

Reexamining the Research on Television and Reading

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Of all the pastimes created in modern times, watching television is perhaps the most universal. Television's popularity and pervasiveness has generated mixed reactions among reading teachers, however. On one hand they lament television's seductive power to lure children away from the benefits of reading and they sometimes lobby to reduce its influence. An example is "Books and Beyond," a project funded by the National Diffusion Network in which schools enlist the support of students and their parents to replace television viewing with reading books. A favorite bumper sticker among teachers reads "Fight prime time, read a book." This point of view is supported by many teachers who believe that reading achievement and interest in books could be increased if students watched less television.

On the other hand, recognizing the inevitability of television viewing, reading teachers have sought ways to turn the perceived disadvantage of television viewing into an advantage. Writers like Shoup (1984) have suggested ways television can be a "friend, not foe of the teacher." Creative teachers have attempted to capitalize on their students' television viewing in order to further the goals of reading instruction. For example, Gough (1979) discusses how television can be used to introduce children to books (see also Adams & Harrison, 1975; Rankin & Roberts, 1981; Steinberg, 1982). Nonetheless, some teachers may be reluctant to use these activities because they fear that encouraging their students to watch television may reinforce an unproductive or even harmful activity.

This ambivalence hinges on an unanswered question: How does television viewing affect reading? This is an important question because its answer guides not only instructional practice but also the professional response that reading educators may be asked to provide to parents and to others concerned about the effects of television viewing on children's reading performance. For more than 30 years researchers have gathered data pertaining to this question. In the early 1980's several published reviews offered conclusions based on available research (e.g., Hornik, 1981; Morgan, 1980; Neuman, 1980). These reviews had a common theme: research did not clearly indicate a strong relationship between television viewing and reading. Either television

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viewing had not had any significant impact on reading or researchers had been unsuccessful in their attempts to discover how they were related.

Researchers in the 1980s have continued to investigate how television viewing may affect reading. More recent studies indicate that television and reading may be related but that the relationship is extremely complex, involving many interacting variables not often examined in earlier research. One purpose of this article, therefore, is to update earlier reviews of the research investigating how television viewing and reading might be related. We also point out new directions in the research and discuss its implications for professionals in the field of reading.

RESEARCH BEFORE 1980

Since the early 1950s when television became widely available in the United States, there have been investigations of its effect on academic achievement and many of these studies examined its effect on reading. These studies were primarily surveys of television and reading habits or comparisons of time spent watching television and reading achievement. Analyses consisted of computing descriptive statistics from survey data or zero-order correlations between viewing time and reading achievement (see Table 1). Differences among correlational studies were primarily in how the amount of viewing time was determined (e.g., questionnaires vs. daily logs of television viewing) and how achievement was measured (e.g., grades vs. scores on standardized tests).

Table 1 Characteristics of Studies Investigating the Relationship Between Television and Reading

Study	Number of Subjects	Grade level(s) Studied	Type of Research/Analysis	Number of Variables Studied Measured
Clark(1951)	1,000	6,7	S/C	x ²
Greenstein (1954)	67	4-6	NE/C	4
Ridder (1963)	2,428	7,8	S/D	X
Slater (1965)	500	3	NE/C	5
LaBlonde (1967)	294	5	NE/C	6
Starkey & Swinford (1974)	226	5,6	S/D	X
Adams & Harrison (1975)	228	4-6	S/D	X
Quissenbery & Klasek (1976)	341	4-6	NE/C	4

Greaney (1980)	920	5	NE/MR	26
Zuckerman, Singer, & Singer (1980)	232	3-5	NE/P	21
Neuman (1982)	198	4-6	E/ANOVA	10
Neuman & Prowda (1982)	7,787	5,8,11	NE/PC	5
Fetler (1983)	29,000	4	NE/PC	6
Pezdek, Leher & Simon (1984)	98	3-6	E/ANOVA	7
Roberts, Bachen, & Hernandez- Ramos (1984)	464	2,3,6	NE/PC	30
Salomon (1984)	124	6	E/ANOVA	9
Telfer & Kann (1984)	234	4,8,11	NE/C	6
Searls, Mead, & Word (1985)	77,247	4-12	S/D	X
Gaddy (1986)	5,074	9-12	NE/SEM	8
Neuman (1986)	122	5	S/D	X
Ritchie, Price & Roberts (1987)	170	2-8	NE/SEM	5
Neuman (1988)	1,030,322	5,8,11	NE/C/PC	17

¹Note. S - Survey. NE = Non-Experimental. E = Experiment. D= Descriptive Statistics. C = Zero-Order Correlations. PC = Partial Correlations. MR = Multiple Regression. SEM = Structural Equation Model. ANOVA = Analysis of Variance

²Note. Number of variables were not counted for survey research.

Several reviewers of the research conducted before 1980 concluded that the results of these studies did not clearly support the belief that television viewing was having a pervasive negative effect on reading achievement (Hornik, 1981; Morgan, 1980; Neuman, 1980). Early studies had consistently found negative correlations between reading achievement and time spent watching television, but the lack of adequate controls for intervening variables in these studies called into question any arguments that the results indicated a causal relationship (Morgan, 1980). This interpretation was supported by the fact that in the few studies that controlled for general factors like intelligence and socioeconomic status (SES) the negative correlations were not statistically significant (e.g., Childers & Ross, 1973).

Hornik (1981) offered two explanations for the lack of strong

NE/MR	26
NE/P	21
E/ANOVA	10
NE/PC	5
NE/PC	6
E/ANOVA	7
NE/PC	30
E/ANOVA	9
NE/C	6
S/D	X
NE/SEM	8
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findings in the research conducted prior to 1980. Either the negative effects many educators believed to exist were imaginary or the methods used by researchers were not powerful enough to find them. On the basis of his review he concluded that the latter explanation was a distinct possibility, because early studies had notable methodological limitations. Sample sizes were often relatively small and the effects of television viewing on reading may have been masked because related variables were not investigated or controlled in the majority of these studies. Few of the studies conducted prior to 1980 dealt with potentially important factors like type of program viewed, grade in school, parents' education, parents' involvement in their children's viewing, children's reasons for watching television (e.g., nothing better to do vs. to learn something interesting), and so forth.

RESEARCH AFTER 1980

Since the early 1980s, researchers have examined in greater depth the relationship between television viewing and reading. A wider range of variables has been examined, more powerful statistical analyses have been employed, and in several instances sample sizes have been notably larger and more diverse. These trends can be seen in Table 1, which compares the characteristics of 8 studies published prior to 1980 and 15 studies that have been published since 1980. A wider range of variables has been examined in order to investigate or to control factors that might affect the relationship between television viewing and reading. Examining how a greater number of variables are related to television and reading has led to the use of more sophisticated statistical analyses, which reflects a general trend in educational research since the late 1970s (see Goodwin & Goodwin, 1985). In addition, large data bases that contain information relevant to television viewing and reading have been made available for secondary analyses (e.g., data from the National Assessment of Educational Progress as used by Fetler, 1983; Neuman, 1988; and by Searls, Mead, & Ward, 1985).

The Significance of Intervening Variables

Recent studies support the conclusion that the negative relationship between television viewing and reading achievement found in earlier studies was due in part to inadequate controls for intervening variables. A graphic demonstration of this conclusion can be found in a study by Ritchie, Price, and Roberts (1987). They compared the amount of time elementary school students spent watching television, the time they spent reading, and their reading achievement. The analysis was carried out in three stages, each employing statistical methods that were progressively more sophisticated. In the first stage zero-order correlations were computed to compare measures of viewing time, reading time, and reading achievement. These resulted in statistically significant negative correlations (-.30 to -.50) that replicated the findings of several studies conducted prior to 1980. In the second stage they computed partial correlations for the same data controlling for subjects' reading achievement measured 1 and 2 years prior to the study. Al-

though several negative correlations remained, they were considerably weaker (.08 to -.39).

In the third stage the data were analyzed using a complex structural equation model that controlled for the reliability of the measurement instruments, an important issue because this study measured television viewing and reading achievement yearly over a three year period. This analysis revealed that television viewing, reading time, and reading achievement were highly correlated and that these variables remained relatively stable across the three years of this study. Apparently television viewing was not affecting either the amount of time students spent reading or their reading achievement. This study provides strong evidence that the statistically significant negative correlations found in earlier studies were not indicative of a direct causal relationship.

Gaddy (1986) employed a similar analysis to test the hypothesis that television viewing leads to lower achievement among high school students because it replaces more educationally enriching activities like reading. Again, zero-order correlations comparing time spent viewing television and reading achievement were negative and statistically significant. When the contribution of various predictor variables was controlled, however, the correlations were non-significant and approached zero. He concluded that television was not affecting high school achievement by replacing reading and that earlier studies had found negative correlations because they failed to take into account exogenous variables like intelligence, educational resources, and so forth. He argues, however, that his results may have been due to "counterbalancing effects." In other words, positive and negative aspects of television viewing may have neutralized each other.

Evidence for Curvilinearity

A robust finding from several large scale studies conducted since 1980 is that the relationship between television viewing and reading achievement appears to be curvilinear. That is, up to moderate levels, increased television viewing is related to greater reading achievement, but as viewing time increases above moderate levels, reading achievement decreases. Fetler (1983), for example, found that reading achievement tends to increase as children watch more television up to approximately the mean of three hours daily. Above three hours daily, achievement decreases appreciably. He consistently found a similar pattern when he looked at various subgroupings of subjects (e.g., by sex, use of English in the home, etc.). Interestingly, he found that reading achievement among disadvantaged students (i.e., those from lower SES families) increased more with moderate levels of television viewing and decreased less with high levels of viewing.

Neuman (1988) also found evidence of a curvilinear relationship that peaked at approximately the mean number of hours viewed by elementary, intermediate, and secondary students completing the National Assessment of Educational progress. She found, however, that the reading achievement of students who were more moderate viewers fell within a much narrower range (.15 of a standard deviation) than those who were heavier viewers. Thus, progressively higher levels of

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viewing above the mean were strongly related to lower achievement, while moderate levels of viewing below the mean were only weakly related to higher achievement.

The curvilinear relationship between television viewing and reading achievement parallels a similar pattern that is found when television viewing is compared to other areas of school achievement. Williams, Haertel, Haertel, and Walberg (1982), for example, conducted a meta-analysis of 23 studies investigating this relationship in various school subjects including reading. Although the overall correlation was slightly negative (-.05), effects were slightly positive for up to 10 hours of viewing weekly but increasingly negative at higher levels. One explanation for this curvilinear relationship is that television may provide vicarious experiences that compensate for a lack of first-hand experiences among disadvantaged children. For some children television may be a relatively rich source of background knowledge important for reading comprehension. Ritchie, Price, & Roberts (1987) offered this explanation despite the fact that their data indicated only a moderate trend toward curvilinearity.

Variables Affecting the Relationship Between Television and Reading

The results of studies published since 1980 suggest that several intervening variables may affect the relationship between television viewing and reading. For example, the relationship may vary with the age of the student (Morgan, 1980; Roberts, Bachen Hornby, & Hernandez-Ramos, 1984). Roberts et al. (1984), for example, regressed 26 reading/television-related variables on the reading achievement of second, third, and sixth-grade students. The 26 variables were grouped into five categories: SES; environment (e.g., presence of rules for television watching and availability of print materials); amount of media use (e.g., time spent watching television or reading books); orientations towards media (e.g., read to learn or use TV to learn); and involvement (e.g., emotional involvement with TV and preference for print). Only 1 of the 26 factors was significantly related to reading achievement for the second grade students compared to 12 for the third grade and 15 for the sixth grade students. These discrepancies may be accounted for in part by the difficulty in obtaining reliable data concerning these factors from younger children.

A related but anomalous finding is that television viewing appears to decrease as students get older. Neuman (1988) conducted a secondary analysis of data from the 1984 National Assessment of Educational Progress in eight states and found that the average hours of daily television viewing for elementary, intermediate, and secondary students was 3.03, 2.86, and 2.30 respectively. In an earlier study (Neuman & Prowda, 1982) she found that only 7% of fourth grade students as compared to 24% of eleventh grade students reported watching less than an hour of television each day.

Another factor that may affect the relationship between television viewing and reading is the type of programs watched. For example, does consistently viewing educational programs have a different effect than watching only cartoons and other entertainment-oriented programs?

Type of program viewed was the focus of a study by Zuckerman, Singer, and Singer (1980). They studied the relationship among numerous school and home variables including time spent viewing the following six types of programs: cartoons, comedy programs, sports, game/variety shows, news/documentaries, and dramatic programs. Dramatic programs were further broken down into those that contained "fantasy violence" (e.g., "The Incredible Hulk") and "hardcore violence" (e.g., "Hawaii Five-O").

Among their findings was that imaginative behavior and more time spent reading were predicted by viewing fewer fantasy-violent programs and that reading more books was predicted by viewing fewer game/variety programs. Interestingly, they found that enthusiasm in school as measured by teacher ratings was predicted by watching fewer cartoons but also by watching more television weekly. As has been the case in more recent research the total viewing time did not predict reading ability or other reading behaviors (e.g., number of books read) and neither did watching non-violent dramas or cartoons. An important limitation of their investigation, however, is that their sample consisted of students who were relatively light viewers and who attended schools in which reading skills were given special emphasis.

A factor that has intuitive appeal in defining the relationship between television and reading is the nature of a student's home environment. Several research studies published since 1980 have investigated this factor. In the Roberts et al. (1984) study, for example, factors associated with subjects' home environment merged as statistically significant predictors of reading achievement, especially for younger students. Neuman (1986) focused specifically on how students' home environment was related to television viewing and reading behavior. She grouped subjects into four categories based on time spent viewing television and time spent reading: light viewing--light reading, light viewing--heavy reading, heavy viewing--light reading, and heavy viewing--heavy reading. Using the results of a questionnaire concerning subjects' home environment, she developed a profile for each group. She concluded that television viewing and reading behavior reflected aspects of the home environment, particularly parents' viewing and reading patterns.

Several studies conducted outside the United States have focused on the relationship between television viewing, other outside-of-school activities, and recreational reading. As early as the late 1950s, Himmelweit, Oppenheimer, and Vince (1958) reported the lack of a strong effect for television viewing on school achievement in England among school-aged children. A 20-year longitudinal study of these subjects by Himmelweit and Swift (1976) indicated that preferences pertaining to recreational reading and television viewing persisted into adulthood (a finding supported by Ritchie, Price, and Roberts, 1987 in the United States). More recently, Greaney (1980) studied factors related to the amount and the type of leisure time reading among students in Ireland. He found that television was not related to differences in the time devoted to reading for leisure while factors like gender, reading attainment, school location, library membership, and birth order were re-

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lated to reading for leisure.

These findings complement the results of several studies conducted more recently in the United States. Neuman (1982, 1986), for example, found that intermediate grade students who watch much television and read little tend to select lower quality materials when reading for leisure than do their peers who watch less television and/or read more (Neuman, 1982). However, she has also found evidence suggesting that this difference may be due to parental modeling rather than to children's television viewing (Neuman, 1986). In a more recent study (Neuman, 1988), she found that the time spent in reading for leisure, sports activities, and socializing with friends were unrelated to the time spent watching television. She concluded that, like other out-of-school activities, children engage in reading for leisure because they find this activity enjoyable, not because it is a substitute for watching television.

These findings are supported by a study conducted by Anderson, Wilson, and Fielding (1988). They examined the relationship between 14 out-of-school activities and various aspects of reading achievement for subjects in the fifth grade, as well as subjects' achievement growth from the second to the fifth grade. Correlations for reading achievement and time spent watching television ranged from .06 to -.17, but the strength of these relationships was superseded by other out-of-school activities like listening to music (-.03 to -.22) and talking on the phone (.03 to -.15). Furthermore, in several analyses that regressed the time spent on the 14 out-of-school activities on various aspects of reading achievement, 8 of the factors accounted for a significant amount of the variance in achievement, but watching television was not one of these factors.

NEW HYPOTHESES AND QUESTIONS

The intuitive belief that television viewing was having a widespread negative impact on reading guided the research conducted prior to 1980. The lack of clear evidence for this belief has led researchers to adopt a more theoretical orientation in their investigations of television and reading. Instead of looking for evidence of ill-defined negative effects, they have sought theoretical explanations for existing data or have proposed theoretical positions to guide data collection. For example, Roberts et al. (1984) used Chall's (1983) six-stage theory of reading development to interpret their findings that the relationship between television and reading varied with age. In this view the reading achievement of first- and second-grade children in Stage 1 (learning decoding skills) may be less affected by television than sixth-grade children in Stage 3 (learning how to acquire new information by reading).

Hornik (1981) was one of the first researchers to specify specific hypotheses that might define the relationship between television and school performance, including reading. He argued that television may (a) replace study time, (b) create intolerance for the slower pace of school activities, (c) stimulate interest in school-related topics, (d) teach the same content as schools, (e) develop cognitive skills that may reinforce or conflict with reading skills, or (f) provide information

concerning school behaviors. Except for the first hypothesis suggesting that television may replace other valuable, school-related experiences, there has been little systematic research investigating these hypotheses.

More recently, Ritchie, Price, and Roberts (1987) have suggested four possible explanations for the fact that research has failed to demonstrate conclusively that television viewing and reading achievement are related. First, the effects of television viewing may occur during the preschool or the primary school years, an age group that has not been studied systematically by researchers in this area. As can be seen in Table 1, subjects in most studies have been students in the middle grades or older. Second, the effect of television viewing may be so subtle that it can be detected only after examining data across many years. A third explanation is similar to Gaddy's (1986) argument that the relationship can only be explained in terms of complex, interacting variables that have offsetting positive and negative effects on reading achievement. Finally, there is the possibility that television viewing has little or no effect on reading achievement.

Two recent articles have articulated in greater detail specific hypotheses that may explain the relationship between television viewing and reading. Beentjes and Van der Voort (1988) grouped these hypotheses into three categories: facilitation hypotheses, inhibition hypotheses, and no-effect hypotheses. Facilitation hypotheses include arguments that television viewing promotes interest in reading or provides practice in reading text displayed on the screen. Inhibition hypotheses include arguments that television displaces activities more relevant to the acquisition of reading skills or that it leads students to be more passive in their processing of text. Focusing on the displacement hypothesis, Neuman (1988) elaborated four hypotheses that explain how television could displace other activities on the basis of functional similarity, physical or psychological proximity, degree of structure, and children's interests at various age levels. She concluded that the data in her investigation supported explanations related to physical and psychological proximity and to changes in interest but not to functional similarity and degree of structure.

Roberts and Rockman (in press) have outlined a theoretical perspective that approaches the issue of television and schooling from a different standpoint. They argue that the effect of television on students' academic performance is mediated by teachers' implicit or explicit theories of how television affects their students. In other words teachers have beliefs about how television affects their students and these beliefs influence their instructional decisions. In this view students are affected indirectly by television because it influences the teaching to which they are exposed. They propose a new domain of research questions generated by this perspective and many of these questions have implications for reading.

For example, teachers may believe that television has created a generation of students who are primarily visual learners with shorter attention spans (a belief that may or may not be accurate, but for which there is no empirical support). This belief may lead a teacher to select

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a videotaped presentation of a difficult topic as opposed to having
students read a lengthy chapter about the topic in their textbooks. One
consequence of this action is that students have fewer opportunities to
develop and practice study strategies that will enable them to master
difficult reading material. The teacher in this instance is also less likely
to seek out instructional strategies designed to assist students develop
these skills. On the other hand, a teacher who believes that television
is an important source of information about the world may assign stu-
dents to watch a television program in order to build background
information about a topic that will be the focus of an assigned reading.

Researchers interested in instructional media have also begun to
compare cognitive and affective consequences of learning via televi-
sion or print. An understanding of how television and reading may be
compared on the basis of underlying cognitive processes and affective
factors may lead to a better understanding of how the two activities are
related. Salomon (1984), for example, has proposed a model that con-
nects a learner's perception of learning content presented via a particu-
lar medium, the amount of mental effort invested, and the amount
learned. Interestingly, subjects in his experiment thought that
"learning from TV was easy and learning from print was tough." Conse-
quently, they invested more mental effort in reading than in watching
TV and this affected their learning. Students' beliefs about television
and reading, therefore, may influence not only students' learning but
their selection of media for learning and for recreational activities.
Likewise, Pezdek, Lehrer, and Simon (1984) compared students' mem-
ory and comprehension of two folktales that were presented as text, a
television program, or radio play. Students' performance on several
memory and comprehension tasks related to the folktales was corre-
lated at statistically significant levels only when the radio and text
versions were compared. Subjects' comprehension scores in the read-
ing and television conditions were uncorrelated and thus support the
view that different cognitive skills may be required (and thus practiced)
to process content presented via television or print (Salomon, 1979).

Recent hypotheses and research questions indicate that research-
ers in the 1980s have begun to recognize the possibility that television
may in some instances have a positive impact on reading achievement.
There is some evidence from recent research to support this possibility.
The consistent finding that the relationship between television viewing
and reading achievement is curvilinear suggests that for some students
moderate levels of viewing television may play a role in developing
reading ability. In addition, Morgan (1980) found that students who
watched more television when they are younger were likely to read
more when they are older. This suggests that television viewing may
broaden young children's interests that are pursued later through
reading. A similar interpretation fits his finding that the more televi-
sion watched by low IQ children, the more types of materials they like
to read. Pren (1984) also found that children's television programs
contain richer vocabulary than children's books. This finding raises
questions concerning the degree to which television may contribute to
incidental vocabulary learning (cf. Nagy, Herman, & Anderson, 1985).

Television may also play a key role in helping students learn important vocabulary associated with what Hirsch (1987) has labeled "cultural literacy."

Recent developments have also changed the nature of television viewing. For example, viewers have a much wider choice of programs due to technological developments like satellite dishes, cable television, and video cassette recorders. The increase in other leisure activities like using computers and playing video games may also affect the amount of time children watch television and consequently the influence television may have on reading. Thus, generalizations about television viewing based on data more than a few years old may be invalid and a new set of questions that take into account changing patterns of television viewing may be appropriate.

Researchers have also begun to examine new uses of television to enhance reading performance. One application that has been the subject of some research is the use of closed-caption television, originally intended for deaf individuals (Goldman & Goldman, 1988; Koskinen, Wilson, & Jensema, 1985; Koskinen, Wilson, Gambrell, & Jensema, 1987). Using a special closed-caption decoding device the spoken dialogue of many television programs can be displayed simultaneously as text on the television screen. Children with reading problems, but who have normal hearing, have increased their sight vocabulary and reading fluency after watching closed-caption versions of popular television programs (Koskinen, Wilson, Gambrell, & Jensema, 1987).

IMPLICATIONS OF CURRENT RESEARCH

Many teachers, parents, and other concerned parties have perceived television to be a major threat to children's reading achievement. Data gathered over the past thirty years do not support such a perception. Although studies have consistently found negative correlations between time spent watching television and reading achievement, recent investigations confirm suspicions expressed by previous reviewers that this finding does not indicate a causal relationship. Recent studies using more sophisticated methods of data collection and analysis indicate that when relevant variables are controlled, the negative correlations found in early studies frequently disappear or are not statistically significant.

Even if all intervening variables could be controlled, one would expect at least a small negative correlation to remain because a small percentage of children regularly spend an inordinate amount of time watching television. Common sense suggests that extremely high levels of television viewing among children will adversely affect many areas of development including reading ability. Research suggests that increasing concern is warranted as average daily viewing exceeds three hours. Although television viewing does not appear to be a common explanation for reading problems, teachers and clinicians may need to be alert for children who regularly watch television for more than three to four hours a day. Research also suggests that aspects of the home environment, especially behaviors modeled by parents, are probably key considerations in understanding and dealing with this behavior.

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tion and reading achievement,
is expressed by previous review-
: a causal relationship. Recent
ods of data collection and analy-
les are controlled, the negative
equently disappear or are not

could be controlled, one would
ation to remain because a small
d an inordinate amount of time
gests that extremely high levels
ll adversely affect many areas of
Research suggests that increas-
ly viewing exceeds three hours.
ppear to be a common explanat-
l clinicians may need to be alert
ision for more than three to four
at aspects of the home environ-
7 parents, are probably key con-
ing with this behavior.

Moderate levels of television viewing, however, do not appear to affect reading achievement adversely. To the contrary, there is tentative support for the possibility that moderate levels of television viewing may be beneficial, especially to certain populations of readers. Potential benefits include the development of background knowledge, interest, and vocabulary. For disadvantaged students who may have fewer educationally enriching experiences at home (e.g., fewer reading materials, fewer field-trip-like experiences, parents who do not discuss current events or other academically-oriented topics, etc.) television viewing represents an easily accessible method for supplanting these experiences.

These potential benefits may explain the results of several studies indicating a positive correlation between reading achievement and television viewing up to moderate levels. However, few researchers have investigated directly the possibility that television viewing may have a positive effect on reading achievement; thus, these explanations are largely speculative. An implication of current research is that a profitable direction for future research would be to examine aspects of television viewing that may be beneficial to reading and reading achievement. Such investigations would also be a useful first in identifying negative effects that may be masked by offsetting positive effects.

Another implication of recent research is that teachers can feel confident in using children's television viewing to promote the goals of reading instruction without being unduly concerned that this will produce potentially harmful side effects. Examples include encouraging students to watch particular programs that may activate background knowledge or build interest in such reading materials. Or, teachers might create a bulletin board displaying new words learned from television programs. These and similar activities have been used by several writers and have been advocated by many teachers in most instances because they believed television viewing to be inevitable, even if its effects were negative (see Shoup, 1984). Recent research strengthens this argument by suggesting that television viewing is not having a pervasive negative effect on reading achievement. In light of this research teachers may need to examine their intuitive beliefs about the effects of television viewing on their students. As Roberts and Rockman (in press) have argued, these beliefs may affect a broad range of instructional decisions.

Despite the insights gained from recent research, it remains difficult to make unqualified generalizations about television viewing because its effect on school achievement is only one factor of concern to parents and to educators. Issues regarding how much television and what programs children are permitted to watch extend beyond the effects of television on reading. Much has been written, for example, about what effect televised portrayals of violence has on children. Informing the general public that reading achievement does not appear to be adversely affected by moderate levels of television viewing may be misleading unless placed in the context of these other important issues.

A firm conclusion that can be drawn from current research, however, is that the relationship between television viewing and reading is

more complex than reflected in the methods and the findings of early investigations. Nonetheless, despite the notable advances in research that have occurred in the 1980s, one conclusion remains unaltered since earlier reviews. More questions than answers continue to be generated about the relationship between television and reading. In an earlier review Hornik stated, "researchers have not even approached the frontier of what is investigable about [television's] impact on schooling" (Hornik, 1981, p. 193). After almost a decade of additional research, researchers have perhaps reached the frontier; nonetheless, a complex landscape remains to be explored.

REFERENCES

- Adams, A. H., & Harrison, C. B. (1975). Using television to teach specific reading skills. *The Reading Teacher*, 29, 45-51.
- Anderson, R. C., Wilso, P.T., & Fielding, L.G. (1988). Growth in reading and how children spend their time outside of school. *Reading Research Quarterly*, 23, 285-303.
- Beentjes, J.W. J., & Van der Voort, T.H.A. (1988). Television's impact on children's reading skills: A review of research. *Reading Research Quarterly*, 23, 389-413.
- Chall, J.S. (1983). *Stages of reading development*. New York: McGraw-Hill.
- Childers, P.R., & Ross, J. (1973). The relationship between viewing television and student achievement. *The Journal of Educational Research*, 66, 317-319.
- Clark, W.J. (1951). *Of children and television*. Cincinnati, OH: Xavier University.
- Fetler, M. (1983). *Television and reading achievement: A secondary analysis of data from the 1979-80 National Assessment of Educational Progress*. (ERIC Document Reproduction Services No. ED 229748)
- Gaddy, G. D. (1986). Television's impact on high school achievement. *Public Opinion Quarterly*, 50, 340-359.
- Goldman, M., & Goldman, S. (1988). Reading with close-captioned TV. *Journal of Reading*, 31, 458-461.
- Goodwin, L.D., & Goodwin, W. L. (1985). Statistical techniques in AERJ articles, 1979-1983: The preparation of graduate students to read the educational research literature. *Educational Researcher*, 14, 5-11.
- Gough, P. (1979). Introducing children to books via television. *The Reading Teacher*, 32, 458-462.
- Greaney, V. (1980). Factors related to amount and type of leisure-time reading. *Reading Research Quarterly*, 15, 337-356.
- Greenstein, J. (1954). Effects of television upon elementary school grades. *The Journal of Educational Research*, 48, 161-176.
- Himmelweit, H. T., Oppenheimer, A.N., & Vince, P. (1958). *Television and the child*. London: Oxford University Press.
- Himmelweit, H. T., & Swift, B. (1976). Continuities and discontinuities in media usage and taste: A longitudinal study. *Journal of Social Issues*, 32, 133-156.
- Hirsch, E.D., Jr. (1987). *Cultural literacy*. Boston: Houghton-Mifflin.
- Hornik, R. (1981). Out-of-school television and schooling: Hypotheses and methods. *Review of Educational Research*, 51, 193-214.
- Koskinen, P.S., Wilson, R.M., & Jensema, C.J. (1985). Closed captioned television: A new tool for reading instruction. *Reading World*, 24, 1-7.
- Koskinen, P.S., Wilson, R.M., Gambrell, L.B., & Jensema, C.J. (1987). *Enhancing reading vocabulary and fluency with closed-captioned television*. Paper presented at the meeting of the College Reading Association, Baltimore, MD.
- LaBlonde, J.A. (1967). A study of the relationship between television viewing habits and scholastic achievement of fifth grade children. *Dissertation Abstracts International*, 22, 2284A.
- Morgan, M. (1980, Winter). Television viewing and reading: Does more equal better? *Journal of Communication*, 159-165.
- Morgan, M., & Gross, L. (1982). Television and educational achievement and aspiration. In D. Pearl, L. Bouthilet, & J. Lazar (Eds), *Television and behavior: Ten years of scientific progress and implications for the eighties* (Vol. 2, pp. 78-90). Washington, DC: US Government Printing Office.

ethods and the findings of early
e notable advances in research
clusion remains unaltered since
swers continue to be generated
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3). Growth in reading and how children
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Quarterly, 23, 389-413.

York: McGraw-Hill.

etween viewing television and student
ch, 66, 317-319.

ati, OH: Xavier University.

A secondary analysis of data from the 1979-
ERIC Document Reproduction Services

l achievement. *Public Opinion Quarterly*,

se-captioned TV. *Journal of Reading*, 31,

techniques in AERJ articles, 1979-1983:
l the educational research literature.

television. *The Reading Teacher*, 32, 458-

l type of leisure-time reading. *Reading*

ementary school grades. *The Journal of*

(1958). *Television and the child*. London:

nd discontinuities in media usage and
es, 32, 133-156.

ughton-Mifflin.

ling: Hypotheses and methods. *Review of*

Closed captioned television: A new tool

ensema, C.J. (1987). *Enhancing reading*

ision. Paper presented at the meeting of

etween television viewing habits and
Dissertation Abstracts International, 22,

ading: Does more equal better? *Journal*

ional achievement and aspiration. In D.

d behavior: Ten years of scientific progress
90). Washington, DC: US Government

- Nagy, W.E., Herman, P.A., & Anderson, R.C. (1985). Learning words from context. *Reading Research Quarterly*, 20, 233-253.
- Neuman, S.B. (1980). Television: Its effects on reading and school achievement. *The Reading Teacher*, 668-670.
- Neuman, S.B. (1982). Television viewing and leisure reading: A qualitative analysis. *Journal of Educational Research*, 76, 299-304.
- Neuman, S.B. (1986). Television reading and the home environment. *Reading Research and Instruction*, 25, 173-183.
- Neuman, S.B. (1988). The displacement effect: Assessing the relation between television viewing and reading performance. *Reading Research Quarterly*, 23, 414-40.
- Neuman, S.B., & Prowda, P. (1982). Television viewing and reading achievement. *Journal of Reading*, 25, 666-670.
- Pezdek, K., Lehrer A., & Simon, S. (1984). The relationship between reading and cognitive processing of television and radio. *Child Development*, 55, 2072-2082.
- Pren, M.C. (1984). *A comparison of television and reading vocabulary*. Paper presented at the meeting of the National Reading Conference, St. Petersburg Beach, FL.
- Quissenberry, N., & Klasek, C. (1976). *The relationship of children's television viewing to achievement at the intermediate level*. (ERIC Document Reproduction Services No. ED 143336)
- Rankin, P.M., & Roberts, C.W. (1981). Television and teaching. *The Reading Teacher*, 30-32.
- Ridder, J.M. (1963). Public opinions and the relationship of television viewing to academic achievement. *The Journal of Educational Research*, 57, 204-207.
- Ritchie, D., Price, V., & Roberts, D.F. (1987). Television, reading, and reading achievement: A reappraisal. *Communication Research*, 14, 292-315.
- Roberts, D.F., Bachen, C.M., Hornby, M.C., & Hernandez-Ramos, P. (1984). Reading and television predictors of reading achievement at different age levels. *Communication Research*, 11, 9-49.
- Roberts, D.F., & Rockman, S. (in press). An approach to the study of television influences on schooling: Teacher theories and the classroom environment. In R. J. Pedone & H. J. Walberg (Eds.), *Children, Television and Education*. Greenwich, CT: J. A. I. Press.
- Salomon, G. (1979). *Interaction of media, cognition, and learning*. San Francisco, CA: Jossey-Bass.
- Salomon, G. (1984). Television is "easy" and print is "tough": The differential investment of mental effort in learning as a function of perceptions and attributions. *Journal of Educational Psychology*, 76, 647-658.
- Searls, D.T., Mead, N.A., & Ward, B. (1985). The relationship of students' reading skills to TV watching, leisure time reading, and homework. *Journal of Reading*, 29, 158-162.
- Shoup, B. (1984). Television: Friend, not foe of the teacher. *Journal of Reading*, 629-631.
- Slater, B.R. (1965). An analysis and appraisal of the amount of televiewing, general school achievement, and socio-economic status of third grade students in selected public schools of Erie County, N.Y. *Dissertation Abstracts International*, 25, 5651A.
- Starkey, J.D., & Swinford, H.L. (1974). *Reading: Does television viewing time affect it?* ERIC Document No. ED 090966.
- Steinberg, H. (1982). Reading and TV viewing-complementary activities. *Journal of Reading*, 26, 510-514.
- Telfer, R.J., & Kann, R.S. (1984). Reading achievement, free reading, watching TV, and listening to music. *Journal of Reading*, 536-539.
- Williams, P.A., Haertel, E.H., Haertel, G.D., & Walberg, H.J. (1982). The impact of leisure-time television on school learning: A research synthesis. *American Educational Research Journal*, 19, 19-50.
- Zuckerman, D.M., Singer, D.G., & Singer, J.L. (1980). Television viewing, children's reading, and related classroom behavior. *Journal of Communication*, 166-171.