
Setting the VCR Research Agenda for the 1990s:
Meta-research on the First Decade of VCR Survey Research

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Abstract

The VCR was introduced to the U.S. market in the late 1970s, and was followed by the first descriptive studies of VCR use in the late 1970s. By the 1980s, more theoretical approaches to the study of VCR usage and VCR impacts were taken. No comprehensive study of the existing body of VCR research has been produced. The integration of the previous findings in this pilot study was intended to pave the way for further VCR research in the 1990s.

This paper presents the results of the first systematic analysis of scholarly research on adult use of VCRs in the United States. Meta-research (in the form of a propositional inventory) provides an objective method for summarizing the results of independent research studies. The data came from VCR research published in academic journals and books.

The analysis produced these conclusions: (1) more probability sampling is needed in future VCR research, (2) previous VCR research was influenced by VCR diffusion rates, (3) prerecorded cassette rental and time-shifting recording are two independent behaviors, (4) more attention is needed on the impact of the length of VCR presence in the household, (5) the VCR may have had minimal impact on television use through 1990, (6) more longitudinal VCR research is needed, and (7) more VCR meta-research is needed on social impacts, including international data.

Setting the VCR Research Agenda for the 1990s:

Meta-research on the First Decade of VCR Survey Research

The videocassette recorder (VCR) diffused into American households faster than any new media technology since television itself (Klopfenstein, 1989). According to Nielsen estimates, the VCR was present in 70% of all American households by July 1990 with urban penetrations higher still (*Television Digest*, October 15, 1990, p. 17). The number of multiple VCR households is also continuing to rise. Despite this rapid diffusion, no synthesis of VCR research has been published. Although Levy (1989) and Dobrow (1990) are collections of significant contemporary VCR research, neither volume includes an attempt to synthesize what was known about the uses and social impacts of the VCR. Han (1990) has summarized VCR research directions in an historical context.

Several explanations for this lack of synthesis may be offered. First, the VCR's impact on electronic media audiences had limited significance throughout the early 1980s as its penetration lagged behind that of cable television. Indeed, research into cable television viewing and audience impacts became the focus of more inquiry in the 1980s (e.g., Heeter and Greenberg, 1988) than for research into VCR use. Second, early research on the VCR was conducted when VCR penetrations were low, resulting in the use of non-probability sampling techniques in which establishment of requisite numbers of VCR users took precedence over statistical generalizability. (Randomly sampling cable television subscribers in one market, by contrast, is made quite simple if a subscription list is secured from the local cable operator.) Third, early studies tended to be more descriptive tallies of VCR use that did not lend themselves well to further inquiry. Fourth, as Rogers (1986) has noted, scholarly communication inquiry historically has tended to focus on the dominant medium of the day; therefore, such inquiry lags behind the initial diffusion of the new medium.

The study of VCR uses and television audience impacts is especially critical to understanding new forms of mediated communication. The VCR typifies new communication technologies with its asynchronous, demassified and interactive aspects (Rogers, 1986). Future developments in digital technologies promise to produce communication transmission and storage equipment that will be the functional equivalent of the VCR. Even as digital compression techniques allow the storage of a feature film on compact disk, future breakthroughs in digital storage may allow diffusion of television sets with storage and retrieval technologies included. To the extent that we focus on understanding the recording and "retrieval" functions of the VCR today, we will be in a better position to understand the coming technologies.

As we enter the 1990s, we have 10 years of VCR research on which to draw. This paper reviews published survey-based research that has investigated general VCR uses and broad audience impacts. The summary of VCR research generally corresponds to the lines of inquiry these studies followed. These questions include:

- What VCR use surveys have been published, and how were they conducted?
- What have the authors of those studies concluded about VCR use?
- What households (demographically) adopted VCR technology?
- What were the patterns of recording, playback of recordings, use of prerecorded tapes, and commercial avoidance via VCR use?
- How does VCR use affect the ways in which people use television?
- What changes appear in the VCR studies over the course of the 1980s?
- What were the limitations of these studies, and what do they imply about the need for investigations in the 1990s?

Method

To summarize the existing set of survey-based VCR research, we chose the methodological approach of meta-research.¹ Our approach followed the example set by Dutton, Rogers, and Jun (1988) in their summary of personal computer survey research. Clearly not all published VCR research is survey-based. The concentration on survey-based research was justified by the following: (1) the focus on the uses and audience impacts of the VCR, (2) the need to include methodologically comparable VCR studies, and (3) the established history of survey-based VCR research.

Because this investigation is centered on "VCR use" as the unit of analysis, we also did not include those studies which concentrated on other social-oriented dependent variables. The following studies were not included: Dobrow's (1989; 1990) ethnographic research on ethnic uses of prerecorded video, Shatzer and Lindlof's (1989; Lindlof and Shatzer, 1990) Q-sort of 14 VCR families, Roe's (1987; 1989) research on Swedish adolescent video use, Kim, Baran and Massey's (1988) investigation of familial control of television in selected VCR households, Morgan, Alexander, Shanahan, and Harris's (1990) investigation of the relationship between VCR and family conflicts, and Levy and Gunter's (1988) review of British VCR use. Future meta-research on these related studies of the impact of the VCR on variables other than audience behavior would be welcomed.

This investigation into VCR research was analogous to the previous study of personal computers in several ways. Both were relatively new communication technologies that had only recently come under the scrutiny of researchers, and so had been in early stages of inquiry. Both had diffused into U.S. households for similar periods of time (approximately 10 years).² The biggest difference between the two subject technologies was in diffusion rates; the VCR had diffused more rapidly and widely into U.S. homes

than the personal computer. The lag time between data collection/analysis and publication of results, however, means that even recently published VCR research was based upon samples taken when VCR penetration was more limited.

Dutton et al. (1988) distinguish between two types of meta-research: meta-analysis and propositional inventories. Although meta-analysis entails the statistical analysis of previous quantitative research, propositional inventories "utilize more qualitative approaches to the synthesis of research findings, yielding a set of verbal conclusions in the form of a propositional inventory" (p. 222). The propositional inventories approach is most useful in the early stages of a field of inquiry, when number and comparability of primary research findings are low, and access to data for secondary statistical analyses is limited (Rogers, 1985). These descriptors apply to published VCR research, especially because the original data collection normally took place well before publication. More important, we chose the propositional inventory approach to meta-research not because a limited number of studies exist, but because so few used random samples. Lack of uniformity in sampling techniques and changing populations of VCR users make the direct statistical comparisons necessary for meta-analysis nearly impossible.

As an initial meta-research investigation, we limited the analysis to the following: (1) surveys of adult U.S. VCR users, (2) published research (primarily journal articles and book chapters), and (3) nonproprietary research. The first step was taken to control for likely cross-cultural differences in findings and to filter out specific studies that reported exclusively on VCR use by children or adolescents. This focus on one large, but specific segment of VCR users allowed more direct comparison of reported findings.

Concerning the second limitation, we presumed published research to be more significant to the field, more refined than unpublished research, and more easily diffused to

scholars in the field. We further restricted the kind of published research to journal articles or book chapters, most of which had passed some measure of peer review (Miletic, 1988, was one exception). Other than unpublished conference papers, the only clear exclusion was proprietary commercial VCR research, because of its limited accessibility and questions about the objectivity of commercially-sponsored research (see Klopfenstein, 1990).³

An exhaustive literature search was completed by consulting Communication Abstracts, the Educational Resources Information Center (ERIC) database, and the bibliographies of VCR papers. All applicable published U.S. VCR research available or cited through the summer of 1990 was included through this process. In all, we identified 20 studies that fit the criteria of survey-based research of adult VCR users in the U.S. Although several citations were based upon a single data set (i.e., Levy 1980a, 1980b, 1981; Levy 1983, Levy and Fink 1984), we included all references because different analyses were completed on the data.

Summary of Findings

The articles were read critically with findings reported in our corresponding word tables. These summaries are our extractions from the original authors' reports.⁴ Where possible, word choice reflects the prose written by the original author(s). The studies are summarized in Table 1. The survey method, sample characteristics, response rate, and year of data collection are given when reported. Sample size and the reported VCR penetration at the time of the study are also listed. Although not all of the studies included demographic findings, a separate column is devoted to such information in order to include descriptive data. Finally, a summary statement of the findings is given. The general findings reflect the opinions of the original author(s) as reported normally in the concluding

section of the study. This text reflects what those author(s) determined to be the key results and implications of the data.

Insert Table 1 about here

Survey Methods

The methodologies of the 20 VCR studies reflected common survey-based approaches: diaries (8), telephone (6), written questionnaires (2), mail questionnaires (2), and electronic meters (2). Only commercial sources (Nielsen and AGB) provided nonproprietary data from electronic meters (Miletic, 1988 and Sims, 1989). The earliest VCR studies were diary-based with 60% response rates, higher than the 45-50% rate normally expected for diaries (Beville, 1988). Telephone response rates were closer to expected values. Academic researchers used written questionnaires and telephone surveys when primary data were collected and analyzed.

VCR sample sizes varied widely with early studies being purposive by necessity, although the first 6 citations were all based upon very large overall samples, of which the VCR subset was around 250 respondents (Agostino & Zenaty, 1980; Levy, 1980a, 1980b, 1981, 1983; and Levy and Fink, 1984). Murray and White (1987) was the first primary, noncommercial study to report a survey based upon a true probability sample, albeit in a small market. Only commercially-sponsored VCR research (e.g., Kaplan, 1985; Metzger, 1986; Miletic, 1988; Lindstrom, 1989; and Sims, 1989) involved the use of national samples. One cited study (Potter, Forrest, Sapolsky & Ware, 1988) drew its sample from a video store membership list. Even though we focused on survey-based VCR research, this process resulted in a varied collection of studies.

Year of publication did not coincide with year of data collection. Murray and White (1987), for example, reported data that was collected in the fall of 1985 with VCR penetration reported to be 29%. Henke and Donohue (1989) studied VCR users in one community when penetration was only 20%, which means that they probably collected their data before Murray and White (1987). Because most studies cited in our manuscript involved a "snapshot" of the expanding VCR universe, resulting sample proportions of early and recent adopters differed depending on the point when the data were collected.

Demographics

In our review, we were surprised to discover that few of the cited studies investigated or even reported demographic characteristics of the VCR households.⁵ Diffusion of innovations research has shown that early adopters tend to be of higher socioeconomic status (Rogers 1983; 1986), and this may have been taken as a given by early VCR researchers. VCR prices, in fact, remained quite high through 1983 (Klopfenstein, 1989) meaning that few moderate and lower income households might be expected to have purchased them.⁶

More recent research reported that VCR households were larger than non-VCR households, a finding explained by the correlation of presence of children in the household with VCR presence. (More evidence of this may be found in the VCR research that focused on the family as the unit of analysis, not included in our analysis.) Consistent with diffusion theory, Lindstrom (1989) reported that, through 1987, VCR households were becoming more like average U.S. households, although they were still headed by more highly educated males and had greater total household incomes than non-VCR households. Klopfenstein (1990) and Lin (1990) also found VCRs in households socioeconomically above the norm.

The findings concerning demographic characteristics as predictors of VCR use are contradictory. Although Rubin and Bantz (1987; 1989) found specific VCR uses related to demographic variables (e.g., age and gender), Potter et al. (1988) and Henke and Donohue (1989) did not. This could be a function of discrepancies in both survey and sampling techniques.⁷ Lindstrom reported that two-thirds of heavy recorders (21 or more recordings per month) were women.

Author's General Findings

Although difficult to summarize and synthesize, an attempt was made to extract the general findings as proposed by the original study's author(s). One consistent conclusion was that the VCR has not had a significant impact on the total broadcast audience. This conclusion was self-evident in 1980, but was reported as recently as 1989 by Lindstrom. VCR use was considered an extension of existing audience behaviors. No one concluded that the VCR represented a dramatic or revolutionary change in general television audience behaviors.

Earlier studies concentrated on VCR use for time-shifting. Prerecorded cassette rentals became more convenient as the decade progressed, and this was reflected in the attention paid to video rental behavior. VCR use appears to be "active."⁸ The concept of the active audience is particularly suited to devices like the VCR, which viewers use as selection tools in the television viewing process. The form of audience activity most closely associated with the VCR deals with intentionality, i.e., how media consumption is directed by prior motivation (Blumler, 1979). Rubin and Bantz (1987) found that time-shifting and convenience are two active uses. They also found VCR use to have goal-directed motives, such as library-building and controlling one's programming environment.

At least when VCR penetration was relatively limited (e.g., less than 50% total household penetration), VCR households also appeared to be heavier cable movie consumers. It is not clear if some causal relationship exists here, e.g., a desire for film may predict both VCR adoption and cable subscriptions.

Patterns of VCR Use

Research findings on patterns of VCR use included frequencies of recording behaviors and playback of those recordings, patterns of prerecorded cassette use, commercial avoidance behaviors, and impact on television viewing habits. These results are summarized in Table 2. Specific behaviors are reported to allow comparisons between studies. If the study reported hours (or minutes) of use, those data are reported in the table.

Insert Table 2 about here

VCR Recording/Playback Behaviors

Early reports of VCR recording behavior indicated that at least 77% of recorded fare originated on broadcast television. This may be partially explained not only by lower cable penetration, but also by less widespread availability of cable networks. Thus, a smaller amount of non-network fare made up the pool of potential recordable material. Between 3 and 4 mean recordings were made by the average household per week, a finding that was reported in both early and more recent studies. Although most recorded programs were played back, the percentage of playback has dropped in more recent research.

The findings showed that time-shifting behavior was apparently different from library-building behavior. Although heavy VCR users may have engaged in both activities, library-builders may not have been interested in time-shifting. A direct relationship between length of VCR presence and frequency of recording behavior seems to exist (Lindstrom, 1989; Klopfenstein, 1990).⁹ That is, earlier VCR adopters make more recordings than more recent VCR adopters.

Prerecorded Cassette Usage Patterns

The data in Table 2 regarding prerecorded cassette use refers to the use of rented or purchased videos. Prerecorded video use increased dramatically from Agostino and Zenaty's (1980) report of 7.5% of playback time (about one half-hour per week) being devoted to viewing prerecorded tapes. Cassette rental behaviors were not discussed in four of the studies published between 1980 and 1985. Later studies suggested that prerecorded tape use may have become the most important overall use of the VCR for many later adopters (Rubin and Bantz, 1987, 1989; Klopfenstein, 1990). Rubin and Bantz (1987; 1989) and Klopfenstein (1990) reported that cassette rental was perceived to be the primary use of the VCR.

Several studies reported the mean number of tape rentals per month. Harvey and Rothe (1985) found that the largest segment of their sample (22.6%) was renting between 1 and 3 tapes per month. Murray and White (1987) reported an average 5 movies rented each month. Lindstrom (1989) reported an average 2.9 rentals per month. Unfortunately, reporting mean behaviors are not helpful in understanding rental behavior at the individual household level. Reporting other descriptive statistics such as frequency distributions (e.g., Harvey and Rothe, 1985) and sample variances would give more information than simple means. VCR rental usage behavior, for example, is known to be more variable on a day-

to-day basis than general television viewing behavior with prerecorded cassette rental behaviors being heaviest around the weekend.

The research contained some apparently contradictory findings. Although Klopfenstein (1990) reported no relationship between length of VCR presence and cassette rental behaviors, Lindstrom (1989) reported an inverse relationship between length of presence and rental frequencies. A more dramatic difference appears to exist between Sims (1989) finding of 3.5 hours per week of prerecorded cassette use and Lindstrom's (1989) report of an average of 2.9 cassette rentals per month.

Commercial Avoidance Behaviors

Although only one-fourth of the studies were directly concerned with commercial avoidance, we knew from previous qualitative research (e.g., Ferguson, 1990a) that VCR users were inclined to fast-forward through commercials when playing a recorded program. Advertising agencies have met this issue by commissioning proprietary research, some of which has found its way into communication journals.

Summarizing the findings of these published studies, we found at least half of all VCR users reported zipping commercials in time-shifted programs. It is clear that viewers derive satisfaction from this behavior, regardless of length of ownership. There was a shortage of research on the uses and gratifications of zipping in the studies we surveyed.

Impact on Television Viewing

Among the early studies, the most common conclusion about VCRs was that their impact on television viewing was minimal (Levy 1980a; 1980b). The research also reported limited playback rates of time-shifted material (Levy, 1983); that is, not all recorded material is played back. Of the material that is played back, most is replayed

soon after it was recorded. Early research characterized the VCR as a complement to regular viewing (Levy, 1981).

Those studies which addressed VCR impacts on television use, however, did detect differences. Agostino & Zenaty (1980) found that their early adopting VCR households used the television set less than non-VCR households. Harvey & Rothe's (1985) respondents said they increased their television use after getting a VCR.

Later studies indicated that VCR owners were watching less television, especially where children were involved. It appears that prerecorded cassette use takes time away from television viewing. The amount of viewing was not related to the psychographic type of VCR user (Potter et al., 1988).

Discussion

There are inherent limits to these survey-based studies. As happens with any new medium, initial VCR investigations suffered from nonrandom samples. This lack of probability sampling limits interpretation of earlier results. More probability sampling is needed. Also, more qualitative, participatory, ethnographic studies are warranted and, in fact, are being reported.

These studies are generally limited to data collected only as recently as 1987 when the national VCR penetration was around 50% and the diffusion rate was at its peak. Because VCR diffusion has slowed with the declining pool of new adopters, general usage patterns now should have stabilized, especially versus earlier studies. A useful contribution today would be a VCR study that would eliminate the effects of the few most recent adopters who are just learning to use their machines, by controlling for the novelty effect. New VCR households are now being created very slowly, which means the VCR household base has become far more stable than in the years covered by many of the cited studies.

VCR research in the 1980s was unique. Because VCR diffusion was accelerating by 1983, VCR users were really a moving target. The importance of this cannot be overlooked. Lindstrom's (1989) finding that recently adopting VCR households by 1987 watched fewer hours of television led him to conclude that the VCR's greatest impact on the television audience had already passed; future VCR diffusion would be into continually lighter viewing households. His finding may have more to do with the household as the unit of analysis rather than the individual viewer; more recent adopting households are less likely to have children, which means there are fewer people in the household and, thus, fewer total household viewing hours. Yet changes in size of the VCR adopting household is only one example of the changing nature of the VCR audience over the 1980s.

Much VCR use must be viewed in the context of when it was measured in the past decade: the emphasis on early VCR use was more on time-shifting than on playback because fewer prerecorded cassettes were available. Similarly, early VCR time shifting was predominantly from broadcast stations because they were the primary sources of programming. Prerecorded cassette usage, too, can be understood in the context of the availability of cable and broadcast material; households with pay cable do not rent as many cassettes as non-pay cable homes. Children and teens, for example, are heavy VCR users partly because of the plethora of children's videos available on cassette versus the dearth of material available on broadcast television (Wartella et al., 1990¹⁰). Because we limited this analysis to studies of U.S. households, how these findings compare with VCR uses and impacts in other countries, where video options are more limited, is not included here. A synthesis of international VCR research would be welcomed.

One apparent conclusion about VCR behaviors may be that rental and recording behaviors are independent of one another. Household recording behavior is reported to be

related to the household's television viewing behaviors. As far as we can tell, there have been no studies of possible correlations between taped programs and the ratings for the same shows. The research reported here suggests that a list of the top ten shows in the ratings may be similar to a list of the top ten recorded shows.

The relationship between length of VCR presence in the household and frequency of recording behavior is intriguing. It may be explained two ways. First, it could be that earlier adopters originally bought their VCRs for time-shifting purposes while more recent adopters acquired their VCRs to playback movies. Second, it could be that the longer the VCR is present in the household, the more likely it is that someone "learns" to use the VCR for time-shifting purposes. To the extent that the second is true, it is possible that recording behaviors may increase as time goes on.

These questions, therefore, remain unanswered: Did adopters over the last two or three years (i.e., in the late 1980s) adopt the VCR as primarily a prerecorded video playback device? To the extent that this is the case, will these recent VCR adopters ever learn to use their VCRs to record programs? In other words, will nontapers become tapers? If not, what are the reasons? Are there simply technological barriers, or are nontapers just not interested in time-shifting? The answers to these questions will help us move from the present uses of VCRs to the future uses of digital video-on-demand services that promise to be the functional equivalents of VCRs.

The VCR apparently has not had a dramatic impact on television or its audiences in the view of the cited authors. Indeed, the growth of cable services, the newfound strength of independent television, and new audience measurement technology may all have had more effect on broadcast television than the VCR has had (Ferguson, 1990b).

The VCR differs from other new media environment variables because of its high visibility and corresponding high user involvement. Cable television, proliferating video channels (both cable and broadcast), and remote control devices are transparent to the viewer. Each is so much a part of the television set that the viewer can easily forget that the process of watching programs has changed in any way. The VCR, on the other hand, is an intrusive device that requires prerequisite motivations of the user: (1) desire, (2) planning, and (3) active participation in the choice process. VCR behaviors are intrinsically less impulsive, because the decision to time-shift or watch rented cassettes is probably made well before viewing. Future research needs to address such a theory of the visibility of a technology, especially if future technologies transparently duplicate VCR functions.

Before this meta-research was conducted, the authors posed a seemingly simple research question that was expected to be answered: Do patterns of VCR use vary over time? This question was later eliminated when it became clear that (1) by and large, there was a clear lack of longitudinal research on the VCR household; and (2) direct comparisons of the various surveys over time was difficult because of the different units of analysis. This is a critical void in VCR research. If VCR use does change over time, then conclusions reached in past VCR studies may not be completely valid for the VCR environment in 1990. Research conducted from this point forward using representative VCR households will likely include more stable use patterns. Unlike only a few years ago, the VCR is now a fixture in more than two of three households. Any "novelty" effect, which might have been pronounced in the past, should now be dramatically reduced. New VCR research can address questions raised by this summary of VCR research in the 1990s.

Endnotes

1. To differentiate our opinions from the authors of the cited studies, we signify our own statements via the first person.
2. Dutton et al. (1988) included a section on the diffusion of the personal computer. Because Klopfenstein (1989) similarly addressed the diffusion of the VCR, we have not repeated that information here.
3. A plethora of proprietary VCR studies have been completed by broadcasters, cable operators and program suppliers, advertising agencies, movie studios, and even VCR equipment manufacturers, and could be a valuable addition to this synthesis. Rogers (1983) has commented on the contribution to diffusion research which could be made if such studies were available. Even if the problem of their accessibility were resolved, deciding upon a representative sample of these studies might pose an additional problem.
4. Dutton et al. (1988) contacted "many of the original authors for their review and comment" (p. 223) on their personal computer meta-research. Further revisions of our manuscript would benefit from such input.
5. VCR research has been criticized for a reliance on demographic independent variables, and we expected to find this in the meta-research. Although these studies do not overly rely on demographic variables, the criticism may come from commercially-sponsored VCR research, excerpts of which often appeared in the trade and business press.
6. This assumption is questionable when viewed in light of home satellite dishes which have been adopted by lower income, rural households despite high costs.
7. The use of demographic variables to expose differences in media uses has been the subject of general debate. Collins et al. (1983), for example, use of household demographics to predict cable subscribership. LaRose and Atkin (1988) and Umphrey (1988) found that demographics are relatively weak predictors of cable subscribership, especially as cable (or any other new technology) becomes less of an innovation. Levy (1987) reported no differences in VCR use by respondent sex, age, or education. Rubin (1984) found that although television viewers could be linked to viewing patterns demographically, usage patterns persisted under controls for age and education. As the VCR diffused, demographics became less a predictor of VCR adoption and/or use.
8. We do not mean to instigate a debate about the word "active." Blumler (1979) explained that the concept of an "active audience" has differing connotations: utility (mass communication has uses for people), intentionality (media consumption is directed by prior motivation), selectivity (media behavior reflects prior interests and preferences), and imperviousness to influence. Blumler also stated that different media call for varying levels of activity. Hence, VCRs may change the selective nature of watching television.

9. See also, for example, Klopfenstein, Spears, & Ferguson, 1990.
10. Wartella et al. (1990) concluded that cassettes increase variety of media available for children, while noting that it reflects the kinds of material on television.

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