		
Satisfaction	.10	.61***	.12	.35***	.22**	
Channel Rep	.41**	.05	.15*	-.25**	-.33***	.02
Pause Live	.06	.22**	.09	.19**	.14	.19*
Record Inconv	-.01	.32***	.15*	.42***	.40***	.35***
Use EPG	.15*	.20**	.18*	.27***	.14*	.10
Use IPG	.04	.02	.10	.01	.07	-.02
Teach DVR	.12	.30***	.20**	.18*	.17*	.26***
Read Updates	.12	.33***	.22**	.14	.09	.27***
Trans to VCR	.07	.21**	.03	.05	.00	.20**
Zip Commer	-.08	.20**	.11	.20*	.24***	.14
Avoid People	.01	.26**	.10	.14	.12	.11
Skip Prog	-.07	.22**	.01	.20*	.19*	.19**
Instant Replay	.02	.11	.00	.28***	.13	.13
Slow Motion	.05	.10	.03	.13	-.04	.02
Thumbs	.20*	.16	.11	-.07	-.03	.15
Tivo Suggest	.14	.09	.13	.21*	.16	.11
Tivo Showcase	.14	.27**	.22*	.24**	.20*	.17*
Skip30	-.15	-.09	.14	-.09	.02	-.10
Less Grazing	-.06	.28***	.16*	.30***	.41***	.25***
Fewer Commer	-.02	.04	.11	.30***	.51***	.21**

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.