How the Digital Video Recorder (DVR) Changes Traditional Television Advertising
Author(s): Kenneth C. Wilbur
Source: *Journal of Advertising*, Vol. 37, No. 1 (Spring, 2008), pp. 143-149
Published by: Taylor & Francis, Ltd.
Stable URL: http://www.jstor.org/stable/20460834
Accessed: 18-03-2016 23:18 UTC

HOW THE DIGITAL VIDEO RECORDER (DVR) CHANGES TRADITIONAL TELEVISION ADVERTISING

Kenneth C. Wilbur

ABSTRACT: The digital video recorder (DVR) is tilting the playing field in the television industry, empowering viewers at the expense of advertisers and networks. Available evidence suggests that DVR users will fast-forward through ads in recorded programming at the expense of other advertisement avoidance strategies. While DVRs may increase commercial avoidance, they will also facilitate the measurement of commercial avoidance. Advertisers can use ad avoidance data to improve creative strategies, targeting, message rotation and scheduling, media buying, and ROI (return on investment) measurements. The net result should be more relevant, engaging, and efficient advertising, which would reduce viewers' motivation to avoid ads.

The digital video recorder (DVR)[1] enables a television viewer to easily skip past television advertisements. In June 2007, DVR penetration was estimated at 17% of U.S. households (Steinberg and Hampp 2007). The fundamental effect of DVR proliferation is a shift in control, from television networks and advertisers, to viewers. This shift is the latest in a long trend that has included remote controls and videocassette recorders (VCRs). The available evidence, reviewed below, suggests that this shift will be significant.

The print media have run numerous stories about the coming demise of television. A *Businessweek* article claimed, "if network-TV audiences were futures, most investors would be selling" (Kiley, Lowry, and Grover 2005). A 2003 book by Joseph Jaffe was titled *Life After the 30-Second Spot.* Market data tell a different story, however. Television consumption has risen steadily: adult male viewing rose from 3.58 hours per day in 1996 to 4.35 hours per day in 2006, while adult female viewing increased from 4.34 to 5.17 hours per day in the same period (Nielsen Media Research data reported at www.tvb.org).

Television advertising has remained similarly robust. While revenues for other media grow at higher percentage rates, television attracts more new spending than any other medium. For example, between 2002 and 2006, U.S. Internet advertising revenues increased 182%, from $6.0 billion to $16.9 billion (IAB 2003, 2007). By contrast, U.S. television advertising revenues increased 24% in the same time period, from $54.9 billion to $68.2 billion (TNSMI 2007).[2] While the percentage growth rate for television advertising was lower, it still grew *more* than on-line advertising ($13.4 billion to $10.9 billion).

Kenneth C. Wilbur (Ph.D., University of Virginia) is an assistant professor of marketing, Marshall School of Business, University of Southern California.

The academic literature has not said much about DVRs. This paper, which provides a holistic discussion of the effects of DVR use on market equilibria, makes three contributions. First, it provides a framework, grounded in previous work on advertisement avoidance, for exploring how DVR use is likely to impact viewers' ad avoidance strategies. Second, it explores the effects of this shift on interactions between television networks and advertisers. Third, it develops a research agenda regarding our knowledge about DVRs.[3]

Throughout the paper, opportunities for television networks and advertisers to profit from DVR proliferation are discussed. Many of these opportunities are made possible by the availability of new data on television viewership recorded by DVRs and digital cable boxes.[4] These data promise much of the informative content of a laboratory study, without concerns about experiment-induced bias.

HOW DVR USE CHANGES TELEVISION ADVERTISEMENT AVOIDANCE

Much of the hype about DVRs stems from their facilitation of advertising avoidance. What is often ignored, however, is that viewers have long avoided advertisements: They change channels with remote controls ("zapping"), divert their attention to companions or other media ("multitasking"), leave the room ("physical zapping"), mute or turn off the television, or fast-forward through commercials in recorded programming ("zipping"). Van Meurs (1998) looked at People Meter data

Anita Elberse, Paul Farris, David Mick, and Fred Zufryden provided helpful comments on a 2004 version of this manuscript. The author thanks three anonymous referees and two editors for a thoroughly constructive and helpful review process. Financial support from the Bankard Fund for Political Economy at the University of Virginia is gratefully acknowledged.

Journal of Advertising, vol. 37, no. 1 (Spring 2008), pp. 143–149.

ISSN 0091-3367 / 2008 $9.50 + 0.00.
DOI 10.2753/JOA0091-3367370111

from the Netherlands and found a 21.5% net audience loss during commercial breaks. Krugman, Cameron, and White (1995) observed viewers in their homes, and found that participants avoided watching the screen 67% of the time during commercial breaks. Tse and Lee (2001) called viewers immediately after commercial breaks, and found that 81% reported engaging in some form of advertisement avoidance.

Why do viewers avoid advertising? There are four basic motivations. First, viewers avoid ads when they have substitute activities such as conversation or watching other channels that they perceive to be more engaging than the available advertising (Tse and Lee 2001). Second, viewers avoid ads that are not visually or creatively engaging (Woltman Elpers et al. 2003). Third, viewers avoid ads that are "worn out," that is, ads that they have seen many times in the past (Siddarth and Chattopadhyay 1998). Fourth, viewers avoid ads when they are not in the market for the advertised product (Ephron 1995).

Any discussion of how DVRs will affect viewers' advertisement avoidance must begin with the question of whether viewers actually zip past ads. Downey (2007) reported that based on a large sample of TiVo users, commercials lose 59% of their program's audience in recorded programming. Pearson and Barwise (2007) found that DVR users skipped 68% of commercials in recorded programming. These zipping rates are high, but they may be biased by sample selection: Current DVR owners may be fundamentally more prone to zipping than the rest of the viewing universe. We might instead look at the number of viewers who use VCRs to zip past ads. Cronin and Menelly (1992) report the results of two studies designed to measure the zipping rate among viewers equipped with VCRs. In a laboratory study of college students, zipping affected 75% of all ad exposures; in a larger field experiment, it affected 62% of ad exposures.

It can be hypothesized that DVR proliferation will lead viewers to favor zipping over other ad-avoidance strategies. Changing channels during a commercial carries the risk of missing the return of the program. Oftentimes, the viewer's next-preferred channel carries a commercial at the same time, so several zaps may be needed. In addition, viewers might not like the programs they graze on while zapping, leaving the ex post possibility they would rather have watched the commercial break. Zipping carries none of these attendant risks. This explains why many DVR users watch "near-live" television, rather than zap commercials. Similarly, the ability to zip and pause live television is likely to reduce viewers' investment in multitasking activities, such as preparing a magazine or Web page for reading during the commercial break. The ability to pause a program at any point is likely to reduce physical zapping.

To the extent that viewers use DVRs to zip past ads, the availability of DVR usage data improves advertisers' measurements of ad avoidance. DVR-equipped viewers effectively "vote" with their remote control on every part of the ad. To address lack of interest in the creative, advertisers can determine which ads in their campaign, and which exact parts of each ad, were most engaging to viewers by examining how zipping rates change at each second their ad was on the air. This information can be used to edit existing commercials to increase engagement and to extend a campaign by building on its most engaging creatives.

To address wear-out, advertisers can observe how zipping rates change over time and with repeated exposures to each ad in the campaign. They can then rotate their creatives to minimize the effects of wear-out on viewer zipping.

To address lack of interest in the advertised product, advertisers can compare zipping rates across products, programs, and time periods. This should help determine which products garner the most audience interest, which audiences contain the highest percentages of interested viewers, and which times of the day, week, and year viewers are most receptive to particular messages.

DVR usage should decrease reliance on older ad-avoidance strategies and improve ad-avoidance measurements. Those measurements can then be used to address the fundamental reasons viewers skip ads. The cumulative effect of these changes should be to move television advertising closer to the permission-marketing model, wherein consumer control is maximized "to reduce clutter and search costs for the consumer while improving targeting precision for marketers" (Krishnamurthy 2001).

VALUE OF ZIPPED EXPOSURES

While DVR usage data give advertisers new methods to increase consumer acceptance of advertising, there will still be many ad exposures affected by zipping. These zipped exposures may be partially effective, and will almost certainly be used by television networks in negotiations over ad prices. It is therefore important to consider whether zipped exposures have any value.

Zipping has two effects on advertising. One effect is physical: The audio component of the message is removed, and the video is accelerated. The other effect is environmental: If a viewer starts zipping during any ad in a pod, there is a heightened probability that the rest of the pod will be skipped.

Yet there are at least three reasons to believe zipped ads may be partially effective: heightened attention, latent effects, and effects of time compression. Viewers watch the screen intently when zipping, to ensure they do not overrun the return of the program. One survey reported that 15% of DVR users "always," and an additional 52% "sometimes," notice television ads while zipping (Mandese 2004b). It is surprising that Zufryden, Pedrick, and Sankaralingam (1993) found that ad exposures affected by zapping were much more strongly as-

sociated with sales than uninterrupted ad exposures; they hypothesized that this difference was due to viewers' heightened attention while zapping. It is interesting to note that viewers can stop zipping through a pod to view an interesting ad, or rewind to view it multiple times.

Even if DVR users do not recall the ads they skip, those ads may have latent effects. In a study of incidental exposure to magazine advertisements, Shapiro, MacInnis, and Heckler (1997) found that participants' consideration sets were affected by advertisement exposures, even when they lacked specific memory of the advertisements in question.

The third reason to think zipped ad exposures may be valuable is the effect of time compression. LaBarbera and MacLachlan (1979) showed that time compression increased listeners' interest and recall in radio advertising. Chattopadhyay et al. (2003) found that greater syllable speed in announcer speech led to more favorable advertising and brand attitudes. Evidence on whether these time-compression effects also apply to visual communications is generally positive. MacLachlan and Siegel (1980) found that moderate time compression of television commercials boosted recall rates by 36 to 40%. Schlinger et al. (1983) found that 25% time compression increases television commercial liking and creates more favorable brand attitudes, but had no effect on purchase intentions. Stout and Burda (1989) found that zipped ads produced brand recall effects about 20% greater than unzipped ad exposures. Gilmore and Secunda (1993) found that high-speed exposures to television commercials boost prior learning, suggesting that zipped commercials can function effectively as reminder ads.[5]

Despite these potential positive effects, television networks and advertisers are certain to do everything possible to combat viewer zipping. These efforts may take several forms. Networks can increase the variation in their commercial pod timing and length to decrease viewers' ability to anticipate when pods will begin and end. Advertisements themselves are likely to vary in length to a greater degree. As Fox sales executive Jon Nesvig said at the 2004 Association of National Advertisers Television Advertising Forum, "Our unit of sale is going to be one second" (Mediapost 2004). Advertisers can experiment with novel ad creatives, seeking to maximize the value of zipped exposures by making brand names and logos more dominant, or designing the ads so they are intelligible at accelerated speeds.

TELEVISION INDUSTRY ECONOMICS

Having examined the "micro" effects of DVR use on viewer ad avoidance and ad effectiveness, the discussion now focuses on these effects' cumulative "macro" impact on industry economics. To begin, television economics are briefly discussed.

"Free" television broadcasting is paid for by advertisers. Networks buy and air programs that attract viewers' attention, and sell that attention to advertisers. The actual price a viewer pays for program consumption is the amount of time given to advertising during the program.

Do viewers find this price objectionable? When advertising is relevant, engaging, and there are not high opportunity costs associated with consuming it, many viewers seem to enjoy advertising. The Super Bowl is an oft-cited example of a program that many people view specifically to watch the ads. This is more the exception than the norm, however.[6] Wilbur (forthcoming) conducted an econometric study on advertising and audience data from four weeks of prime-time broadcast network programs. He found that controlling for program popularity, a 10% increase in advertising time on a highly rated broadcast network reduces audience size by about 25%.

Since networks have traditionally been compensated based on program audience size, the television network faces an interesting trade-off when setting its advertising level. Additional clutter increases the number of times an audience is sold, but each ad produces a marginal audience loss, devaluing all of the ads. The next section discusses how DVR proliferation affects this balance between audience size and advertising sales.

EFFECTS OF DVR PROLIFERATION ON TELEVISION INDUSTRY ECONOMICS

The magnitude of the DVR's impact will be partly determined by how many viewers use it. There are three reasons to believe DVR proliferation will continue. First, digital cable and satellite operators are offering DVR service to subscribers for monthly rental without equipment purchase. Second, DVR functionality is being built into convergent television/Internet platforms such as Microsoft's Windows Media Center. Third, DVRs use computer hardware, so they will continue to get better and cheaper as technology advances.

Ad revenue losses due to shifting ad avoidance may be partially offset by increases in DVR households' program consumption, due to DVRs' facilitation of zipping, time-shifting, and program information. The shift from zapping to zipping is likely to soften within-timeslot network competition for viewers, leading to further increases in clutter (Wilbur forthcoming). No evidence suggests that a substitute mass audience delivery system will emerge. Thus, it is both important and interesting to consider how networks and advertisers can take advantage of DVR proliferation.

DVR use will likely accelerate current trends toward "unskippable" advertising such as product placement, branded entertainment, and program sponsorship. These techniques seem likely to reach limits of consumer acceptance, however. For advertisers, the principal negative consequence of DVR proliferation is the increasing scarcity of viewer attention. Scarcity drives up the price of advertising exposures, not just in television, but across media, as advertisers shift money away from rising television ad prices.

To protect the value of their programs, networks can use data on viewer zipping to improve their advertising scheduling in two ways: by putting the ads viewers zip least first in the pod[7] and by charging advertisers according to the amount of zipping their advertisements induce (controlling for the ad's position in the pod). These changes would increase advertising efficiency: Charging or paying rebates to advertisers for the zipping levels induced by their creatives would motivate advertisers to avoid doing damage to their neighbors in the pod. And because viewers tend to zip until the program returns (Cronin and Menelly 1992), regardless of where they started zipping, ads should be scheduled to minimize zipping early in the pod. These ideas are akin to the search-marketing business model, wherein Google puts the highest-paying ads, and the ads with the highest click-through rates, at the top of the page.

Advertisers can buy media more effectively by taking zipping rates into account. Advertisers whose target demos are more prone to zipping can shift money from television to other media, while those whose target demos zip less could move money from other media to television. Within the television medium, zipping rates should be used to calculate advertisers' willingness to pay for audiences. As Mandese (2004a) put it, the "dilemma is how the ad industry's top media buyers can calculate an effective CPM [cost per thousand] . . . when DVRs are thrown into the mix." Traditionally, the CPM is calculated as

$$\frac{1000 * AdPrice}{AudienceSize},$$

but advertisers should use an "adjusted" CPM (ACPM) in the future to take ad skipping into account. A relatively simple ACPM is

$$\frac{1000 * AdPrice}{AudienceSize * \left[\phi_z \theta + \phi_{\sim z}(1-\theta)\right]},$$

where ϕ_z is the value of reaching a fast-forwarding viewer, $\phi_{\sim z}$ is the value of reaching a passive viewer, and θ is the probability that a viewer in the audience zips past the ad. This definition of ACPM puts a premium on audiences that contain fewer ad skippers, such as sporting events and other live programs. More sophisticated variants of ACPM, which take into account demographic differences in ad skipping, can also be deployed.

DVR and digital cable usage data will also give advertisers new tools to measure the effectiveness of their television campaigns. Many viewers, especially those with digital cable, can be identified by area code, or even zip code. These geographic areas are small enough to provide targeted viewing data, but sufficiently large that they come with manageable privacy concerns. If DVR usage data can provide commercial ratings by zip code, then an advertiser that can track sales by zip code can construct a panel of geographic areas analogous to an ongoing, large-scale "single-source" database.

DVR and digital cable usage data can contribute to making television a more targeted medium than before. In the past, television advertisers hunted like spiders: Go where the bugs are, weave a big enough web, and lunch will serve itself. As control continues to shift from advertisers to viewers, advertisers will have to behave more like bats: Use sonar to figure out where the bugs are, and go get them. DVRs and digital cable boxes enable addressable advertising, that is, the targeting of specific creatives to specific viewer demographics in specific locations. A retailer could advertise only to those viewers who live near one of its stores, or a high-income household might see a Cadillac ad, and a middle-class household a Saturn ad, at the same time, on the same channel, in the same city. Addressable advertising will likely cost more to execute, but it will increase the likelihood that advertising is relevant and engaging to the viewer, thus reducing ad avoidance.

To summarize, DVR proliferation is likely to make advertising exposures more scarce and costly, and to change networks' competitive interactions. The point on which advertisers and networks can focus is how to use ad-avoidance data to improve ad scheduling, purchasing, targeting, and ROI (return on investment) measurements.

A RESEARCH AGENDA

To this point, the academic literature has extensively informed the discussion of the likely effects of DVR use, yet many questions remain unanswered, and others take on new significance. This section suggests a set of DVR-related research topics. Major issues include how viewers use DVRs, how this use alters the effectiveness of advertising, the interplay between DVR use and message strategy, and how advertisers can optimally respond to these changes.

Gaps in current knowledge about how people use DVRs include how much they zip, their preferred commercial exposure speed, and how those figures vary across demographic groups and time periods. It would be useful to learn how viewers' habits change as they become more experienced with DVR use. Pearson and Barwise (2007) provide a major step in this direction, but acknowledge that their small sample size suggests additional research is needed. It could be hypothesized that viewer zipping rates increase with DVR familiarity, but that decreases in aggregate viewer time spent with advertising leads to enhanced willingness to accept and attend to highly relevant advertising.

A second research area is how DVR use alters advertising's effects. There has been some work done on the effects of zipped

exposures on brand recall and brand knowledge. It is important to extend this research to correlate advertising effectiveness with viewers' preferred advertisement exposure speeds. The extant measurements tend to be significantly slower than the speeds at which DVRs allow viewers to zip past ads. If high-speed exposures are found to be effective, it will be interesting to explain why: Is it because of latent effects, heightened attention, or effects of time compression? Another crucial issue is to distinguish between the value of advertising lost due to viewer zipping, as opposed to the number of advertisement exposures zipped. For example, it could be hypothesized that zipping rates are highest for worn-out commercials, suggesting that the least valuable exposures are those most affected by zipping. Another hypothesis could hold that some advertisements, especially those receiving consistently poor placement in commercial pods, may never achieve effective wear-in among DVR users. Future studies should link the effect of commercial exposure speed directly to consumer response whenever possible. One way to do this is to correlate viewer exposure to television network tune-ins[8] with subsequent viewer consumption of advertised television programs, as was done by Shachar and Anand (1996). This effectively converts a panel data set on DVR use into a single-source database.

A third research area related to DVRs involves how advertising content and message strategy relate to viewer zipping. While the importance of getting viewers' attention in advertising is well understood, DVR zipping data provide large-scale information on the degree to which different message strategies hold viewers' attention. How does zipping inducement correlate with advertising effectiveness? It could be that the active processing required to begin zipping during a commercial facilitates greater consumer learning. Another issue is how effectiveness changes in the absence of audio information and whether visual content can mitigate that absence. A related line of questioning could identify the thresholds of DVR use and zipping at which it makes sense to optimize commercial content for high-speed exposure. Yet another issue is how second-by-second DVR usage data (e.g., induced zipping, pausing, or rewinding) can be used to identify the images in a commercial that have the greatest impact on the audience, and how the advertising creative should be changed in light of this information. It would be interesting to understand how answers to these questions vary across product categories, creative strategies, and communication goals.

Finally, the availability of new DVR and digital cable data require the development of new techniques to optimally respond to increased zipping. When the effects of DVR use on advertising effectiveness are better understood, the next step will be to develop models to use zipping data to optimize message strategy, scheduling, and rotation. The challenges facing researchers are significant.

CONCLUSION

DVR proliferation seems likely to lead viewers to shift from other forms of ad avoidance to zipping, and may increase advertisement avoidance. It also enables networks and advertisers to measure ad avoidance, and to develop new strategies to address the fundamental reasons viewers avoid commercials. DVR and digital cable usage data can help advertisers to craft more relevant and engaging messages; rotate creatives to prevent wear-out; measure and account for ad avoidance when buying media and vehicles; and improve ROI measurements. To take advantage of these opportunities, questions about how viewers use DVRs and how DVR use affects advertising effectiveness must be answered, and new modeling techniques to take advantage of DVR usage data must be developed. The net result should be increased relevance, efficiency, and entertainment value in advertising delivery.

NOTES

1. A DVR, also known as a personal video recorder (PVR), and sometimes called by the industry's best-known brand name, a TiVo, can be fairly described as a "VCR on steroids." The DVR improves VCR functions, and adds new ones. A DVR is "always on," continually storing the previous 30 to 60 minutes of programming, so live television can always be paused or rewound. Digital program storage obviates videotape purchases, insertions, rewinding, and storage. Fast-forwarding is more efficient: A two-minute commercial break can be skipped in as little as five seconds. The DVR's user interface facilitates recording by providing an on-screen program guide. Many DVRs enable simultaneous recording on multiple channels and recommend programs based on viewing habits.

2. The television advertising revenue figures given include broadcast, spot, syndicated, cable, and Spanish-language television.

3. While this paper focuses on how DVR proliferation affects traditional television advertising, the concepts discussed here will apply to most video programming with "skippable" ads (including some forms of video on demand and Internet video), and to similar technologies in other media that increase consumer control over ad exposure and enable advertisers to measure advertisement avoidance.

4. The best current example is TiVo's Stop||Watch service, which reports detailed DVR usage figures for a nationally representative panel of 20,000 homes. Cable and satellite television companies are collecting similar data from digital set-top boxes. Data are also available from third-party research companies such as erinMedia, Nielsen, and TNS Media Research (Mandese 2006).

5. Caution should be applied when generalizing from these results, as they depend on a small number of commercials, and the effects of time compression could vary widely with creative strategy, target group, and environmental factors.

6. In a 2004 survey conducted by Yankelovich Partners, 59% of consumers felt that "most marketing and advertising has very

little relevance" to them, and 69% said they "are interested in products and services that would help them skip or block marketing."

7. There is evidence that suggests networks are already placing the most relevant and engaging creatives first in the pod. A recent study found that, of 13 industries, entertainment industry ads were most often placed first in their pod by five of the six major broadcast networks (Mandese 2004b). This could be because movie studios are good customers and pay top dollar for airtime; it could also be that entertainment industry ads are more informative, entertaining, and relevant than the average television ad, and therefore are more likely to keep the audience watching.

8. "Tune-ins," sometimes called "promos," are advertisements aired by television networks for future network programs.

REFERENCES

Anderson, Simon P., and Stephen Coate (2006), "Market Provision of Broadcasting: A Welfare Analysis," *Review of Economic Studies,* 72 (4), 947–972.

Chattopadhyay, Amitava, Darren W. Dahl, Robin J. B. Ritchie, and Kimary N. Shahin (2003), "Hearing Voices: The Impact of Announcer Speech Characteristics on Consumer Response to Broadcast Advertising," *Journal of Consumer Psychology,* 13 (3), 198–204.

Cronin, John J., and Nancy E. Menelly (1992), "Discrimination Vs. Avoidance: 'Zipping' of Television Commercials," *Journal of Advertising,* 21 (2), 1–7.

Danaher, Peter (1995), "What Happens to Television Ratings During Commercial Breaks?" *Journal of Advertising Research,* 35 (1), 37–47.

Downey, Kevin (2007), "Study: First Ad Does Get More Eyeballs," *Media Life Magazine* (August 21), www.medialifemagazine.com/artman2/publish/Research_25/Study_First_ad_does_get_more_eyeballs.asp (accessed January 15, 2008).

Ephron, Erwin (1995), "What Is Recency?" Ephron Consultancy, available at www.ephrononmedia.com/ (accessed August 2007).

Gilmore, Robert F., and Eugene Secunda (1993), "Zipped TV Commercials Boost Prior Learning," *Journal of Advertising Research,* 33 (6), 28–38.

Interactive Advertising Bureau (IAB) (2003), "IAB and PwC Release 'Top-Line' Data from 2002 Internet Advertising Report," available at www.iab.net (accessed August 2007).

——— (2007), "Internet Advertising Revenues Grew 36% in '06, Hitting a Record Close to $17 Billion," available at www.iab.net (accessed August 2007).

Kiley, David, Tom Lowry, and Ronald Grover (2005), "The End of TV (As You Know It)," *Businessweek* (November 21), 40.

Krishnamurthy, Sandeep (2001), "A Comprehensive Analysis of Permission Marketing," *Journal of Computer-Mediated Communication,* 6 (2), 1–28.

Krugman, Dean M., Glen T. Cameron, and Candace McKearney White (1995), "Visual Attention to Programming and Commercials: The Use of In-Home Observations," *Journal of Advertising,* 24 (1), 1–10.

LaBarbera, Priscilla, and James MacLachlan (1979), "Time-Compressed Speech in Radio Advertising," *Journal of Marketing,* 43 (1), 30–36.

MacLachlan, James, and Michael H. Siegel (1983), "Reducing the Costs of TV Commercials by Use of Time Compressions," *Journal of Marketing Research,* 17 (1), 52–57.

Mandese, Joe (2004a), "DVRs Impact Ad Viewing, but Is It Time to Panic?" *Broadcasting and Cable* (November 29), available at www.broadcastingcable.com/article/CA483256.html (accessed January 15, 2008).

——— (2004b), "Equitable's No Longer Questionable: Data Reveals Nets Position Some Advertisers Better than Others," *Media Daily News* (September 17).

——— (2006), "TNS Commercializes Set-Top Ratings, Competes with Nielsen," *Media Daily News* (May 30), available at publications.mediapost.com/index.cfm?fuseaction=Articles.showArticleHomePage&art_aid=43916 (accessed January 15, 2008).

Mediapost's Real Media Riffs (2004), "And Now a Blipvert from Our Sponsor," *Mediapost* (March 11).

Pearson, Sarah, and Patrick Barwise (2007), "PVRs and Advertising Exposure: A Video Ethnographic Study," *International Journal of Internet Marketing and Advertising,* 4 (1), 93–113.

Schlinger, Mary Jane Rawlins, Linda F. Alwitt, Kathleen E. McCarthy, and Leila Green (1983), "Effect of Time Compression on Attitudes and Information Processing," *Journal of Marketing,* 47 (1), 79–85.

Shachar, Ron, and Bharat Anand (1996), "The Effectiveness and Targeting of Television Advertising," *Journal of Economics and Management Strategy,* 7 (3), 363–396.

Shapiro, Stewart, Deborah J. MacInnis, and Susan E. Heckler (1997), "The Effects of Incidental Ad Exposure on the Formation of Consideration Sets," *Journal of Consumer Research,* 24 (1), 94–105.

Siddarth, S., and Amitava Chattopadhyay (1998), "To Zap or Not to Zap: A Study of the Determinants of Channel Switching During Commercials," *Marketing Science,* 17 (2), 124–138.

Steinberg, Brian, and Andrew Hampp (2007), "DVR Ad Skipping Happens, but Not Always," *Advertising Age* (May 31).

Stout, Patricia A., and Benedicta A. Burda (1989), "Zipped Commercials: Are They Effective?" *Journal of Advertising,* 18 (4), 23–32.

TNS Media Intelligence (2007), "Strategy database," available at www.tns-mi.com (accessed January 15, 2008).

Tse, Alan Ching Biu, and Ruby P. W. Lee (2001), "Zapping Behavior During Commercial Breaks," *Journal of Advertising Research,* 41 (3), 25–29.

Van Meurs, Lex (1998), "Zapp! A Study on Switching Behavior During Commercial Breaks," *Journal of Advertising Research,* 38 (1), 43–53.

Wilbur, Kenneth C. (forthcoming), "A Two-Sided, Empirical Model of Television Advertising and Viewing Markets," *Marketing Science.*

Woltman Elpers, Josephine L. C. M., Michel Wedel, and Rik G. M. Pieters (2003), "Why Do Consumers Stop Viewing

Television Commercials? Two Experiments on the Influence of Moment-to-Moment Entertainment and Information Value," *Journal of Marketing Research,* 40 (4), 437–453.

Yankelovich Partners (2004), "Consumer Resistance to Marketing Reaches All-Time High," press release, April 26.

Zufryden, Fred S., James H. Pedrick, and Avu Sankaralingam (1993), "Zapping and Its Impact on Brand Purchase Behavior," *Journal of Advertising Research,* 33 (January/February), 58–66.