DOCUMENT RESUME

ED 434 364 CS 510 117

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TITLE Pacing in Children's Television Programming.
PUB DATE 1999-03-00
NOTE 42p.; Paper presented at the Annual Meeting of the Association for Education in Journalism and Mass Communication (82nd, New Orleans, LA, August 4-7, 1999).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Childrens Television; Content Analysis; Preschool Education; *Programming (Broadcast); Television Research
IDENTIFIERS Sesame Street

ABSTRACT

Following a content analysis, 85 children's programs were assigned a pacing index derived from the following criteria: (1) frequency of camera cuts; (2) frequency of related scene changes; (3) frequency of unrelated scene changes; (4) frequency of auditory changes; (5) percentage of active motion; (6) percentage of active talking; and (7) percentage of active music. Results indicated significant differences in networks' pacing overall and in the individual criteria: the commercial networks present the bulk of the very rapidly paced programming (much of it in the form of cartoons), and those networks devoted primarily to educational programming--PBS and The Learning Channel--present very slow-paced programs. (Contains 26 references, and 12 tables and a figure of data.) (RS)

Pacing in Children's Television Programming

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Paper submitted to the Mass Communication & Society division of the Association for Education in Journalism and Mass Communication. March, 1999

Abstract

Following a content analysis, 85 children's television programs were assigned a pacing index derived from the following criteria: (a) frequency of camera cuts, (b) frequency of related scene changes, (c) frequency of unrelated scene changes, (d) frequency of auditory changes, (e) percentage of active motion, (f) percentage of active talking, and (g) percentage of active music. ANOVA procedures reveal significant differences in networks' pacing overall and in the individual criteria.

PACING IN CHILDREN'S TELEVISION PROGRAMMING

In December 1997 more than 700 young Japanese children were rushed to hospitals after viewing a popular cartoon show called *Pokemon* (*Pocket Monsters*). The program, aimed at elementary school children, contained a scene with strobe-like red, white, and blue flashes amidst an explosion of other colors. An American neurologist speculated that the cartoon's flashing lights could have either prompted hyperventilation in the children, leading to their convulsions, dizziness, fainting, and nausea, or acted directly on their brains' circuits to cause seizures (Smillie, 1997). The pandemonium eventually warranted a "jeer" from *TV Guide*, which called *Pokemon* "truly dangerous television" ("Cheers & Jeers," 1998, p. 12).

Pokemon is certainly not the first program to be labeled as detrimental because of its pacing. In fact, a program that debuted almost 30 years earlier, although not noted for provoking medical attention, has often been singled out as being anywhere from unhelpful to detrimental to children, primarily because of pacing issues.

The Children's Television Workshop unveiled *Sesame Street* in 1969, presuming that to attract the attention of children, its pioneering program had to feature surprising, novel visual and auditory effects (Lesser, 1974). Some scholars and several lay critics noted the multisensory characteristics and the pacing of the program and began to describe what they believed to be detrimental effects. Meichenbaum and Turk (1972) suggested that *Sesame Street* engaged in too much verbal bombardment and did not take enough time to model learning strategies and behavior. Halpern (1975) maintained that the "revved-up" behavior of toddlers entering his mental health clinic was "directly traceable" to *Sesame Street*, and that the program's "pulsating stroboscopic, stimulus-

rich, and insistent visual and auditory experience" (p. 69) strongly interferes with children's learning. Content, even if educational, that is too complex or accompanied by too much dissonance and noise was alleged to lead to sensory overload in children, thus disrupting their ability to assimilate.

A series of popular books followed this line of thinking. Winn (1977), in *The Plug-In Drug*, wrote that the sights and sounds moving at rapid-fire pace cause children to lose the thread of the content and that television hampers not only the amount but also the nature of children's play. Mander (1978) went further, maintaining that the non-stop flow of televised images transforms any viewer, even an adult, into a helpless zombie and can provoke hyperactivity in children via their "artificially teased senses" (p. 168). Postman (1985) acknowledged *Sesame Street* as an availing program but contended that it is no ally of the classroom. As merely "a series of commercials" (pp. 142-144), *Sesame Street* was said to encourage children to love television, not school.

Singer (1980) asserted that television in general, and *Sesame Street* in particular, delivers a case of cognitive overload. As with a cocktail party that introduces a succession of new faces and names to remember, television continually presents new material before a child has had an opportunity to process it. Singer stated that *Sesame Street*'s frenetic pace attracts children's attention but does not provide enough time for them to mentally replay what they have seen.

The most outspoken recent critic of the impact of television's pace and special effects has been Healy (1990). In *Endangered Minds*, Healy wrote that television, with its fast pace and special effects, turns children into zombies and hinders their ability to learn and be imaginative. In particular, she referred to *Sesame Street* as a "cacophony of

vignettes" (p. 218), "peripatetic carnival" (p. 220), "substitution of surface glitz for substance" (p. 221), and "sensory hucksterism" (p. 234) that failed to teach reading.

Some scholars have taken issue with Healy (1990). For example, in a U.S. Department of Health and Human Services symposium chaired by Healy, Bryant (1992) reported the results of an informal content analysis that compared the mean length of camera shots (a primary ingredient of pacing) in *Sesame Street* with that of other contemporary fare. The fastest paced material, not surprisingly, belonged to assorted commercials, with a mean length of just over 2 seconds for each camera shot, and to music videos, at just under 3 seconds per shot. The mean shot lengths of the situation comedies (6.29 seconds) and television dramas (6.86 seconds) evaluated were shorter than that of the *Sesame Street* episodes analyzed (8.69 seconds).

Moreover, even a cursory examination of children's television today would seem to suggest that many of the allegations of Healy (1990), Mander (1978), Winn (1977), and others either are dated or certainly cannot be applied unequivocally to preschool television today. After all, much of PBS's preschool programming block comprises seemingly slow-paced programs like *Reading Rainbow, Mister Rogers' Neighborhood,* and *Storytime*. Moreover, the most successful commercial preschool program today, Nick Jr.'s *Blue's Clues*, "now the No. 1-rated preschool show ahead of PBS' *Sesame Street* and *Barney*" (Katz, 1998, p. 25; also see Kiesewetter, 1998), intentionally eschews fast pace and extraneous special effects in order to allow preschoolers time for analysis, synthesis, and evaluation (Wilder, 1998).

In other words, the criticisms of the most vocal critics of television's pace and special effects seem to be based on informal observations rather than on careful content

analyses. Moreover, not only does the program they criticized most ardently—*Sesame Street*—appear to be different from the iteration of the program criticized a generation earlier, but that *Sesame Street* of yesteryear does not necessarily seem to reflect the norm for preschool television today. Therefore, a more systematic content analysis of contemporary preschool children's programming would seem to be in order. This report presents such an updated systematic assessment. Prior to presenting the results of this investigation, a review of conceptualizations of pacing and special effects is presented. Various measurement issues associated with pacing are discussed in the methodology section.

Conceptualizations of Pacing

Pacing has been explicated in several ways. Anderson, Levin, and Lorch (1977) judged the pacing of *Sesame Street* episodes based on camera or editing actions, change in visual scenes, active motion, auditory change, lively music, active talking, and segment length. In their analysis of children's shows, Huston et al. (1981) observed the amount of activity and pacing (defining pacing as the frequency of scene and character changes) at the molar level and visual and auditory features at the molecular level. Watt and Krull (1974) rated 168 television programs on a number of pacing attributes such as frequency of verbal utterance and frequency of set changes. After transforming these attributes into entropy measures (combining frequency of occurrence and predictability), they derived two factors of pacing: dynamism and familiarity. Watt and Welch (1983) went beyond camera and editing techniques and likened pacing to sensory stimulation, measurable by visual dynamic complexity: the unpredictability, or difference, in light levels in the screen over time. Their comparison of *Sesame Street* and *Mister Rogers'*

Neighborhood episodes yielded surprising results: *Mister Rogers' Neighborhood* had slightly higher visual dynamic complexity than *Sesame Street*. Providing the visual dynamic change for *Mister Rogers' Neighborhood* were camera switching and editing as well as the motion of the characters on the sets.

A recent trend in research in this arena contends that pacing should embrace content. The rationale offered is that television viewers treat form and content as interdependent dimensions. Studies examining related shifts (those occurring within a single scene) and unrelated shifts (those occurring between different messages) have indicated that unrelated cuts require more processing capacity and therefore result in slower reaction times (Lang, Geiger, Strickwerda, & Sumner, 1993; Geiger & Reeves, 1993).

Measurement of Pacing

Anderson et al. (1977) employed the following criteria to rank pacing of *Sesame Street* segments for a pioneering experiment: (a) frequency of camera or editing actions, (b) frequency of change to an essentially new visual scene, (c) percentage of active motion, (d) frequency of auditory change (e.g., change from man's voice to music), (e) percentage of lively music, (f) percentage of aroused, active talking, and (g) segment length. They ranked all of the segments in four different *Sesame Street* programs according to each criterion, then chose the segments with the highest average ranks for the fast-paced segments and the ones with the lowest average ranks for the slow-paced segments.

Huston et al. (1981) included pace among their taxonomy of formal features from 137 children's television programs. Pace was defined in terms of (a) variability—rate of

new scenes (i.e., scenes not previously shown in the program), and (b) tempo—rate of familiar scene changes (i.e., scenes previously shown in the program plus the rate of character change). Other formal feature categories were action, visual features, and auditory features. Both the work of Anderson et al. (1977) and Huston et al. (1981) informed the pacing measures utilized in the present investigation.

Issues in the Present Investigation

Several issues emerged in preparing for a content analysis of pacing in preschool television programming. The first is that the nature of children's television is dramatically different today than it was more than a decade ago, when most other formal pacing content analyses were conducted. Precipitated by shifts in the regulatory environment for children's television (e.g., The Children's Television Act of 1990, The Telecommunications Act of 1996), the proliferation of new outlets for distributing and exhibiting children's programming (e.g., Fox Family, The Learning Channel, The Cartoon Network), an influx of new curriculum-based programming (e.g., Cornachio, 1998), and many related developments, the sheer quantity of children's programming today is overwhelming. Moreover, with audience segmentation and fragmentation, some children's programs on less popular exhibition outlets attract very small audiences today (e.g., Schneider, 1999). Accordingly, many contemporary children's programs have very short lives. For these reasons, it seemed advisable to content analyze only more frequently watched, durable children's fare.

Unfortunately, the most common criteria used to determine the popularity of adult television programming—ratings and shares—often are not available for children's programming, except for those programs shown on Nickelodeon (e.g., "People's

Choice," 1998). Therefore, it was necessary to engage in primary research to generate a list of the most popular television programs for preschool children.

The second issue dealt with the desire to organize the programs selected into useful categories. With today's emphasis on "branding" (e.g., PBS's Ready to Learn), which includes presenting a relatively cohesive, clearly identifiable package of programs within an outlet, it seemed potentially useful for some of the analyses to collapse across programs delivered on the same program source. Therefore, some assessments were made by network. Those child-oriented networks (a) that direct a significant portion of their programming to preschool children, (b) that offer curriculum-based programming, and (c) that do not interrupt preschool programming with commercials are treated as independent units. This includes Disney, Nickelodeon, The Learning Channel, and PBS. Networks or other programming sources (a) that are commercially oriented, (b) that offer little or no curriculum-based programming, and (c) that insert commercials within programs (e.g., ABC, CBS, Fox, NBC, TBS, The Cartoon Network, TNT, and USA) were treated as an entity labeled "commercial networks."

The third issue addressed is the pacing of curriculum-based programming. It may be recalled that much of the early criticism of fast-paced programming was directed toward the pioneer educational program *Sesame Street*, which unabashedly mixed learning with fun and created a revolution in children's programming by doing so. From its earliest days, *Sesame Street* was guided by a curriculum that was developed by child development specialists and educators. Moreover, that curriculum was refined annually and was routinely examined in terms of how well it was meeting its curriculum goals via formative and summative evaluation (e.g., Bryant, Alexander, & Bryant, 1983). Other

successful contemporary programming has followed *Sesame Street*'s model (actually, the "CTW Model"; Fisch, Truglio, & Cole, 1999) and utilized curricula to guide development and production. In fact, the entire "block" of PBS preschool children programming is curriculum-based (*Thirteen—WNET series guide,* 1995). And the curriculum guide to Nick Jr.'s *Blue's Clues* emphatically states that "each episode is driven by the curriculum" (Wilder, 1998, p. 5). The present content analysis sought to determine whether curriculum-based programming features a different pacing profile than other, less education-oriented programming.

Methodology

Developing a Sample of Preschool Programs

Parents of 79 children who were not yet enrolled in the first grade at school completed viewing diaries that reported all of the television programs the child watched during four 1-week periods in 1996. The preschool girls (n = 41, 52%) and boys (n = 38, 48%) lived in the Northeastern, Far Western, or Southeastern United States.[1] The children's ages ranged from 2 to 6, with a mean age of 4 years, 3 months.

Parents and/or professional caregivers reported their children's viewing in 30-minute blocks by completing diaries during May, September, October, and December 1996. For each block, the caregiver indicated whether the television was on, to what station and program it was tuned, and who was watching.

Two hundred thirty-three different programs or videos were reported as viewed by the 79 preschoolers during the 4-week period. After eliminating primetime adult programs, videos, and holiday specials, 113 different children's television programs

remained. Eighty-five (75%) of these shows accounted for more than 90% of total viewing. These 85 programs were tape recorded during June 23-30, 1997, and were subjected to a systematic content analysis of pacing.

Of the popular children's programs that were analyzed, 31 (36.5%) were on commercial networks, 23 (27.1%) were on Nickelodeon, 15 (17.6%) were on PBS, 11 (12.9%) were on Disney, and 5 (5.9%) were on The Learning Channel. A list of programs, along with their corresponding networks, can be seen in Table 1.

Determining Curriculum-Based Programming

Following an extensive literature review, personal interviews were conducted with the director of the PBS Ready-to-Learn Service and the director of research for Nickelodeon's preschool programming (Nick Jr.) to determine which of their programs were truly curriculum based. A telephone interview was conducted with the director of children's programming for the Disney Channel to reach the same decision for Disney. Those programs are identified with asterisks in Table 1.

Developing a Pacing Index

This study developed and employed a new pacing index, adapted from the research literature on pacing and expanded to fit the new landscape of children's television. Because many of the darts aimed at children's television involve the frenetic switching from one camera to another (or from one scene to another), and because such shifts introduce more new information for the viewers to process, 50% of this study's pacing index comprised cuts. The next 20% came from movement on the screen. For example, a 60-second camera shot, without cuts of any kind, would typically lend to slow

[1] The authors would like to thank Barbara Wilson of the University of California, Santa Barbara, and Norbert Mundorf of the University of Rhode Island, and their Research Assistants for their invaluable

pacing, yet if that camera were mounted on the front of a moving roller coaster, the viewer is introduced to a great deal of activity. The so-called "bells and whistles" made up the final 30%: the amount of active talking and music and the number of auditory changes. A more detailed explication of the weighting system follows, with the first three categories dedicated to mutually exclusive examples of the "cuts" or shifts that account for 50% of the index value.

1. Frequency of *unrelated shifts* = 20%. As Lang et al. (1993) explained, these cuts occur when the scenes on either side of the cut are completely unrelated to one another, either by audio content, message content, or visual setting. Typically these are abrupt, unexpected, even artificial changes in both the program and the message, similar to what occurs when a person is watching television and another person unexpectedly changes the channel. Examples from the children's programming we coded include the following: (a) on *Sesame Street,* a cut from Bert and Ernie's kitchen to a cartoon segment featuring the letter *q*; (b) on *Looney Tunes,* a dissolve from the *Looney Tunes* board to the title card for a *Bugs Bunny* cartoon; and (c) on *Rocky and Bullwinkle*, a dissolve from the closing credits of a *Dudley Do-Right* cartoon to the opening credits of a *Bullwinkle* cartoon.

2. Frequency of *related shifts*, or changes to a new visual scene that semantically related to the prior scene = 15%. Examples include the following: (a) *Reading Rainbow*'s LeVar Burton in the studio introduces a segment about how books are made, followed by a dissolve to a book bindery; (b) Scooby Doo and Shaggy explore a haunted house, followed by a cut to Daphne in the swamp; (c) the trolley on *Mister Rogers* rolls

assistance in this portion of the investigation.

from living room to The Land of Make-Believe; and (d) *Speed Racer* cuts to a commercial, after which the show picks up at a different scene, but still part of the story.

3. Frequency of *camera cuts*, or editing actions, within a single scene = 15%. Camera zooms, pans, or tilts from one character to another would not count. Two examples follow: (a) a cut from a close-up of Fred Flintstone to a two-shot of Fred and Wilma, and (b) a cut from a long-shot of a crowd to a medium-shot of Batman and Robin.

4. Percentage of *active motion* = 20%. Coders considered criteria presented by Anderson et al.'s (1977) and Huston et al.'s (1981) studies. This included any activity by characters that took place at a pace faster than a walk: running, jumping, dancing, and so on. Examples include the following: (a) flying planes, spaceships, hoverboards, etc.; (b) fast-moving cars, bikes, trucks, and other vehicles; (c) a character running in place; (d) *Sesame Street* cartoon numbers "morphing" quickly from 1 to 10; (e) a scene containing busy traffic; (f) a close-up of pouring water; (g) a close-up of a waterfall; (h) a heavy rain; (i) quick pans or tilts of the camera; (j) a stationary camera mounted on a moving object, such as the front of a roller coaster; (k) a close-up of two characters playing patty-cake; (l) a close-up of dog shaking water out of fur; (m) a cartoon lightning bolt hitting the ground; and (n) a car, plane, or runner disappearing into horizon.

5. Frequency of *auditory changes*, as delineated by Anderson et al. (1977) = 10%. This was defined as a change from one qualitative type of sound to another. Examples of auditory changes include: (a) from a man's voice to woman's voice, (b) from a woman's voice to child's voice, (c) from a child's voice to animal's voice, (d) from a man's voice to sound effect, and (e) from music to sound effect. The following

would not represent examples of this category: (a) conversation between two men, (b) conversation among five children, and (c) change from one type of music to another, similar type of music.

6. Percent of *active music* = 10%. This category typically included instrumental music that was above low-key. A steady bed of background music would not count if it was slow and soft. Other examples would be musical sound effects, such as a slide whistle.

7. Percent of *active talking* = 10%. This category was devoted to talking above low-key, background talk. A normal on-screen conversation would count. Other examples in this category were singing as well as barking, roaring, or other animal sounds.

Unit of Analysis

The unit of analysis was a randomly selected 5-minute segment from each of the 85 children's television programs in the sample. Because a number of programs, such as those in the Nick Jr. block, typically run 24:30 in length, the starting minute for each program's 5-minute sample ranged from zero to 19:30. The start time per program was determined by a computer-generated list of random numbers. Opening credits counted as part of the program, but commercials and interstitial segments did not. For example, if advertisements and network promos interrupted the program being examined after 2 ½ minutes, then the 2 ½ minute block following the break were coded along with the 2 ½ minutes preceding the break.

Procedure

Coding was completed in an automated content-analysis facility. Five coders[2] seated at laboratory tables were assigned buttons that they depressed whenever a feature for which they were responsible was presented in the segment of the program that was being screened. Prior to the actual coding, the segment was screened as many times as necessary for each coder to decide onset and offset marks for each feature of interest. Discussion among the coders and the senior investigator was allowed to clarify any points of uncertainty.

When the coders were satisfied that they had mastered their assigned criteria in a segment, it was screened. Coding was accomplished in real time, in order to permit duration as well as frequencies measures for each dimension of pacing. The button presses engaged ViewDac software that coded the data in a format that could be readily transformed for statistical analysis.

Determining reliability. Pilot tests were conducted to analyze both the coding scheme and the work of the coders. Reliability was checked periodically in two ways: test-retest comparisons of scoring by the same observer at different times (intracoder agreement) and comparison of two independent scorers (intercoder agreement). Intracoder reliability was conducted for two programs, *Aladdin* and *Roger Ramjet*. The first program yielded the following Cohen's kappas: related shifts, .855; unrelated shifts, 1.000; camera edits, .938; auditory changes, .914; active motion, .607; active talking, .671; and active music, .443. The grand mean was .775. A subsequent intracoder check yielded these kappas: related shifts, .811; unrelated shifts, 1.000; camera edits, .886;

[2] The authors are exceedingly grateful to Francesca Dillmann, Cassandra Imfeld, Lisa Mullikin, and Art Raney for their invaluable assistance with the coding.

auditory changes, .808; active motion, .774; active talking, .913; and active music, .931. The mean kappa for the second test was .875. Intercoder reliability checks were conducted a number of times, ranging from once to three times for the seven criteria based on their difficulty. Means of kappas for each criteria were as follows: related shifts, .605 (maximum .863); unrelated shifts, 1.000; camera edits, .978 (maximum 1.000); auditory changes, .737 (maximum .871); active motion, .620 (maximum .695); active talking, .736 (maximum .839); and active music, .740 (maximum .905). The grand mean for these intercoder kappas was .773.

Compiling the Pacing Index

Following the coding, criteria were weighted to create a pacing index for each program. One hurdle to be cleared was fusing the four frequency criteria and the three percentage criteria. We decided to normalize the data by transforming the frequencies into percentages. For example, if *Show X* led all other programs with 144 auditory changes, then it would be assigned 100% for that category. *Show Y*, then, with 100 auditory changes, would be assigned 69%. Table 2 demonstrates how the pacing index for *Show X* would have been derived.

Results

Individual Pacing Criteria

Table 3 presents the pacing index and score for each element of that index for each of the 85 children's programs examined, with programs listed alphabetically. If the individual items used to compile the index are examined independently, it can be seen that considerable variability between programs exists for each index, although the variability clearly is greater for some pacing criteria than for others.

For the general category of camera edits, presented in the second column of Table 3, the grand mean for number of camera edits during the 5-minute segments per program was 53.08. The five programs with the most camera edits per segment were *Underdog* (100), *Dragon Ball Z* (99), *Roger Ramjet* (98), *Spiderman* (98), and *Ultra Force* (91). All of these programs were presented on "commercial networks." The five programs with the fewest number of camera edits were *Storytime* (1), *Looney Tunes* (8), *Mister Rogers' Neighborhood* (12), *Bananas in Pajamas* (16), and *Bill Nye the Science Guy* (16). Three other the programs with the fewest edits are on PBS (*Storytime, Mister Rogers, Bill Nye*); the other two are on "commercial networks."

Table 4 presents the information for camera edits organized by networks. The analysis of variance on these data yielded a statistically significant main effect for network, with $F(4, 80) = 4.21$, $p = .004$. As can be seen from the table, the programs on PBS and The Learning Channel had a statistically significantly smaller number of camera edits per segment than did the programs on the commercial networks and the Disney Channel. Nickelodeon fell in-between and did not differ significantly from any other channel in frequency of camera edits.

The third column of Table 3 presents the number of related shifts per program segment. *Bill Nye the Science Guy*, thanks primarily to a quickly edited music video clip, had twice as many related scene shifts (110) as the second-ranked program. Rounding out the top five were action adventure cartoons on commercial networks: *Roger Ramjet* (54), *Street Sharks* (53), *Sailor Moon* (35), and *Speed Racer* (31). Six programs had fewer than three related scene shifts: *All That* (0), *Lamp Chop's Play Along* (1), *Adventures in Wonderland* (2), *Barney* (2), *Blue's Clues* (2), and *Donald Duck* (2).

Table 5 presents the mean scores for related scene shifts by network. The analysis of variance for these data failed to reach acceptable levels of statistical significance, with $F(4, 80) = 1.70, p = .16$.

The fourth column of Table 3 presents the data for unrelated scene shifts. Three programs with magazine formats had the most unrelated scene shifts: *Bill Nye the Science Guy* (7), *Kablam!* (6), and *Beetlejuice* (4). Fifty-eight of the 85 programs (68.2%) did not have any unrelated scene shifts in the 5-minute blocks examined.

Table 6 presents the mean scores and other statistical information associated with the analysis of variance performed by network. The resulting *F*-ratio failed to reach acceptable levels of statistical significance ($F < 1$). The large number of programs with no unrelated scene shifts obviously contributed to inflated error variance.

The fifth column of Table 3 presents the data for auditory changes per program segment. The top four programs in terms of frequency of auditory changes were exhibited by Nickelodeon: *Beetlejuice* (144), *Clarissa Explains It All* (128), *Blue's Clues* (112), and *All That* (112). The three programs with the lowest number of auditory changes were on PBS: *Storytime* (20), *Sesame Street* (25), and *Mister Rogers' Neighborhood* (25).

Those differences are also reflected in Table 7, which presents the differences in auditory changes by network. The analysis of variance was statistically significant, with $F(4, 80) = 4.09, p = .005$. Subsequent tests revealed that only the two extreme networks—Nickelodeon as the heavy user and PBS as the light user—were statistically different in their use of auditory changes.

The data for active motion are presented in column 6 of Table 3. Nine of the top 10 programs in terms of percentage of active motion were action adventure cartoons. The top five were: *Power Rangers* (51%), *Godzilla* (34%), *Speed Racer* (32%), *Action Man* (30%), and *Jonny Quest* (30%). Commercial networks presented all of these programs. In contrast, for the 12 programs in which action motion was detected in 1% of less of the 5-minute block tested, seven were on PBS programs (*Kratt' Creatures, Reading Rainbow, Sesame Street, Where in Time Is Carmen San Diego?, Lamb Chop's Play Along,* and *Storytime*).

As might be anticipated from these findings, the analysis of variance by network for active motion resulted in a statistically significant *F*-ratio ($F(4, 80) = 6.64, p < .001$). Table 8 presents the mean scores and other statistical information associated with the main effect for network. The Learning Channel, PBS, and Nickelodeon were all statistically significantly different from the commercial networks.

The data for active music are presented in the seventh column of Table 3. Four programs had active music in more than 90% of the segments examined: *Adventures of Ariel, Godzilla, Looney Tunes,* and *Tiny Tunes.* In marked contrast, five programs had active music in less than 10% of their segments: *Reading Rainbow, Rocky and Bullwinkle, All That, Pappyland,* and *Speed Racer.*

Table 9 presents that data for active music by network. The analysis of variance yield a statistically significant main effect for network, with $F(4, 80) = 2.71, p = .036$. PBS had significantly less active music per show than the commercial networks or Disney.

The final column of Table 3 presents the data for active talking. The top five programs, with nearly nonstop dialogue, were: *Allegra's Window* (98%), *Storytime* (98%), *Puzzle Place* (97%), *Where in Time Is Carmen San Diego?* (96%), and *Sesame Street* (95%). In contrast, *Tom & Jerry* (12) and *Looney Tunes* (15%) were all action and not much talk.

Table 10 presents the results of the analysis of variance for active talking by network. That analysis failed to yield a statistically significant main effect for network ($F(4, 80) = 1.31, p = .30$).

Pacing Indices

Table 11 presents the program-pacing index for all 85 programs examined, ordered from the highest score to the lowest. Again, identified by asterisks in that table are those children's programs that are curriculum-based. In other words, those programs have educational goals and are produced to accomplish a "lesson plan." One program—*Bill Nye the Science Guy*—is somewhat of an outlier, with a pacing index of 56.90. As previously explained, the segment selected by random procedure proved to be an aberration for this program, because it contained a video montage, which appears to be quite atypical. At the other end of the spectrum are two PBS programs. The notoriously slow-paced *Mister Rogers' Neighborhood* has a pacing index of 14.95, and *Storytime* is almost as slow-paced (15.75). Also noteworthy is that *Sesame Street*, which has often been maligned for its fast pace, actually is very slow-paced (24.80).

Figure 1 presents the pacing indices for all 85 programs that were content analyzed. As can be seen, these data approximate a normal curve, but the *Bill Nye* segment analyzed truly is an outlier.

Table 12 presents the overall pacing index data analyzed by network. The analysis of variance performed on these data revealed a statistically significant difference in pacing by network, with $F(4, 80) = 3.99, p = .005$. Programs presented on The Learning Channel and PBS were found to be significantly slower paced overall than programs presented on the commercial networks. Programs from Nickelodeon and the Disney Channel fall in between in terms of pace and appear to be highly similar. The relatively high standard deviation scores reported for PBS are derived largely from the aberrant *Bill Nye* episode examined.

Pacing in Curriculum-Based Programming

In order to examine any differences in pacing between curriculum-based versus non-curriculum guided programming, a *t*-test was conducted. The results were $t(83) = 2.79, p = .007$. The mean score for the 19 curriculum-based programs was 27.987; for non-curriculum based programming, the mean scores was 33.101. Children's television has evolved to the point where today's educationally oriented programs are less fast-paced than their less educational counterparts.

Discussion

Although American children's television may not feature a rival to the Japanese program *Pokemon*, it does provide some fast-paced programming. But that is only a portion of the story; it also provides some slow-paced programming. Moreover, for the most part, fast- versus slow-paced children's programming appears to be qualitatively different—as well as quantitatively different on the pacing indices examined.

In general, the commercial networks present the bulk of the very rapidly paced programming. Much of that programming comes in the form of cartoons. In fact, 9 of

the 15 fastest paced programs we examined were action-adventure cartoons, like *Street Sharks, Roger Ramjet, Power Rangers, Spiderman, Action Man*, and the like. Their very names connote fast-paced action, and the programs seem to deliver what they promise.

On the other hand, those networks devoted primarily to educational programming—PBS and The Learning Channel—present very slow-paced programs. The differences between curriculum-based and other programming are extremely telling. Children's television programmers apparently have decided that children need time to process, absorb, and reflect on their educational messages if such program is to reach its full potential.

Other program providers, like Nickelodeon, clearly appear to have adopted different "formal features" for different types of programming. The Nick Jr. preschool block obviously features a great deal of slow-paced programming, like *Blue's Clues*, although *Gullah Gullah Island* clearly is a notable exception to that rule. On the other hand, Nickelodeon's entertainment-oriented, magazine-formats shows, such as *Kablam!* (ranked 2nd overall) and *Weinerville* (10th), are designed to have a sizzling pace and special effects galore.

Of particular interest should be the pacing scores from the much-maligned *Sesame Street*. Of the 85 programs analyzed, *Sesame Street's* overall pacing index of 24.80 ranked it 77th, making it one of the slowest paced programs examined. On only one of the pacing criteria employed, active talking, did *Sesame Street* rank high. On the other criteria examined, however, *Sesame Street* ranked among the slowest programs—74th in camera edits, 83rd in auditory changes, 70th in related shifts, 76th in active motion, and 76th in active music. These findings clearly run counter to claims from Singer

(1980), Healy (1993), and others that *Sesame Street* is revved-up and frenetic. We have no evidence that it was not hyperkinetic in its earlier iterations—although little systematic empirical evidence was typically offered to support such contentions—but current evidence indicates that the golden yardstick by which other children's educational programming is measured now provides a relatively staid example of the democratic art of children's television programming.

References

Anderson, D. R., Levin, S. R., & Lorch, E. P. (1977). The effects of TV program pacing on the behavior of preschool children. *Audio Visual Communication Review, 25,* 159-166.

Bryant, J. (October, 1992). *TV and attention span: Effects of different formats.* Paper presented to Department of Health and Human Services, Administration for Children and Families, conference proceedings of Television and the Preparation of the Mind for Learning: Critical Questions on the Effects of Television on the Developing Brains of Young Children, Washington, DC: Department of Health and Human Services: Research on Attention and Comprehension.

Bryant, J., Alexander, A., & Bryant, D. (1983). Learning from educational television programmes. In M. J. A. Howe (Ed.), *Learning from television* (pp. 1-30). London: Academic Press.

Cheers & Jeers. (January 17, 1998). *TV Guide*, 12.

Cornachio, D. (1998, March 14). Parents' guide to kids' TV: Smart shows. *TV Guide*, pp. 20-24.

Fisch, S. M., Truglio, R. T., & Cole, C. F. (1999). The impact of *Sesame Street* on preschool children: A review and synthesis of 30 years' research. *Media Psychology*, 1, 165-190.

Geiger, S., & Reeves, B. (1993). The effects of scene changes and semantic relatedness on attention to television. *Communication Research, 20*, 155-175.

Halpern, W. (1975). Turned-on toddlers. *Journal of Communication, 25*, 66-70.

Healy, J. (1990). *Endangered minds: Why our children don't think.* New York: Simon and Schuster.

Huston, A. C., Wright, J. C., Wartella, E., Rice, M. L., Watkins, B. A., Campbell, T., & Potts, R. (1981). Communicating more than content: Formal features of children's television programs. *Journal of Communication, 31*(3), 32-48.

Katz, R. (1998, June 17). Competition Nick'd: Cabler beats Big 3 for kids' Sunday ratings. *Daily Variety*, p. 25.

Kiesewetter, J. (1998, July 6). TV's Big 3 should worry about future. *The Cincinnati Enquirer*, p. C1.

Lang, A., Geiger, S., Strickwerda, M., & Sumner, J. (1993). The effects of related and unrelated cuts on viewers' memory for television: A limited capacity theory of television viewing. *Communication Research, 20*, 4-29.

Lesser, G. S. (1974). *Children and television: Lessons from Sesame Street.* New York: Random House.

Mander, J. (1978). *Four arguments for the elimination of television.* New York: Morrow.

Meichenbaum, D., & Turk, D. (1972). Implications of research on disadvantaged children and cognitive training programs for educational television: Ways of improving *Sesame Street. Journal of Special Education, 6*, 27-41.

People's choice: Cable's top 25. (1998, July 13). *Broadcasting & Cable*, pp. 29, 42.

Postman, N. (1985). *Amusing ourselves to death.* New York: Penguin Books.

Schneider, M. (1999, March 8). Pax TV ratings a letdown: Analyst—Overall performance 'disappointing.' *Electronic Media*, pp. 19, 23.

Singer, J. (1980). The power and limitations of television: A cognitive-affective analysis. In P. H. Tannenbaum, (Ed.), *The entertainment functions of television* (pp. 31-65). Hillsdale, NJ: Erlbaum.

Smillie, B. (1997, December 18). Japan's fast-paced cartoons prompt question of safety. *The Tuscaloosa News*, p. D3.

Thirteen—WNET RTL series guides. (1995). New York: Big Feats! Entertainment.

Watt, J. H, & Krull, R. K. (1974). An information theory measure for television programming. *Communication Research, 1*, 44-68.

Watt, J. H., Jr., & Welch, A. J. (1983). Effects of static and dynamic complexity on children's attention and recall of televised instruction. In J. Bryant & D. R. Anderson (Eds.), *Children's understanding of television: Research on Attention and Comprehension* (pp. 35-68). New York: Academic.

Wilder, A. A. (1998). *Challenging the active minds of children: Blue's Clues curriculum guide.* New York: Nickelodeon.

Winn, M. (1977). *The plug-in drug: Television, children, and the family.* New York: Viking.

Tables

Table 1

Programs Chosen for Content Analysis and Their Starting Minute

(Asterisks Indicate Curriculum-Based Programs)

No.	Program	Network	Start
1	Action Man	Commercial Network	8
2	Adventures in Wonderland	Disney	8
3	Adventures of Pete and Pete	Nickelodeon	1
4	Adventures of Ariel/Little Mermaid	Disney	12
5	Aladdin	Disney	7
6	All That	Nickelodeon	15
7	Allegra's Window*	Nickelodeon	9
8	Alvin and the Chipmunks	Commercial Network	20
9	Amazing Animals	Disney	4
10	Animaniacs	Commercial Network	10
11	Are You Afraid of the Dark?	Nickelodeon	6
12	Arthur*	PBS	15
13	Bananas in Pajamas	Commercial Network	5
14	Barney*	PBS	2
15	Batman	Commercial Network	4
16	Beetleborgs	Commercial Network	15
17	Beetlejuice	Nickelodeon	4
18	Big Comfy Couch*	PBS	12
19	Bill Nye The Science Guy*	PBS	20
20	Blue's Clues*	Nickelodeon	9
21	Bobby's World	Commercial Network	1
22	Bugs and Daffy Show	Commercial Network	18
23	Busy World of Richard Scarry	Nickelodeon	7
24	Charlie Brown and Snoopy	Disney	4
25	Chicken Minute	The Learning Channel	13
26	Chip and Dale	Disney	2
27	Clarissa Explains it All	Nickelodeon	16
28	Dennis the Menace	Commercial Network	10
29	Donald Duck	Disney	11
30	Doug	Nickelodeon	19
31	Dragon Ball Z	Commercial Network	17
32	Duck Tales	Disney	3
33	Flintstones	Commercial Network	14
34	Garfield & Friends	Commercial Network	0
35	Godzilla	Commercial Network	16
36	Goof Troop	Disney	7
37	Gullah Gullah Island*	Nickelodeon	18
38	Gumby	Commercial Network	5
39	Hey Arnold	Nickelodeon	13

40	Inspector Gadget	Commercial Network	18
41	Iris the Happy Professor	The Learning Channel	15
42	Jetsons	Commercial Network	9
43	Jonny Quest	Commercial Network	9
44	Kablam!	Nickelodeon	12
45	Kratts' Creatures*	PBS	11
46	Lamb Chop's Play-Along*	PBS	20
47	Little Bear	Nickelodeon	14
48	Little Star	The Learning Channel	20
49	Looney Tunes	Commercial Network	9
50	Magic School Bus, The*	PBS	12
51	Mighty Max	Commercial Network	19
52	Mister Rogers' Neighborhood*	PBS	1
53	Muppet Babies	Nickelodeon	10
54	New Adventures of Pooh	Disney	11
55	Papa Beaver's Storytime	Nickelodeon	2
56	Pappyland	The Learning Channel	1
57	Power Rangers	Commercial Network	12
58	Puzzle Place*	PBS	17
59	Reading Rainbow*	PBS	15
60	Real Monsters	Nickelodeon	19
61	Ren and Stimpy	Nickelodeon	14
62	Rocko's Modern Life	Nickelodeon	16
63	Rocky and Bullwinkle	Commercial Network	3
64	Roger Ramjet	Commercial Network	18
65	Rory and Me	The Learning Channel	9
66	Rugrats	Nickelodeon	15
67	Rupert*	PBS	2
68	Sailor Moon	Commercial Network	5
69	Scooby Doo	Commercial Network	6
70	Sesame Street*	PBS	1
71	Shining Time Station*	PBS	3
72	Simpsons, The	Commercial Network	7
73	Speed Racer	Commercial Network	15
74	Spiderman	Commercial Network	10
75	Storytime*	PBS	9
76	Street Sharks	Commercial Network	0
77	Tale Spin	Disney	7
78	Tiny Toons	Nickelodeon	16
79	Tom and Jerry	Commercial Network	9
80	Ultra Force	Commercial Network	15
81	Underdog	Commercial Network	7
82	Weinerville	Nickelodeon	20
83	Where Is Carmen San Diego?*	PBS	15
84	Wisdom of the Gnomes	Commercial Network	19
85	Wishbone*	PBS	7

Table 2

Weightings of Pacing Criteria

Criteria	Score	Weight	New Score
Unrelated shifts	57 (normalized)	20%	11.40
Related shifts	32 (normalized)	15%	4.80
Camera cuts	81 (normalized)	15%	12.15
Auditory changes	100 (normalized)	10%	10.00
Active motion	24 (actual %)	20%	4.80
Active talking	18 (actual %)	10%	1.80
Active music	35 (actual %)	10%	3.50
			48.45

Table 3

Programs' Pacing Indices and Scores in the Individual Pacing Criteria

Program	Pacing Index	Camera Edits (#)	Related Shifts (#)	Unrelated Shifts (#)	Auditory Changes (#)	Active Motion (%)	Active Music (%)	Active alking (%)
Action Man	39.10	88	29	0	51	30	87	38
Adventures in Wonderland	25.35	57	2	0	30	4	50	86
Adventures of Pete and Pete	32.85	36	30	2	51	1	50	89
Adventures of Ariel (Mermaid)	36.00	89	12	0	51	14	95	52
Aladdin	35.55	75	4	0	78	4	89	86
Allegra's Window	28.50	33	3	0	70	7	70	98
All That	30.65	47	0	2	102	5	5	92
Alvin & the Chipmunks	32.25	60	8	0	50	7	89	84
Amazing Animals	29.30	53	23	0	93	2	31	82
Animaniacs	31.45	37	29	1	66	10	84	42
Are You Afraid of the Dark?	16.50	25	12	0	30	1	45	43
Arthur	31.10	61	5	2	60	1	28	82
Bananas in Pajamas	28.55	16	5	1	79	4	69	94
Barney	31.00	60	2	0	63	10	63	90
Batman	25.85	60	14	0	61	12	38	45
Big Bad Beetleborgs	35.90	63	12	0	84	15	80	80
Beetlejuice	45.75	40	12	4	144	12	67	76
Big Comfy Couch	27.05	36	6	0	60	19	35	94
Bill Nye the Science Guy	56.90	16	110	7	51	16	57	71
Blue's Clues	21.85	25	2	0	112	3	17	77
Bobby's World	37.55	50	17	3	62	24	32	69
Bugs & Daffy	29.85	24	18	3	73	28	75	56
Busy World of Richard Scarry	42.20	58	15	3	62	13	73	86
Charlie Brown	33.10	32	13	2	33	10	82	82
Chicken Minute	30.30	64	4	0	58	7	55	92
Chip & Dale	35.50	91	10	0	72	19	59	58
Clarissa	29.30	38	4	0	128	1	55	84
Dennis the Menace	33.85	48	8	1	65	11	80	81
Donald Duck	34.30	68	2	0	74	24	70	69
Doug	33.55	51	11	0	83	13	68	92
Dragon Ball Z	40.80	99	19	0	47	27	63	84
Duck Tales	29.30	51	10	0	63	11	55	82
Flintstones	32.75	44	6	0	96	9	85	84
Garfield	30.70	46	18	0	37	13	89	73
Godzilla	40.25	48	23	0	75	34	95	84
Goof Troop	31.60	59	6	0	72	9	74	78
Gullah Gullah Island	37.00	65	12	0	80	18	70	94
Gumby	27.05	48	8	0	65	18	54	53
Hey, Arnold!	29.20	60	22	0	60	2	43	83
Inspector Gadget	34.00	78	11	0	59	10	88	59
Iris, the Happy Professor	25.15	40	3	0	44	0	69	87
Jetsons	26.95	46	10	0	87	3	28	93
Jonny Quest	35.40	67	25	0	85	30	34	66
Kablam!	50.30	55	21	6	92	8	63	77
Kratts' Creatures	26.95	46	30	0	33	1	70	65

Program	Pacing Index	Camera Edits (#)	Related Shifts (#)	Unrelated Shifts (#)	Auditory Changes (#)	Active Motion (%)	Active Music (%)	Active alking (%)
Lamb Chop's Play-Along	28.70	37	1	2	45	0	48	93
Little Bear	28.45	68	3	1	57	8	41	53
Little Star	25.15	23	9	0	66	14	44	87
Looney Tunes	29.85	8	19	1	33	8	93	15
Magic School Bus	28.95	58	5	0	83	14	32	77
Mighty Max	28.20	63	14	0	58	16	49	47
Mister Rogers' Neighborhood	14.95	12	3	0	25	5	47	53
Muppet Babies	37.80	74	18	0	75	15	71	90
New Advntrs. of Winnie Pooh	31.85	54	10	2	48	7	30	89
Papa Beaver's Storytime	32.55	53	18	0	77	13	57	86
Pappyland	19.90	35	8	0	57	2	4	88
Power Rangers	41.90	71	12	0	57	51	77	77
Puzzle Place	23.10	17	3	0	60	5	34	97
Reading Rainbow	20.60	46	9	0	39	1	9	87
Real Monsters	30.20	86	9	0	65	3	28	82
Ren & Stimpy	31.00	49	10	1	64	10	64	67
Rocko's Modern World	26.75	35	18	0	64	6	49	86
Rocky & Bullwinkle	33.75	50	16	3	83	4	6	82
Roger Ramjet	43.25	98	54	1	66	16	18	88
Rory & Me	26.25	29	13	2	50	5	72	26
Rugrats	27.45	66	8	0	42	1	45	89
Rupert	35.55	80	8	0	61	20	80	63
Sailor Moon	29.20	40	35	0	35	2	74	82
Scooby Doo	30.60	46	18	0	95	11	43	82
Sesame Street	24.80	29	5	2	25	1	25	95
Shining Time Station	23.35	33	18	0	40	9	43	71
Simpsons	30.25	64	12	0	63	7	54	78
Speed Racer	27.95	53	31	0	66	32	1	47
Spiderman	40.25	98	26	0	26	28	75	72
Storytime	15.75	1	24	0	20	0	11	98
Street Sharks	45.95	59	53	2	54	27	57	92
Talespin	36.25	78	10	0	68	14	73	84
Tiny Toons	40.70	55	6	2	78	17	92	79
Tom & Jerry	30.40	23	12	3	40	21	85	12
Ultra Force	41.95	91	18	0	64	25	80	85
Underdog	44.65	100	23	3	59	14	30	80
Weinerville	41.80	77	12	2	94	17	60	69
Where... Is Carmen San Diego?	27.55	44	6	0	62	1	61	96
Wisdom of the Gnomes	32.40	78	11	0	71	7	43	86
Wishbone	28.10	78	4	0	54	8	18	86

Table 4

Summary Statistics of Networks' Frequencies of Camera Edits

Network	*n*	*M*	*s*
Disney	11	64.27[b]	17.82
Commercial Networks	31	59.87[b]	22.85
Nickelodeon	23	51.47[ab]	19.61
PBS	15	38.27[a]	21.14
The Learning Channel	5	38.20[a]	15.77
Total	85	53.08	22.31

Table 5

Summary Statistics of Networks' Frequencies of Related Scene Shifts

Network	*n*	*M*	*s*
Commercial Networks	31	19.19	11.97
PBS	15	15.40	27.53
Nickelodeon	23	11.87	7.45
Disney	11	9.27	5.97
The Learning Channel	5	7.40	4.04
Total	85	14.56	14.62

Note. Differences among the means were not significant.

Table 6

Summary Statistics of Networks' Frequencies of Unrelated Scene Shifts

Network	*n*	*M*	*s*
Nickelodeon	23	1.04	1.58
PBS	15	.87	1.88
Commercial Networks	31	.68	1.14
The Learning Channel	5	.40	.89
Disney	11	.36	.81
Total	85	.75	1.37

Note. Differences among the means were not significant.

Table 7

Summary Statistics of Networks' Frequencies of Auditory Changes

Network	*n*	*M*	*s*
Nickelodeon	23	74.96[b]	27.92
Commercial Networks	31	63.84[ab]	17.03
Disney	11	62.00[ab]	19.44
The Learning Channel	5	55.00[ab]	8.37
PBS	15	48.00[a]	17.61
Total	85	63.29	22.16

Table 8

Summary Statistics of Networks' Percentages of Active Motion

Network	*n*	*M*	*s*
Commercial Networks	31	17.61[b]	11.43
Disney	11	10.73[ab]	6.71
Nickelodeon	23	8.78[a]	6.15
PBS	15	6.07[a]	6.33
The Learning Channel	5	5.60[a]	5.41
Total	85	11.59	9.65

Table 9

Summary Statistics of Networks' Percentages of Active Music

Network	*n*	*M*	*s*
Disney	11	64.36[b]	21.62
Commercial Networks	31	60.06[b]	26.63
Nickelodeon	23	56.78[ab]	21.49
The Learning Channel	5	48.80[ab]	27.45
PBS	15	38.73[a]	18.97
Total	85	55.31	24.43

Table 10

Summary Statistics of Networks' Percentages of Active Talking

Network	*n*	*M*	*s*
PBS	15	83.67	13.55
Disney	11	77.09	12.17
Nickelodeon	23	76.96	18.99
The Learning Channel	5	76.00	28.03
Commercial Networks	31	70.81	19.59
Total	85	75.86	18.38

Note. Differences among the means were not significant.

Table 11

Programs' Pacing Index (Asterisks Indicate Curriculum-Based Programs)

56.90	*Bill Nye the Science Guy**	30.65	*All That*
50.30	*Kablam!*	30.60	*Scooby Doo*
45.95	*Street Sharks*	30.40	*Tom & Jerry*
45.75	*Beetlejuice*	30.30	*Chicken Minute*
44.65	*Underdog*	30.25	*Simpsons*
43.25	*Roger Ramjet*	30.20	*Real Monsters*
42.20	*Busy World of Scarry*	29.85	*Bugs & Daffy*
41.95	*Ultra Force*	29.85	*Looney Tunes*
41.90	*Power Rangers*	29.30	*Amazing Animals*
41.80	*Weinerville*	29.30	*Clarissa*
40.80	*Dragon Ball Z*	29.30	*Duck Tales*
40.70	*Tiny Toons*	29.20	*Hey, Arnold!*
40.25	*Godzilla*	29.20	*Sailor Moon*
40.25	*Spiderman*	28.95	*Magic School Bus**
39.10	*Action Man*	28.70	*Lamb Chop's Play-Along**
37.80	*Muppet Babies*	28.55	*Bananas in Pajamas*
37.55	*Bobby's World*	28.50	*Allegra's Window**
37.00	*Gullah Gullah Island**	28.45	*Little Bear*
36.25	*Talespin*	28.20	*Mighty Max*
36.00	*Adventures of Little Mermaid*	28.10	*Wishbone**
35.90	*Big Bad Beetleborgs*	27.95	*Speed Racer*
35.55	*Aladdin*	27.55	*Where Is...San Diego?**
35.55	*Rupert**	27.45	*Rugrats*
35.50	*Chip & Dale*	27.05	*Big Comfy Couch**
35.40	*Jonny Quest*	27.05	*Gumby*
34.30	*Donald Duck*	26.95	*Jetsons*
34.00	*Inspector Gadget*	26.95	*Kratts' Creatures**
33.85	*Dennis the Menace*	26.75	*Rocko's Modern World*
33.75	*Rocky & Bullwinkle*	26.25	*Rory & Me*
33.55	*Doug*	25.85	*Batman*
33.10	*Charlie Brown*	25.35	*Adventures in Wonderland*
32.85	*Adventures of Pete and Pete*	25.15	*Iris, the Happy Professor*
32.75	*Flintstones*	25.15	*Little Star*
32.55	*Papa Beaver's Storytime*	24.80	*Sesame Street**
32.40	*Wisdom of the Gnomes*	23.35	*Shining Time Station**
32.25	*Alvin & the Chipmunks*	23.10	*Puzzle Place**
31.85	*New Adventures of Pooh*	21.85	*Blue's Clues**
31.60	*Goof Troop*	20.60	*Reading Rainbow**
31.45	*Animaniacs*	19.90	*Pappyland*
31.10	*Arthur**	16.50	*Are You Afraid of Dark?*
31.00	*Barney**	15.75	*Storytime**
31.00	*Ren & Stimpy*	14.95	*Mr. Rogers' Neighborhood**
30.70	*Garfield*		

Table 12

Summary Statistics of Networks' Overall Pacing Index

Network	*n*	*M*	*s*
Commercial Networks	31	34.29[b]	5.78
Nickelodeon	23	33.03[ab]	7.66
Disney	11	32.55[ab]	3.48
PBS	15	27.26[a]	9.56
The Learning Channel	5	25.35[a]	3.71
Total	85	31.86	7.41

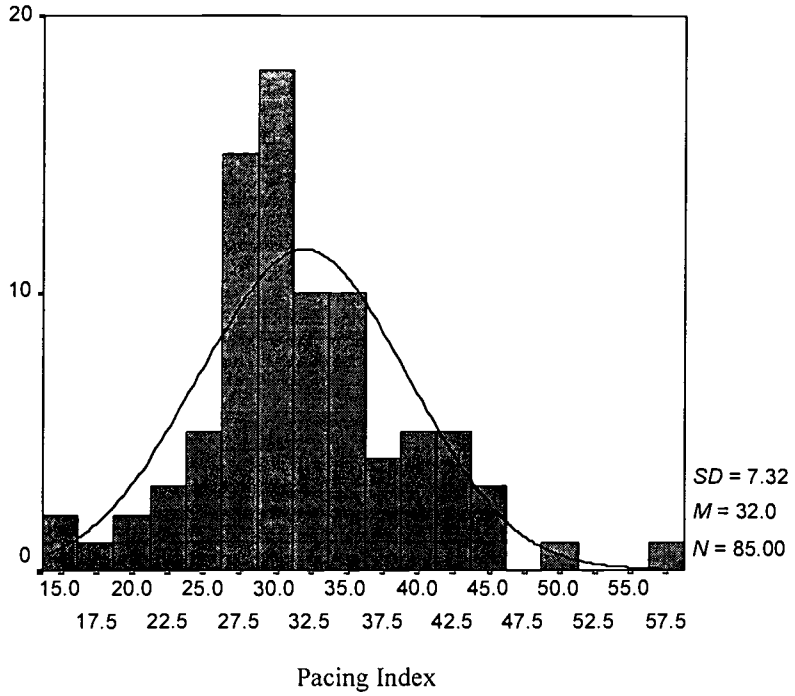

Figure 1. Pacing indices of the 85 programs content analyzed.

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