What Research Indicates about the Educational Effects of "Sesame Street."

Children's Television Workshop, New York, N.Y.

Oct 90

15p.

Reports - Research/Technical (143) -- Information Analyses (070)

MP01/FC01 Plus Postage.

*Childrens Television; *Cognitive Development; Cooperation; Early Childhood Education; Foreign Countries; *Infants; Longitudinal Studies; *Preschool Children; *School Readiness; Television Research; *Television Viewing; Vocabulary Development

Educational Testing Service; *Sesame Street; Turkey (Ankara)

This paper reviews the results of several studies that examined the educational effects of Sesame Street. Three studies by the Educational Testing Service on Sesame Street's first two seasons determined that among children who watched Sesame Street, those who watched the most scored highest on an achievement measure; frequent viewers made more cognitive gains than infrequent viewers; and teachers rated viewers as better prepared for school than nonviewers. Results from two longitudinal studies indicated that Sesame Street viewing predicted improved vocabulary scores, and Sesame Street elicited more verbal responses from children while they were viewing the show than did other shows. Results from other studies showed that Sesame Street viewing produced substantial gains in children's vocabulary, letter and number recognition, and printed word identification; and preschoolers who viewed Sesame Street learned to cooperate better than did nonviewers. A survey of mothers of preschool children indicated that mothers were pleased with Sesame Street's educational benefits for their children. A study of the effectiveness of a Turkish version of Sesame Street determined that children made significant developmental gains after watching the series for 6 months. (BC)
WHAT RESEARCH INDICATES ABOUT
THE EDUCATIONAL EFFECTS OF

SESAME STREET

PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

G. B. Sammur

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

Corporate Research Department
CHILDREN'S TELEVISION WORKSHOP
One Lincoln Plaza
New York, New York 10023
October, 1990

BEST COPY AVAILABLE
WHAT RESEARCH INDICATES ABOUT

THE EDUCATIONAL EFFECTS OF SESAME STREET

THE HIGHLIGHTS

The Educational Testing Service (ETS) evaluation of the educational impact of SESAME STREET's first year indicated that children who watched the most SESAME STREET learned the most, as demonstrated by pre- to post-test gains on an ETS testing instrument designed to measure achievement in SESAME STREET's curriculum goal areas.

The ETS investigation of the impact of SESAME STREET's second year also demonstrated significant gains in basic skills such as naming letters, classification, recognizing numbers, counting, and others. Regardless of racial background or SES, frequent viewers of SESAME STREET made greater cognitive gains than infrequent or non-viewers.

The ETS second-year follow-up investigation of 283 children tested from the first study indicated that "...SESAME STREET graduates who were frequent viewers and who entered school during the show's second year were, according to results from teacher ranking questionnaires, better prepared than their non- or low-viewing classmates, and more important, adapted well to the school experience."

A two-year longitudinal study of the impact of viewing SESAME STREET on the vocabulary development of 326 three-year-old and five-year-old children demonstrated that SESAME STREET viewing predicted significantly improved vocabulary scores, from pre-test to post-test, on the Peabody Picture Vocabulary Test. This effect was not evident for other children's programs.

A recent study exploring the use of SESAME STREET home videocassettes noted substantial gains in children's vocabulary, letter recognition, number recognition, and printed word identification, as measured by standardized tests and materials specially designed to assess the skills taught by the videos.

A longitudinal study that examined the viewing behavior of 16 children, ages six months to two-and-one-half years, in their own homes noted that SESAME STREET, more than other shows, elicited verbal responses or "TV talk" from the children, facilitating language acquisition.

A study examining the effectiveness of SESAME STREET in teaching cooperation to preschoolers indicated that SESAME STREET viewers learned to cooperate more than those who did not view, when tested in situations similar to those presented on the program.

A 1989 survey of one thousand mothers of preschool children throughout the United States indicated that mothers were pleased with SESAME STREET's educational benefits such as teaching letters and numbers. Mothers with older children reported that SESAME STREET has helped their children with school work.

A recent study of the educational effectiveness of the Turkish version of SESAME STREET, SUSAM SOKAGI, demonstrated substantial pre- to post-test gains after children viewed 6 months of the series, leading researchers to conclude that, "what a child of 5 knew before SESAME STREET, now seems to be known by a child at the age of 4."
WHAT RESEARCH SAYS ABOUT SESAME STREET'S EDUCATIONAL IMPACT

The amount of research associated with SESAME STREET -- research into production issues, educational effects, theoretical issues -- is without equal in the entire field of educational television. Even so, as society changes, significant questions continue to arise, and CTW continues to research them. SESAME STREET is a continuing experiment, and is treated as such. This paper sets out some of the highlights on what is known now, based on research about the educational effectiveness of SESAME STREET.

Among the most frequently cited documents in the research literature on children's television, and the most elaborate studies to date on the effects of SESAME STREET, are the Educational Testing Service (ETS) evaluations of SESAME STREET's first two seasons. The first-season ETS study investigated SESAME STREET's impact on the development of specific cognitive skills, with particular attention to the moderating effects of age, sex, prior achievement level, home background conditions (including Spanish spoken at home), and the measurable benefits of viewing the series at home and in preschool classes. A geographically diverse sample of 943 children ranging in age from three to five, 731 of whom were considered to be from disadvantaged backgrounds, were randomly assigned to one of the following conditions: (1) encouraged-to-view at home, (2) encouraged-to-view at school, (3) not-encouraged-to-view at home or (4) not-encouraged-to-view at school. All children were pre- and post-tested on an extensive, ETS-constructed testing instrument designed to measure performance in the following skill areas: knowledge of the alphabet and numbers, names of body parts, recognition of forms, knowledge of relational terms, and sorting and classification

1A recently compiled SESAME STREET research bibliography database has over one thousand entries:

skills. For the purposes of the data analysis, the sample was divided at the end of the 26-week broadcast season into quartiles, according to the children's frequency of viewing SESAME STREET. Complex statistical analyses were conducted to determine whether to attribute observed differences to interactions with other factors, or to viewing SESAME STREET.

The bottom-line finding was that children who watched the most learned the most. Children in the "frequent viewers" group (Q4) scored 40 points higher on the post-test of 203 items than a comparable group of children who had never watched the show (Q1). Frequent viewers performed better than infrequent viewers and also made the greatest gains from pre-test to post-test. The finding that children who watched more gained more held true across age, sex, geographical location, socioeconomic status, mental age, whether the dominant language was English or Spanish, and whether children watched at home or at school. Skills given the most time and attention on the program were the skills learned the best. Note that the exposure period of a typical SESAME STREET viewer is not restricted to a 26-week period, as was spanned in the initial ETS study, but probably three years or more, which would make the ETS measures of learning gains a conservative estimate.

SESAME STREET also helped children prepare for school. The second-year follow-up investigation conducted by ETS with 283 disadvantaged children from the first study indicated that:

"...SESAME STREET graduates who were frequent viewers and who entered school during the show's second year were, according to results from teacher ranking questionnaires, better

---

2 Quartile 4 (Q4) = children who watched more than five times a week; Q3 = children who watched the show on the average of four or five times a week; Q2 = children who watched the show on the average of two to three times a week; Q1 = children who rarely or never watched the show.

3 The experimental design and methods of analyses for the ETS evaluation of SESAME STREET are complex and detailed. Those interested in pursuing its finer methodological points are referred to the first- and second-year reports and summaries available via ERIC. (The ERIC accession codes are ED 047 823 for the final report of the first study, and ED 122 800 and ED 122 801 for reports on the second year study. The ERIC accession codes for the first and second year summaries are ED 122 799 and ED 122 802.)

prepared than their non- or low-viewing classmates, and more important, adapted well to the school experience. They did not prove to be, as some had expected, bored, restless, or passive participants in the formal classroom.  

One component of the second-year study entailed evaluating the educational effects of the second year's curriculum on children who had not been previously exposed to SESAME STREET. Statistically significant gains were obtained in the following areas: function of body parts, naming geometric forms, roles of community members, matching by form, naming letters, letter sounds, sight reading, recognizing numbers, naming numbers, counting, relational terms, classification, and sorting. For two years in a row, therefore, SESAME STREET showed measurable educational impact.

In the mid-seventies, the ETS evaluation data for SESAME STREET were reanalyzed by Cook and others. They also reached positive but more modest conclusions about the effects of SESAME STREET after removing what they considered to be the learning effects not of the series per se, but of "encouragement to view." The natural home environment, however, is not an experimental condition of uniform non-encouragement, but one in which many mothers encourage their child to view, view with their child, and discuss elements on the show. Recent survey data, for example, indicate that about three-fourths of the mothers in viewing, low-income households report that they do talk about SESAME STREET with their child. CTW has always encouraged  

---


6 There were some curriculum areas where no gains could be detected such as geometric forms, matching by position, alphabet recitation, enumeration, conservation, and parts of the whole, but there were no areas in which the show had a negative effect.


8 This "encouragement" was the means by which ETS sought originally to get the experimental group to view, while "no encouragement" was given to the control group. Cook argues that the encouragement alone caused some of the learning gains.

parents to view actively with their preschool child, because this is known to be a powerful combination.

Reflecting back after the passage of twenty years, Samuel Ball stated the following about the methodology of the original ETS studies:

...we remain committed to our heavily quantitative, scientific, methodology-oriented approach, and we hope (and we know) that later researchers looked for more subtle nuances. It [SESAME STREET]...benefited children's television as no other show has done before or since. I think our evaluation showed that an hour a day of viewing attention-holding educational television can have a positive impact on young children. 10

RESEARCH SHOWS THAT SESAME STREET ENHANCES LANGUAGE SKILLS

Recent evidence of SESAME STREET's educational impact has been found by Mabel Rice, et al., at the Center for Research on the Influences of Television on Children at the University of Kansas. They examined the relationship between preschool children's viewing of SESAME STREET and their vocabulary development, finding that children in SESAME STREET's target age range, but not older children, benefited from watching SESAME STREET in terms of expanded vocabulary. A substantial sample, particularly for a longitudinal study, of 326 children and their families in Topeka, Kansas were the participants in this study. Two age groups of children were followed: three-year-olds and five-year-olds who, by the end of the study, had turned five and seven, respectively.

Viewing of SESAME STREET was measured by having parents fill out diaries, recording viewing of all family members for one week in the spring and one week in the fall for two years. The Peabody Picture Vocabulary Test (PPVT) was administered to the children at the beginning and

end of the two-year period as a measure of vocabulary gain. A series of statistical analyses were run to see how well SESAME STREET viewing predicted final scores on the Peabody Picture Vocabulary Test. Results indicated that viewing SESAME STREET during ages three to three-and-a-half years contributed significantly to improved vocabulary scores at age five, and suggested a positive cumulative effect of SESAME STREET viewing during the ages from three to five years. Older viewers, from five to seven years of age, showed less vocabulary benefit from viewing this preschool series. It is noteworthy that these positive effects were not evident for other kinds of children's programs; the vocabulary benefit was specific to viewing SESAME STREET.

The researchers emphasized that children are in a stage of rapid vocabulary acquisition between the ages of one-and-one-half to six years of age, learning an average of nine new words a day. In their view, the positive effects of SESAME STREET viewing on children's vocabulary development resulted from a combination of the content and presentation formats found in SESAME STREET, its appeal, and preschoolers' readiness to learn new vocabulary.

A primary means of presenting new information on SESAME STREET is through dialogue and narration that is adjusted to young viewers' comprehension levels in a manner strikingly similar to the way adults adjust their speech and language to young children in live interactions. The dialogue on SESAME STREET closely resembles that of a mother talking to her child, with simple sentences, much talk about the here and now, repeated emphasis on key terms, and an avoidance of abstract terminology. Such speech is well-suited to introducing word meanings to young viewers. Simplified dialogue is not evident in children's cartoons or in adult situation comedies.

---


RESEARCH SHOWS THAT SESAME STREET HOME VIDEOCASSETTES ENHANCE LANGUAGE AND NUMBER SKILLS

A recent study exploring the use of SESAME STREET home videocassettes in the natural home setting provides further evidence that children learn vocabulary and other language skills from SESAME STREET. Twenty children, ages two to five, and their families participated in this one-year study. Four SESAME STREET cassettes -- "I'm Glad I'm Me," "The Alphabet Game," "Learning About Letters," and "Count It Higher" -- were given to families for natural, instructional use in this study. Information was collected from parents on family video use, and children were observed in their homes as they viewed the cassettes. In addition, children were tested prior to and following the period of home viewing on cognitive skills thought to be influenced by watching. Measures included the Brigance K-1 Screening for Kindergarten and First Grade, the recognition of numerals section of the Brigance Diagnostic Inventory of Basic Skills, and other testing materials designed to assess the skills taught by the videos. The results indicated that children learned when they viewed the SESAME STREET cassettes, even when the viewing was infrequent and spaced over several months. Gains were noted in children's vocabulary, letter recognition, number recognition, and printed word identification. Researchers commented that "... the learning effects of the cassette viewing are rather remarkable, given that the children averaged only two-and-one-half to three hours of viewing of each tape, over 11 weeks, in a situation with competing social activities."13

RESEARCH SHOWS THAT YOUNG CHILDREN RESPOND VERBALLY TO SESAME STREET

A longitudinal study, whose purpose was to collect observations of young children's television viewing behavior in their own homes, was conducted by Dafne Lemish and Mabel Rice over a period

of six to eight months. Sixteen families volunteered to be participants in this study. At the beginning of the study, the children's ages ranged from six months to two-and-one-half years; at the end, from one to three years. Researchers visited the families in their homes to observe the children being exposed to television. Mothers kept extensive logs throughout the study period, noting what the children were watching, whether others were present, and whether any verbal behavior occurred during viewing. Mothers were instructed to report in detail any new behaviors their child displayed while viewing.

Children displayed a variety of verbal behaviors in response to television. Researchers classified children's verbalizations into four categories: 1) designating objects on television, 2) asking questions about television content, 3) repetition of television dialogue, and 4) describing television objects. SESAME STREET in particular elicited verbal responses ("TV talk," as it is termed in the study) from young children and their parents in the viewing situation, and is mentioned frequently in verbatim responses in the report. One 18-month-old "identified at least a dozen objects during the opening song to SESAME STREET. Standing right by the set she pointed at the objects as they rapidly changed: baby, mouse, baby, and so on." The researchers concluded that effective television can serve to facilitate children's language acquisition. They proposed that television be construed as a "talking picture book," with great potential as a vehicle for teaching vocabulary.

**RESEARCH SHOWS THAT SESAME STREET TEACHES SOCIAL SKILLS**

In 1974, Paulson examined the effectiveness of SESAME STREET's third season in teaching cooperation to preschoolers. His sample of 78 children included three- and four-year-olds from disadvantaged, inner-city backgrounds. The experimental groups of 36 children viewed the entire season of programs; the control group of 42 children did not watch the show. As a measure of

---

cooperation, Paulson used the Oregon Preschool Test of Interpersonal Cooperation (OPTIC), a picture recognition test, and observations from free play. The OPTIC measures social behavior by placing two children into a series of carefully designed situations, and scoring the children on whether they cooperated with each other. Paulson found that the SESAME STREET viewers learned to cooperate more than those who did not view, when tested in situations similar to those presented on the program. Also, children who viewed were more likely than those who did not view to recognize the examples of cooperation presented on the show, judge the cooperation solution as "best," and use the word "cooperation" in an appropriate manner.15

MOTHERS REPORT THAT SESAME STREET HELPS PREPARE THEIR CHILDREN FOR SCHOOL

Last year, one thousand mothers of preschool children, drawn from 25 cities throughout the United States, all with incomes at the poverty level, were asked about the role of SESAME STREET in their lives. Nearly all of the children had watched SESAME STREET, and nearly two in three were watching on a daily/almost daily basis. Children enjoy SESAME STREET: 75% of the mothers named SESAME STREET as their child's favorite show. Mothers acclaimed SESAME STREET for its educational benefits: 80% gave overall ratings of 'excellent' to SESAME STREET. By contrast, only 22% rated children's other favorite programs as favorably. Mothers were especially pleased with the teaching of letters and numbers, and were also aware of other benefits also (e.g., social skills, self-awareness). Mothers with older children reported that SESAME STREET had helped their children with school work.16 A "second-generation" effect was revealed: 40% of the mothers surveyed had themselves watched SESAME STREET as children. These mothers were more likely


than their nonwatching peers to discuss the program with their children and to give it high marks.

**SESAME STREET WORKS INTERNATIONALLY**

SESAME STREET is not just an American phenomenon; it is recognized worldwide as a beneficial experience for children. In various adaptations, SESAME STREET plays in over 80 countries around the globe, addressing educational goals tailored to children in those cultural settings. Research shows that SESAME STREET works educationally with children in other countries. In Turkey, for example, SESAME STREET is called SUSAM SOKAGI. Nail-Sahin, research director of an evaluation of SUSAM SOKAGI, recently presented the preliminary research results of a major study of that series' educational impact, conducted with 1,166 children, ages three to six. These children were selected from low-income neighborhoods of the Ankara area, and were representative of the target audience. The children were assigned to either an experimental (exposed to SUSAM SOKAGI) or a control group (not exposed). The latter was used as a comparison group to factor out the contributions to apparent gains of maturation and repeated-testing from pre-test to post-test.

The children in the experimental group were exposed to SESAME STREET for a period of six months and were pre- and post-tested in their own homes by experienced researchers. Among the testing instruments used were the original Ball and Bogatz ETS battery, the SESAME STREET familiarity test to assess how familiar children were with the main characters, and questionnaires administered to mothers to find out about family viewing patterns. These results indicated a total mean gain of 31 points from pre-test to post-test. Scores were compared to scores of children of the same age who had not seen SESAME STREET, to factor out gains due to maturational factors. The

---

17 SESAME STREET co-productions entail a joint effort between CTW and the education and broadcast communities of foreign countries. With CTW as advisor, co-productions of SESAME STREET are adapted to the language, needs, and cultural mores of the foreign countries. The International Conference on Adaptations of SESAME STREET was held September 4-7, 1990 in Amsterdam, The Netherlands. Researchers gathered from all over the world to compare notes and share evaluative research results on the educational effectiveness of adapted versions of SESAME STREET.
Consider, for example, children at the age of 4.0 [four years] in the pre-test. If nothing else happened, their scores six months later would be similar to those at the age of 4.6 [four years, six months]. But they actually received a post-test score (71.95) which is higher than the mean of the 5.6 year-old [five years, six months] children (65.82). Similar comparisons of other age groups lead us to state that, apart from the effects of maturation, SESAME STREET viewing causes an increase in children's baseline scores which is comparable to about one year in development. What a child of 5 knew before SESAME STREET, now seems to be known by a child at the age of 4.18

SESAME STREET TODAY

Today, SESAME STREET continues as an experiment. The goals of SESAME STREET keep evolving and growing. This is not a single-issue series: the basic cognitive emphasis which characterized the initial programming is still there, but is increasingly shared with contemporary social issues. Most recently, for example, curriculum seminars have been held on race relations between Caucasians and African-Americans. The goals for the 22nd experimental season of SESAME STREET -- over 600 goals in total -- are grouped into four broad categories:19

- Children and Their World. This area aims to promote self-awareness in children, to help them better understand themselves in relation to their world, and to gain a sense of mastery over it. Goals include teaching science, reasoning, problem-solving, safety, emotions, social units (i.e., family, neighborhood, city, school), social interaction, and the environment.

- Human Diversity. This area aims to engender an awareness in children that some people are different from them, but all people share commonalities. Curriculum areas focus on appreciating the diversity of human life and perspectives. There are also special curriculum areas for children with mental retardation, deafness, and special needs.

- Symbolic Representation. This area covers pre-reading, pre-writing, and pre-mathematics goals. Goals include helping children learn the alphabet and numbers, new vocabulary words, Spanish words, and the names for geometric forms. Some broader goals include helping children realize that reading and writing are ways to

18 N. Sahin, Preliminary report on the summative evaluation of the Turkish co-production of SESAME STREET. Presented at the International Conference on Adaptations of SESAME STREET, September 4-7, 1990.

communicate and that they are enjoyable.

- **Cognitive Organization.** This area teaches perceptual discrimination and orientation skills in both the visual and auditory domain. Goals include matching objects, recognizing embedded figures, understanding part/whole relationships and patterns, identifying sounds, discriminating sound patterns, and providing children with music experiences. Relational concepts and classification skills are also stressed.

Some other goals for the 22nd season address contemporary topics such as helping children gain useful knowledge about and positive attitudes toward computers. CTW will continue to use experience and research as guidance for meeting the needs of children in the nineties and beyond.

**SESAME STREET IS COST-EFFECTIVE**

One reason why SESAME STREET merits such strong support, both here and abroad, is its cost-effectiveness. Large audiences make for small costs per viewing. The U.S. has over 92 million television households, and 16.3 million of those have at least one child under six years of age. Across the six-week measurement period in 1990, SESAME STREET has consistently reached 63.3% of all U.S. TV households with a child under six (10,320,000 households with a child under six) plus many other households as well. SESAME STREET costs less than one penny per household viewing.

**BEYOND RESEARCH: THE FIRST-HAND EXPERIENCE OF PARENTS**

Beyond the evidence of formal research such as experiments and surveys, there is another powerful source of evidence about the role that SESAME STREET plays in the lives of young children. This is the evidence of observation -- not of dozens or even hundreds of formal research observations, but countless first-hand experiences that parents have had with their own children. A mother who has spent literally thousands of hours observing her preschool child across the entire

---

gamut of life's behaviors does not need a control group, a statistical comparison, or a random sample to know when her child has learned something from SESAME STREET. Although not scientific in methodology, millions of American parents know from first-hand experience that SESAME STREET works: it teaches, it models, it invites participation, it entertains. They see it with their own eyes. One can constantly hear testimonials such as the young child who sings a song in Spanish when there is no Spanish spoken in the home, or who starts asking questions about topics mentioned on the show, or who generalizes a principle learned from the show ("Mommy -- Look! My pillow is a rectangle!"). Anyone who has watched SESAME STREET with a preschooler as he or she eagerly calls out the letters of the alphabet, counts with The Count, or sings a song with Big Bird, knows at an informal level what the research says formally: SESAME STREET is doing its job.