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Children's learning from television

It's not just "violence"

Studies on the effectiveness of educational programmes unveil a truly positive impact. Children learn academic and prosocial content from specifically designed formats, such as that of the Sesame Workshop.

Many discussions of television's impact on children focus only on negative effects, such as the influences of violent television or persuasive advertising (e. g., John, 1999; Kunkel, 2001; Wilson, et al., 1997). Such research is certainly important, and has had a critical impact on policy and legislation in the United States. However, it is equally important to recognise that not all effects of television are negative.

Often, far less attention has been paid to the positive effects that educational television programmes can hold. Yet, if we believe that children can learn negative lessons from television, then it stands to reason that they can learn positive lessons, too. The same medium through which children learn product information in commercials should also allow them to learn science concepts in an educational programme. And the same medium that can influence children to act more aggressively should also be able to motivate them to co-operate with a friend.

In fact, research has shown that all of these propositions are true: Just as negative television programmes can produce negative effects among child viewers, positive programmes can produce positive effects. To illustrate this point, let's consider several examples of studies that demonstrate children's learning of academic and prosocial content from educational television programmes. Afterwards, drawing upon research conducted with a wide variety of television series, I will discuss some of the production features that producers can build into their programmes to make them as educationally effective as possible. (Interested readers can find greatly expanded discussions of all of these issues in Fisch, 2004.)

Children's learning: academic content

Perhaps the most prominent – and certainly the most extensively researched – example of an educational television series is *Sesame Street*. For more than 35 years, *Sesame Street* has used puppets, animation, stories, parodies, and numerous other formats to entertain and educate children, both across the United States and (through its various international co-productions) around the world.

The earliest evidence for the educational power of the U.S. version of *Sesame Street* came from a pair of experimental studies conducted after the first and second seasons of production (Ball and Bogatz, 1970; Bogatz and Ball, 1971). Each study found that, among 3- to 5-year-olds, heavier viewers of *Sesame Street* showed significantly greater growth in an assortment of academic skills related to the alphabet, numbers, body parts, shapes, relational terms, and sorting and classification. The areas that showed the greatest effects were the ones that had been emphasised the most in *Sesame Street* (e. g., letters). These effects held across age, sex, geographic location, socio-economic status (SES) (with low-SES children showing greater gains than middle-SES children), native language (English or Spanish), and whether the children watched at home or in school. Indeed, even when Cook and his colleagues (1975) conducted a reanalysis of these data that controlled for other, potentially contributing factors such as mothers' discussing *Sesame Street* with their child, the above effects were reduced, but many remained statistically significant.

These effects found parallels in several subsequent summative evaluations of international co-productions of *Sesame Street*. Significant differences in cognitive skills (often focussed on literacy and mathematics) were found between viewers and nonviewers of *Plaza Sésamo* in Mexico (Diaz-Guerreo and Holtzman, 1974; UNICEF, 1996), *Susam Sokagi* in Turkey (Sahin, 1992), *Rua Sésamo* in Portugal (Brederode-Santos, 1993), and *Ulitsa Sezam* in Russia (*Ulitsa Sezam* Department of Re-

search and Content, 1998). Only one Mexican study failed to replicate this pattern of differences (Diaz-Guerreo, Reyes-Lagunes, Witzke, and Holtzman, 1976), but it turned that the "nonviewers" had, in fact, been exposed to *Plaza Sésamo* as well. (See Cole, Richman, and McCann Brown, 2001 for a more detailed review of this research.)

The U.S. version of *Sesame Street* was found to hold long-term benefits for viewers as well. One component of the Bogatz and Ball (1971) study was a follow-up on a subset of the children who had participated in their earlier study, now that the children were one year older and had entered school (Ball and Bogatz, 1970). Teachers rated their students on several dimensions of school readiness (e. g., verbal readiness, quantitative readiness, attitude toward school, relationship with peers) without knowing their prior viewership of *Sesame Street*. Results indicated that those children who had been frequent *Sesame Street* viewers were rated as better prepared for school than their non- or low-viewing classmates.

More than 25 years later, the immediate and long-term effects of *Sesame Street* were confirmed by other data. One study followed low-SES preschoolers over a period of three years. After controlling statistically for background variables such as parents' level of education, native language, and preschool attendance, the study found that preschoolers' viewing of educational TV programmes – and *Sesame Street* in particular – was positively associated with the amount of time children spent reading and in educational activities, as well as their letter-word knowledge, maths skills, vocabulary size, and school readiness on age-appropriate standardised achievement tests. Also, as in the earlier Bogatz and Ball (1971) study, teachers more often rated *Sesame Street* viewers as well-adjusted to school (Wright et al., 2001a, 2001b). A second study was a correlational analysis of data representing approximately 10,000 children from the U.S. Department of Education's National Household Education Survey in 1993. Results indicated that preschoolers who viewed *Sesame Street* were more likely to be able to recognise letters of the alphabet and tell connected stories when pretending to read; these effects were strongest among children from low-income families, and held true even after the effects of other contributing factors (e. g., parental reading, preschool attendance, parental education) were removed statistically. In addition, first and second graders who had viewed *Sesame Street* as preschoolers were more likely to be reading storybooks on their own and less likely to require remedial reading instruction (Zill, 2001).

***Sesame Street* Characters**

Finally, the longest-term impact of *Sesame Street* was found in a "re-contact" study that examined high school students who either had or had not watched educational television as preschoolers; the bulk of this viewing had consisted of watching *Sesame Street*. Results showed that high school students who had watched more educational television – and *Sesame Street* in particular – as preschoolers had significantly higher grades in English, Mathematics, and Science in junior high or high school. They also used books more often, showed higher academic self-esteem, and placed a higher value on academic performance. These differences held true even after the effects of students' early language skills and family background variables were removed statistically (Anderson, Huston, Schmitt, Linebarger, and Wright, 2001; Huston, Anderson, Wright, Linebarger, and Schmitt, 2001).

All of these results provide powerful evidence for the educational effectiveness of *Sesame Street*. And numerous other studies show that *Sesame Street* is not alone in helping children learn. Summative studies on other educational series for preschool and school-age children have shown that educational television can enhance children's knowledge, skills, and attitudes in a wide variety of subject areas. These include effects of series such as *Between the Lions* and *The Electric Company* on children's language and literacy skills (e. g., Ball and Bogatz, 1973; Ball, Bogatz, Karazow, and Rubin, 1974; Linebarger, 2000); *Square One TV* and *Cyberchase* on children's use of mathematics and problem solving (e.g., Fisch, 2003; Hall, Esty, and Fisch, 1990; Rockman et al., 2002);

Barney, the friendly purple dinosaur

3-2-1 Contact and *Bill Nye the Science Guy* on children's understanding of science and technology (e. g., Cambre and Fernie, 1985; Johnston, 1980; Johnston and Luker, 1983; Rockman et al., 1996; Wagner, 1985); children's news programmes on knowledge of current events (e. g., Bachen, 1998; Walma van der Molen and van der Voort, 2000), and preschool series such as *Blue's Clues* and *Barney & Friends* on more general school readiness (e. g., Anderson et al., 2000; Singer and Singer, 1998), among many others.

Children's Learning: Prosocial Content

Parallel to the academic effects of educational television, numerous studies have found that viewing prosocial television programmes produces significant positive changes in children's social behaviour. Indeed, reviews and meta-analyses of the literature have shown that the positive effects of prosocial television and the negative effects of violent television tend to be about equally strong: Both types of television result in small to moderate effects on viewers (Mares and Woodard, 2001).

Effects of prosocial television have been documented as increases in several domains: "friendliness" and positive interactions in general, altruism and cooperation, self-control and delay of gratification, and reduction of stereotypes. Most of this research has been conducted with preschool children, so the bulk of the evidence to date relates to this age group. However, some research on stereotypes has been conducted with older children, as in the case of series such as *Nashe Maalo* in Macedonia or *Freestyle* in the United States. For example, Johnston and Ettema (1982) found significant reductions in gender stereotypes among 9- to 12-year-olds after children watched 26 episodes of *Freestyle*; these effects were strongest when viewing was combined with follow-up classroom discussions among viewers and their teachers.

Although research has pointed to a consistent pattern of effects of prosocial television, these effects often have been less strong than the academic effects of educational television. Several possible explanations might be offered for this difference: First, it is possible that social outcomes are more difficult for researchers to measure, so the measures used in some studies may not have been sufficiently sensitive to detect effects. Second, it may be that some of the television series used in these studies were simply more effective than others. Third, it is possible that children's social behaviour is more resistant to change than their knowledge, skills, or attitudes regarding academic subjects. Indeed, it seems likely that all of these factors play a role.

In particular, it is important to remember that the prosocial messages presented in an educational television programme are likely to be mediated by lessons learned from family and peers, as well as children's own life experiences. In some cases, these experiences may work hand-in-hand with the prosocial lessons shown on-screen. In other cases, however, the messages from these various sources may conflict. For example, research on race relations segments from *Sesame Street* found that preschool children recalled the fun things that young African-American and White characters did together on screen. However, they also believed the characters' parents were less positive about their having playmates of other ethnicities – a finding that paralleled children's beliefs about their own parents in prior research (Truglio, Lovelace, Seguí, and Scheiner, 2001). Thus, it seems likely that children's interpretations of the on-screen events were filtered through real-life experiences with their own families.

Characteristics of effective programmes

All of the above research clearly demonstrates that children can – and do – learn from educational television. Yet, that is not to say that all educational television programmes are equally effective, or have an equally strong impact on their audience.

What causes some educational programmes to be more powerful than others? Looking across research on a wide variety of educational television series, we can identify a number of features that have contributed to the

effectiveness of existing series – and that producers can build into new productions to make them as educationally powerful as possible.

These features include:

- Engaging children via the use of appealing elements such as humour (with the caveat that children find different kinds of humour funny at different ages), mysteries, and games, among others.
- Choosing age-appropriate topics (for both stories and educational content) that are inherently interesting to children and relevant to their lives.
- Presenting content via age-appropriate language and at levels of difficulty that are tailored to children's knowledge and developmental level.
- Handling educational content in ways that are clear, direct, and explicit.
- Keeping the educational content "on the plotline" – that is, making the educational content central rather than tangential, to the narrative plotline (e. g., using a scientific principle to uncover the crucial clue that solves a mystery).
- Focussing an individual episode or segment tightly on conveying a small number of ideas.
- Reinforcing concepts by repeating them over the course of an episode or segment.
- Drawing explicit connections among conceptually related segments, to encourage children to see how similar concepts can be applied to different problems or situations.
- Using engaging or action-filled visuals rather than static visuals or "talking heads."

  Including characters whom viewers see as competent and intelligent, and with whom they can identify.
- Encouraging children to actively engage in the educational content themselves through viewer participation (e. g., during a game show, or by attempting to solve a problem before the on-screen characters solve it).
- Motivating children to carry their learning forward via activities that extend the experience after viewing (e. g., by trying out hands-on experiments or activities they've seen on-screen, or through online games or resources that provide further opportunities for learning).

Naturally, this list is by no means exhaustive. It illustrates just a few of the many ways in which research has contributed to both researchers' and producers' understanding of what "works" in creating educational television programmes.

Conclusion

Despite critics who claim (without any substantive evidence) that television destroys children's attention spans or turns them into "zombie viewers," research has shown that television is neither inherently good or bad for children. Rather, the effects of a television programme depend on its content. As the late researcher John Wright was fond of saying, "Marshall McLuhan appears to have been wrong. The *medium* is not the message. The *message* is the message!" (Anderson et al., 2001, p. 134).

Research on educational television has been invaluable in demonstrating that such programming can hold significant benefits for its viewers. On one level, of course, data on the impact of any particular series is of great interest to its production team, who want to gauge the degree to which their efforts have been successful. At the same time, evidence of children's learning from educational television has also been critical for funding agencies interested in accountability and in the evolution of public policy regarding children's television.

Yet, perhaps the most important impact of such research lies in its ability to inform the production of new programming. By identifying what "works" – the approaches and production techniques that contribute to the effectiveness of existing programming – research can help producers build on the most effective techniques as they create new material. When used well, research brings the voice of children into the production process, so that material can be tailored directly to the needs, interests, and abilities of the target audience. In this way, research can help to ensure that future educational television series will continue to be as appealing, age-appropriate, and educationally powerful as possible. ■

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