The Effects of Television Form and Violent Content on Boys' Attention and Social Behavior

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An experiment is reported that examined the independent effects of television content (violence) and television formal features (action level) on children's attention to programs and their postviewing social behavior. Pairs of preschool boys participated in two experimental sessions in which they saw animated and live television programs that varied in violent content (high or low) and formal features (high or low action level). They then played with toys that contained cues for either aggressive or prosocial interaction. Rapid character action facilitated visual attention to the programs; violent tv content did not facilitate attention. On measures of social behavior, strong effects of toy cues were found independently of television treatment effects. Aggressive toys produced aggressive behavior, and prosocial toys produced prosocial behavior; these patterns included some nonspecific, generalized influences in addition to direct demands of the play materials. Violent tv content led to changes in subjects' style of interaction and was also associated with increases in some prosocial behaviors. Television action level had no systematic effects on subjects' behavior. Results are discussed within the theoretical frameworks of observational learning and general arousal. Implications for children's television programming are also discussed. © 1986 Academic Press, Inc.

The effects of television content, particularly violence, on viewers' behavior have been investigated extensively in the past two decades.

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There is a large body of evidence showing that children and adults can learn patterns of social behavior by observing actions of characters on television (Pearl, Bouthilet, & Lazar, 1982; Stein & Friedrich, 1975).

Recent new directions in television research have been concerned with the forms of the medium. Formal features of television are the auditory and visual production and editing techniques used to present content (Wright & Huston, 1983). Although formal features are in principle independent of content, existing children’s programs often associate violent content with high rates of physical action, animation, rapid changes of scene and character, and high levels of noisy sound effects (Huston et al., 1981). This “natural” confound of form and content raises questions about the relative contribution of content and form in earlier studies showing that violent programs influenced attention and/or aggressive behavior. The present study was designed to investigate the separate effects of violent content and formal features on young children’s attention and social behavior.

Attention to Television

Much of the research on television forms has been concerned with attention and comprehension rather than with social behavior. Features that elicit and maintain young children’s attention include high action (physical movement by characters), animation, sound effects, visual tricks, child dialog, and humor (Alwitt, Anderson, Lorch, & Levin, 1980; Anderson & Lorch, 1983; Bryant, Zillmann, & Brown, 1983; Huston & Wright, 1983).

Although these formal features have reliable effects on children’s attention in nonviolent programs, many television producers continue to believe that violence is an important component of the “action” package that will hold young audiences. Surprisingly, there are few empirical tests of the influence of violent content on children’s attention, and only one in which there was an effort to separate the effects of formal features from violent content. In that study (Huston-Stein, Fox, Greer, Watkins, & Whitaker, 1981) children saw one of three cartoons: high violence–high action level, low violence–high action, and low violence–low action. They attended to both high action programs more than to the low action program, and there was no effect of violence. These findings were suggestive, but not conclusive. Only one program of each type was included, and no program containing high violence and low action was used (because one could not be found on commercial broadcasts).

The present study was designed to investigate the relative contribution of violent content and high action to children’s attention using a broader sample of programs than in previous studies and including all four possible combinations of action and violence. Both animated and live programs were included to increase the generality of the findings. Animated programs
typically have higher levels of formal features such as pace, variability, and visual and auditory features than live programs, and they often contain humor (Huston et al., 1981). Animation may also serve as a signal that the program is intended for children, so children may expect its content to be interesting and comprehensible (Anderson & Lorch, 1983). Therefore, it is important to determine whether the independent variables of interest—violent content and high action—affect attention similarly for both animated and live productions.

**Social Behavior**

The second purpose of the present study was to examine the effects of TV action and violence on children’s social behavior as well as the influence of environmental factors on aggressive and prosocial interaction. Two theoretical models have been proposed. According to observational learning theory, viewing violent content can lead to imitative aggression, and observing nonviolent high action may stimulate high levels of activity. Imitative aggression has been repeatedly demonstrated (Pearl et al., 1982; Stein & Friedrich, 1975). Increases in activity level after viewing non-aggressive, highly active models has also been demonstrated in some studies (Bandura, Ross, & Ross, 1963; Christy, Gelfand, & Hartmann, 1971). Observational learning theory generally predicts some isomorphism between the observed television attribute and the behavior manifested by the observer.

Arousal theory provides another model for the effects of both content and form on behavior. General arousal is conceptualized as an activator that increases the intensity of any behavior; specific behaviors emitted are determined by environmental cues or individual predispositions (Mandler, 1975; Schachter, 1964; Zillmann, 1983). Considerable evidence demonstrates that residual arousal from a variety of television content can be carried over into subsequent situations, where it may activate or intensify a wide range of behavioral responses. Unlike observational learning, the topography of the behavioral outcome may be quite unrelated to the content of the original source of arousal (e.g., Cantor, Zillmann, & Bryant, 1975; Mueller & Donnerstein, 1981; Tannenbaum & Zillmann, 1975).

Increases in general arousal may also result from formal features that make perceptual or cognitive demands or that have been previously associated with arousing thematic content such as violence (Bryant & Zillmann, 1979; Krull & Watt, 1973). One study demonstrated that children were more aggressive after seeing nonviolent commercial advertisements with high rates of action, pace, and visual tricks than after seeing commercials with low rates of those features (Greer, Potts, Wright, & Huston, 1982). However, in another investigation, there were nonsignificant differences in aggression following high action or low action cartoons (Huston-
Since no increases in subjects' activity levels were reported in either study, it appears that character action and associated formal features sometimes serve as an arousal source that activates aggressive behaviors cued by play materials, rather than as a model for direct imitation.

An arousal model has also been proposed by critics of rapidly paced educational programs such as Sesame Street (Singer, 1980). However, one comparison of high- and low-paced versions of Sesame Street showed no differences in nonsocial aggressive behavior or activity level as a function of pace (Anderson, Levin, & Lorch, 1977).

In short, the evidence concerning possible arousal and behavioral effects of formal features such as high action or high pace is at present mixed and inconclusive. Because such production features are often used to gain and hold child audiences, there are important applied as well as theoretical reasons for delineating their effects on social behavior.

The arousal process depends on situational cues or individual predispositions for direction of arousal-activated behaviors. In previous studies of tv form and viewers' behavior, a variety of thematic toys were available in order to provide opportunities for both aggressive and cooperative play, and for both high and low activity levels. In the present study, situational cues were manipulated systematically by providing toys that would elicit either aggressive or prosocial behavior.

According to arousal theory, if television action and/or violence is arousing, then children should show higher rates of whatever behavior is cued by the toys available. That is, they should show more prosocial behavior with prosocial cues and more aggressive behavior with aggressive cues after they see high violence or high action than after less arousing television programs. Observational learning theory also leads to a prediction of increased aggression after seeing violent content, particularly when aggressive cues are available, but not to a prediction of increased prosocial behavior.

In addition to predictions based on arousal theory, theoretical treatments of social behavior in general also emphasize the role of situational variables in directing individual behavior (e.g., Mischel, 1977). Most studies of effects of television on behavior have not examined those influences under different situational conditions that may be supportive or nonsupportive of the behavior patterns of interest. In this study, it was possible to compare the effects of tv content and form under different situational conditions, in addition to examination of the relative magnitude of influence of both tv program variables and environmental variables.

Sex Differences

Sex differences in aggression occur reliably in investigations of preschool children's behavioral responses to television violence (Friedrich & Stein,
1973), as well as in their general patterns of social interaction (Maccoby & Jacklin, 1974). In addition, some studies suggest that boys are more attentive to cartoons and violent content than girls (e.g., Friedrich & Stein, 1973; Wright et al., 1984). For these reasons, only boys were selected for the present study, so that patterns of visual attention and behavior known to be influenced by violent content and arousing formal features could be most readily observed. Positive findings, if obtained, would indicate a replication with females.

**METHOD**

**Overview**

Television programs representing the factorial combinations of high and low violent content with high and low action level were shown to pairs of preschool boys in two experimental sessions. In one session, they saw an animated program, and in the other session, they saw a live program representing the same levels of action and violence. Visual attention to the programs was recorded. Postviewing social behavior was recorded in the presence of aggressively cued toys in one session and prosocially cued toys in the other session.

**Subjects**

Subjects were 64 boys, aged 39 to 75 months, with a mean age of 55 months. They were recruited from a university preschool and two private day-care establishments and were predominately white, middle-class children. They participated in the study in pairs of similar age who were acquainted with each other and were randomly assigned to experimental conditions. Different age levels and preschool populations were distributed about equally among the experimental conditions. Although the age range included might indicate different developmental levels in some areas, previous studies have not demonstrated age differences in behavioral responses to tv content or form within this general age group (e.g., Liebert & Baron, 1972). However, in the event that unforeseen age effects might be present, this variable was statistically controlled as a covariate in the data analyses.

**Apparatus**

The data were collected in three experimental settings: a university research room, an unused school classroom, and a mobile research trailer. The boys’ television viewing and postviewing play behavior was recorded on videotape with a concealed camera. Television programs were shown on a television monitor in the experimental room.

**Stimulus Programs**

Eight television programs were selected as stimuli, representing the factorial combinations of high and low violence and high and low action.
Each of the four violence × action cells was represented by one animated cartoon and one live program. All of the programs were recorded from commercial broadcasts and were intended primarily for child audiences. Selection of programs was based on the scoring system for formal features and content variables described by Huston et al. (1981). Violence was defined as the incidence of verbal and physical aggression between television characters. This included derogation, threat of injury, and direct physical assault on another character. Action was defined as the presence of characters moving at human running speed or faster. Trained observers recorded the frequency of violence and duration of rapid action on a Datamyte 900 electronic event recorder. Interobserver reliability for each feature was above 80% agreement; interobserver agreement occurred when two scorers recorded the onset or offset of a target event within 4.8 s of one another. Summaries of the violence and action levels in each program are presented in Table 1.

All programs lasted approximately 5 min. All but two were originally longer than 5 min and were edited so that key scenes and major plot resolution were portrayed. An effort was made to control any differences in plot continuity by informing all subjects at the outset that they were going to see segments from a tv show, and possibly not a complete program. The major themes and titles of these stimulus programs are listed below:

1. High violence/high action/animated: a buzzard attempts to catch and eat a worm, but all plans backfire (Blast-Off Buzzard).

<table>
<thead>
<tr>
<th>Format</th>
<th>Animated</th>
<th>Live</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character action</td>
<td>Violent content</td>
<td>Character action</td>
</tr>
<tr>
<td>Action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>38.8</td>
<td>16.3</td>
</tr>
<tr>
<td>Low</td>
<td>7.8</td>
<td>15.9</td>
</tr>
<tr>
<td>Violence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>23.3</td>
<td>28.9</td>
</tr>
<tr>
<td>Low</td>
<td>23.4</td>
<td>3.2</td>
</tr>
</tbody>
</table>

* Entries represent percentage of total tv program containing rapid character action defined as movement at human running speed or faster.
* Entries represent frequency of physical and verbal acts of aggression per 5 min of program time.
2. High violence/high action/live: a witch captures several friendly characters, who eventually escape and destroy her (*The Wizard of Oz*).

3. High violence/low action/animated: a cat repeatedly attempts to catch a caged bird and eat it and is repeatedly foiled (*Sylvester and Tweety*).

4. High violence/low action/live: Robin Hood and his men rescue a group of prisoners by killing their captors (*Once Upon a Classic*).

5. Low violence/high action/animated: several familiar cartoon characters compete in a high-speed motorcycle race (*Laff-O-Lympics*).

6. Low violence/high action/live: a flying superhero rescues a skydiver when his parachute fails to open (*Shazam*).

7. Low violence/low action/animated: a giant friendly ape enters a talent show (*Grape Ape*).

8. Low violence/low action/live: teenage astronauts complete a successful science mission (*Space Academy*).

**Play Session Materials**

Nine toys were provided for play in the postviewing sessions. Three were designed to present aggressive cues: an inflatable Bobo doll in the likeness of a popular space villain, mechanical boxing robots, and small *Star Wars* characters and a rocket ship. Three were designed to present prosocial cues: a foam rubber basketball and hoop, an illuminating peg board, and an ambulance and paramedic characters. Two of the prosocial toys were specially modified to facilitate cooperation. The basketball hoop was attached to a 3-ft pole which would not stand unsupported, necessitating that one player held it while the other threw the ball. The lighting peg board was illuminated by a squeeze bulb connected by a long tube to an air pressure switch, such that one player needed to squeeze the bulb while the other inserted the pegs. These modifications were described to the children when the toys were presented. The remaining three were nonthematic toys which could easily be used in either aggressive or prosocial play, depending on the context provided by instructions and other available toys: Velcro-covered balls and a Velcro target, interconnecting blocks (*Bristle Blocks*), and small Playskool characters with a plane and bus. Within each content type, one toy entailed gross motor activity, one required fine motor activity, and one was imaginative.

**Design and Procedure**

Television violence, television action, and the presentation order of program were between-group factors, and animation was a within-group factor for the attention measure. Television violence, television action, and presentation orders of program and cuing session were between-group factors, and thematic cuing was a within-subject factor for the social behavior measures.
Each pair of children was assigned to see two programs classified in one level of violence and action in two sessions about 1 week apart. They saw the animated program in their assigned condition in one session and the live program in the other session. Following each television program, they were given a 12-min play session; in one play session, they received prosocial-cue toys with the nonthematic toys. In the other session they received aggressive-cue toys with the same nonthematic toys. Within each play session, they were given separate opportunities to play with the gross motor, fine motor, and imaginative fantasy toys for 4 min each. The reason for this method of toy presentation was to provide some variety of materials in the play sessions while controlling for differential attractiveness of the toys. The orders for animated vs live programs and prosocial vs aggressive toy cues were counterbalanced across experimental sessions. Within sessions, the order of gross motor, fine motor, and fantasy toys was varied randomly.

Dependent Measures

Visual attention to the television monitor during the program presentations was recorded from videotapes using a Datamyte 900. The dependent measure used in the analysis was the total duration of visual orientation to the television screen expressed as a percentage of program time. Interobserver agreement using this system averages greater than 90%, where agreement is defined as a change in fixation (on or off screen) recorded by both scorers within 4.8 s of each other (see Calvert, Huston, Watkins, & Wright, 1982).

Social behavior was scored from the videotapes of the play sessions according to a preselected set of behavior categories. Three observers were trained to code the behavior categories using a checklist data sheet divided into 10-s intervals. Digital clock numerals were electronically superimposed on the videotapes, corresponding to the time segments on the data sheets. All behavior categories except activity level were scored as present or absent in each interval. They could be counted a maximum of 72 times in the 12-min play session. Activity level was scored on a 4-point scale, where 1 = little or no movement, 2 = stationery with gross limb movement, 3 = moving about the room at walking speed, and 4 = running. The highest level reached in each 10-s interval was recorded. The activity score used for analysis was the mean level averaged across all 72 intervals. The behavior definitions, along with product-moment correlations between observers' ratings were as follows:

1. Interpersonal aggression: physical attack or use of force or coercion toward the other child, or threat of physical attack or derogation or name calling (.79).

2. Object aggression: physical attack directed toward an inanimate object, such as the Bobo doll (.94).
3. Fantasy aggression: verbalizations, sounds, or gestures implying aggression between toy characters (.91).

4. Cooperation: both subjects working toward a common goal in play activity that has prescribed or implied rules for each participant (.99).

5. Turntaking: subjects play with a single toy in an alternating pattern, or exchange use of two toys in alternation (.96).

6. Helping/sharing: offering materials or efforts without prior request from other subject (.87).

7. Suggests rules/requests help: making suggestions regarding structure of play (e.g., rules for turntaking) or asking for aid or for sharing of toys in nonaggressive or nondemanding tone (.96).

8. Dyadic play: interacting in any way or acknowledging other subject’s presence (.99).

9. Activity level: rate of motion about the room (.92).

10. Imaginative fantasy: providing verbalizations or gestures indicating a fantasy theme, usually accompanying play with toy characters (.83).

11. Noncompliance: refusal to accommodate request from other child, either verbal or nonverbal (.95).

RESULTS

Measures from an individual subject were not considered independent of those from the other subject within a pair. To control for this non-independence, the unit of analysis became subject pair. For every dependent measure, the scores of the two children in a pair were summed and averaged, and the number of cases was therefore reduced to 32.

Attention

These data were subjected to a four-way analysis of variance including tv violence (2 levels), tv action (2), and order of presentation (2) as between-group factors and tv animation (2) as a repeated measure. Age in months was a constant covariate. The only significant effect on attention was that of tv action, $F(1, 23) = 17.87, p < .001$. High tv action elicited significantly more attention (89.6%) than low tv action (71.3%). The tv violence factor produced a nonsignificant difference, $F(1, 23) = 3.50$, n.s., although high-violence programs received slightly more attention (83.5%) than low-violence programs (75.5%). There were no effects of the animation factor or any interaction of factors.

Social Behavior

Preliminary analyses. Subjects’ scores were considered outliers if they represented standard scores more extreme than ±4.0. Five such data points were altered to conform to the maximum standard score. Those
data points came from five different subjects and each one represented a different dependent measure.

The different toys within each cuing session were selected to elicit a range of activity levels and fantasy themes. Subjects' activity levels and fantasy play were examined to assess the intended effects of those different toy types (i.e., gross motor, fine motor, fantasy). Means for the activity measure were 2.76, 1.49, and 1.86, for the gross motor, fine motor, and fantasy phases of the play session, respectively. Means for the fantasy measures were 1.35, 1.56, and 6.90, for the respective play session phases. One-way analyses of variance on the measures indicated highly significant effects of toy type: $F(2, 29) = 434.99$ for the activity scores, and $F(2, 29) = 82.59$ for the fantasy scores.

**Main analyses.** Effects of tv content and formal features and play setting materials were tested using repeated measures multivariate analyses of variance with univariate follow-up analyses. MANOVA procedures were performed on each of three categories of dependent measures. Set 1 represented prosocial behaviors and included helping, turntaking, cooperation, and suggests rules/requests. Set 2 represented aggressive behaviors, and included interpersonal aggression, object aggression, non-compliance, and fantasy aggression. In Set 3 were measures of activity level and overall dyadic interaction. A univariate analysis of variance was run on the imaginative fantasy measure. For each analysis, subject age in months was a constant covariate.

Because of the number of factors in the design, the number of dependent measures, and the number of cases, not all between-group factors could be included simultaneously in the MANOVA analyses. Only two 2-level factors could be included at the same time, because of the requirement that there be at least one more observation per cell than dependent measures being analyzed. This requirement was met when a $2 \times 2$ between-group design was employed in the analyses of the four prosocial measures or the four aggression measures.

Therefore, in order to assess the effects of all the between-group factors employed, the main hypothesis factors of tv violence and tv action were first tested, along with the repeated factor of cuing session. Then, after observing any significant multivariate $F$ values, univariate follow-up ANOVAs included those factors along with a four-level factor that represented the presentation orders of both program animation type and thematic cuing (i.e., animation + prosocial cues, then live + aggressive cues; animation + aggressive, live + prosocial; etc.).

**Prosocial behaviors.** Multivariate analyses of variance for the four prosocial variables indicated a significant main effect of cuing session, $F(4, 25) = 14.12, p < .001$. Follow-up univariate tests for each dependent variable demonstrated significant cuing effects for cooperation, $F(1, 16) = 112.65, p < .001$; turntaking, $F(1, 16) = 8.50, p < .01$; and rules/
requests, \( F(1, 16) = 5.90, p < .03 \). All of these behaviors occurred more frequently in the prosocial cue condition than in the aggressive cue condition. Means appear in Table 2. In addition to these main effects of cuing condition, an interaction of cuing and order was significant for the measure of cooperation, \( F(3, 16) = 4.38, p < .02 \). A Duncan's multiple range comparison \( (p < .05) \) on this set of means indicated that while virtually all cooperation occurred in the prosocial cue condition, it was further facilitated when the prosocial cues were present in the second play session.

The multivariate test for the tv violence effect fell just short of significance, \( F(4, 24) = 2.10, p = .10 \), although univariate tests demonstrated significant effects of tv violence on the measures of helping, \( F(1, 15) = 7.57, p < .02 \), and turntaking, \( F(1, 15) = 10.29, p < .01 \). The reason for this nonsignificant multivariate \( F \) value is not clear, since several guidelines to ensure robustness were met (e.g., error \( df > 20 \), equal cell sizes, outlier reduction). The patterns of means from the univariate results are therefore presented with some caution. High tv violence facilitated both helping \( (M's = 1.74 \) and 0.89 for high and low violence) and turntaking \( (M's = 3.28 \) and 1.89).

In addition to the main effects of tv violence on these measures, an interaction of tv violence, tv action, and order was significant, \( F(3, 15) = 4.35, p < .02 \), for the measure of helping. Apart from the main effect of tv violence described above, a systematic pattern of effects was not evident in this interaction, and since each cell represented only two observations, no further interpretation was considered appropriate. For the measure of turntaking, a tv violence \( \times \) order interaction was significant,

<p>| TABLE 2 |
| MEAN FREQUENCIES OF SOCIAL BEHAVIOR BY THEMATIC CUING CONDITION |</p>
<table>
<thead>
<tr>
<th>Cu ing condition</th>
<th>Aggressive cues</th>
<th>Prosocial cues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help/share</td>
<td>1.15</td>
<td>1.50</td>
</tr>
<tr>
<td>Cooperation</td>
<td>0.31</td>
<td>20.45</td>
</tr>
<tr>
<td>Turntaking</td>
<td>2.09</td>
<td>3.09</td>
</tr>
<tr>
<td>Rules/roles</td>
<td>7.34</td>
<td>9.04</td>
</tr>
<tr>
<td>Noncompliance</td>
<td>1.48</td>
<td>1.65</td>
</tr>
<tr>
<td>Imaginative play</td>
<td>11.76</td>
<td>8.35</td>
</tr>
<tr>
<td>Interpersonal aggression</td>
<td>4.87</td>
<td>1.89</td>
</tr>
<tr>
<td>Fantasy aggression</td>
<td>16.71</td>
<td>0.17</td>
</tr>
<tr>
<td>Object aggression</td>
<td>12.84</td>
<td>0.64</td>
</tr>
<tr>
<td>Dyadic play</td>
<td>67.59</td>
<td>65.28</td>
</tr>
<tr>
<td>Activity level(^a)</td>
<td>2.13</td>
<td>2.04</td>
</tr>
</tbody>
</table>

\(^a\) Entries represent mean level across seventy-two 10-s play intervals (1 = stationary, 4 = running speed).
Post hoc comparisons indicated that the combination of high TV violence and animated format in the first play session facilitated turntaking compared to other program and order combinations.

**Aggressive behaviors.** Multivariate analyses of the four aggression measures revealed a significant effect of cuing condition, $F(4, 25) = 60.45, p < .001$. Follow-up univariate ANOVAs showed significant cuing effects on interpersonal aggression, $F(1, 16) = 19.95, p < .001$; object aggression, $F(1, 16) = 130.95, p < .001$; and fantasy aggression, $F(1, 16) = 110.18, p < .001$. All of these behaviors occurred more frequently in the aggressive-cue condition than in the prosocial-cue condition. Means appear in Table 2.

At this point it should be noted that a theoretically interesting interaction of cuing and TV violence effects on the measure of interpersonal aggression fell just short of significance in the follow-up analyses, $F(1, 16) = 2.76, p = .11$. The pattern of means in this interaction suggests a cumulative effect of TV content and aggressive cues in producing increased aggression in the children. Means in the aggressive-cue condition were 6.20 and 3.53 for the high- and low-violence conditions, respectively, and in the prosocial condition, 2.17 and 1.65.

**Activity level and dyadic play.** Multivariate analyses of the measures of subject activity and general dyadic interaction revealed a significant main effect of cuing condition, $F(2, 27) = 5.71, p < .01$. Follow-up univariate analyses showed a significant cuing effect on activity level, $F(1, 16) = 10.37, p < .005$. Higher activity was observed in the aggressive-cue condition than in the prosocial-cue condition. Means appear in Table 2. In addition, the age covariate was significant, $F(1, 15) = 4.54, p < .05$. A negative regression coefficient indicated that activity level declined with increasing age.

**Imaginative fantasy.** Univariate analysis of the fantasy measure indicated a significant main effect of cuing condition, $F(1, 16) = 11.72, p < .01$. More of this behavior occurred in the aggressive-cue condition than in the prosocial-cue condition. Means appear in Table 2. Also, a between-group interaction of TV violence and order was significant, $F(1, 15) = 3.36, p < .05$. Post hoc tests revealed only one significant difference: a low-violence program combined with aggressive toys in the first play session facilitated fantasy more than high TV violence combined with prosocial toys in the first play session. Beyond this, however, no systematic pattern was discernible. The age covariate was significant, $F(1, 15) = 7.18, p < .01$. A positive regression coefficient indicated that fantasy behavior was observed more often in the older subjects.

**DISCUSSION**

**Attention**

A finding of primary importance in this study was that rapid action facilitated boys’ attention, but violent content did not. These effects of
formal features are consistent with earlier findings (Alwitt et al., 1980; Greer et al., 1981; Wright & Huston, 1983). Only one previous study included an examination of attention varying violent content and formal features independently (Huston-Stein et al., 1981). The results indicated that it is the forms of television rather than the violent content which attract and hold children’s attention. The present study supported that conclusion with a more solid data base because it included both animated and live programs, and it included all four possible combinations of action and violence.

Several reasons have been offered for the positive effects of high action on attention. One interpretation emphasizes the perceptually salient quality of attributes such as movement, change, and contrast for young children (Rice, Huston, & Wright, 1982). Another is focused on content comprehensibility as an important determinant of children’s attention (Anderson & Larch, 1983). Physical actions by characters may increase program comprehensibility by providing an iconic form of representation for the young child (Calvert et al., 1982; Salomon, 1978).

Social Behavior

The environmental setting had pronounced effects on boys' social play in all treatment conditions. In general, prosocially cued toys elicited prosocial behavior, and aggressively cued toys elicited aggressive behavior. These findings are in accord with various theoretical positions which emphasize the role of physical settings and cues as determinants of behavior (e.g., Mischel, 1977). In the aggressive cue condition, the toys produced generalized patterns of interpersonal aggression that went well beyond the direct demands of the toys themselves. The Bobo doll, the boxing robots, and the Star Wars figures elicited not only object and fantasy aggression, but led to interpersonal physical and verbal attacks between the children as they played. These interpersonal behaviors were scored independently of the behaviors directed to the toys. For young boys, toys with aggressive cues appear to elicit generalized patterns of aggressive behavior.

Aggressive toys were also associated with high rates of nonaggressive fantasy, and this finding may be a reflection of the availability of fantasy relevant themes offered by contemporary television programming. That is, there are probably more popular presentations that involve outer space adventure than there are that deal with ambulance rescue operations. The Star Wars characters were familiar because of the film of the same name and because they were very popular with young children. The children may have had more interest and a richer store of themes on which to draw in creating fantasy play with these materials than with the other imaginative play characters.

Although the prosocial toys also elicited turntaking and cooperation,
these behaviors appear to represent the direct demands of the toys. However, an increase in requests and rule suggestion in the prosocial cuing condition may imply that the children were attempting to structure the play session or change the existing play pattern differently than they did in the aggressive cue condition. These requests and rules were probably the antecedents of the increased cooperation and turn-taking also observed in the prosocial cue condition, and may indicate a generalized prosocial style in which the children were at least attempting to verbalize their inclinations for play styles rather than imposing them aggressively.

The effects of the television content and form manipulations on social behavior were weak, compared to the toy cuing effects. Violent content was associated with increased turn-taking and helping in both cuing sessions. This finding could be interpreted within an arousal framework if it were assumed that cues for these behaviors were present in both cuing sessions. Although such cues were intended to be available only in the prosocial cue condition, it seems likely that the children responded to social cues provided by the subject partner as well as physical cues in the toys. It is possible that the mere presence of a play companion provides cues for a range of interpersonal behaviors including the kinds of behaviors observed that could be activated by arousing television material.

This notion of increased general social responsiveness is further supported by examination of within-pair correlations of the behavior measures. Measures from one child in a pair were compared to the corresponding measures from the other child in the pair, and this was done separately for the high and low TV violence conditions. In this analysis, measures of cooperation, turn-taking, and dyadic play were excluded since, by definition, scores for both children in a pair were identical and thus perfectly correlated. The mean correlation across measures for children in the high TV violence condition was +.47, while in the low violence condition it was +.17. This suggests that exposure to TV violence made the children more responsive to each other's behavior, presumably through a general arousal process. In other words, children who saw violent TV were behaving "in synchrony" to a much greater extent than those in the nonviolent TV condition.

The finding that violent TV did not produce significant increases in aggressive behavior is perhaps a result of the procedural sequence employed. In the present study, an adult entered the room every 4 min to present a new set of toys, and this possibly may have inhibited the children from engaging in sustained aggressive interaction. It should be noted, however, that the level of interpersonal aggression in the violent TV condition was not trivial ($M = 4.19$), and was more frequent than that observed in the low TV violence condition ($M = 2.59$).

High action in the television programs had virtually no effects on children's social behavior. One major reason for the absence of effects
of the television manipulations may be that the strong demand qualities of the toys led to restricted variance in children's behavior. That is, the cueing properties of the toys had overriding effects on the rates of many of the aggressive and prosocial behaviors observed. Because children were given only two toys at a time, they had little choice about which toys to play with. In the earlier study showing effects of formal features on social behavior, there was a wide range of toys available (Greer et al., 1982). Similarly, in most investigations demonstrating effects of television violence on aggression, children have had choices of play activities or actions.

No predictions were made concerning the effects of program format (animation) on social behavior patterns because both types of programs were included only for purposes of generality. Although few studies have examined effects of animated vs nonanimated programs on behavior, no differences in behavior due to that formal variable have been reported (e.g., Steuer, Applefield, & Smith, 1971) and the present null results are consistent.

Two conclusions seem appropriate. First, the demand qualities of the immediate environment can be made sufficiently strong to override the effects of a brief exposure to different types of television content or form. This finding is consistent with the social learning emphasis on the importance of situational cues in determining social behavior. It also has applied relevance; children's play environments might be designed to counteract some of the deleterious effects of violent television content. In this context, it is sobering to note that it was much more difficult to find or design toys that promoted prosocial behavior than those that promoted aggression.

Second, the accumulated findings to date indicate that the effects of television content and/or form depend on the environmental circumstances surrounding the child. The public and professional debate about television violence seems to rage on without considering this rather obvious point. For instance, one analysis of the literature on television violence suggested that increases in aggression typically appeared when children were observed outside the immediate supervision of adults, but not when adults were present (Stein & Friedrich, 1975). The present study suggests that environmental cues may obliterate the influences of prior short-term television exposure. It appears that short-term effects of television violence are most likely to be observed in situations where variance is unrestrained by interpersonal or environmental cues. The present null findings do not, of course, address an equally valid and perhaps paramount social concern regarding the effects of long-term exposure to television violence.

At present, there is relatively little evidence that formal features of television influence children's social behavior. The absence of effects in the present study is consistent with some earlier investigations (Anderson
et al., 1977; Huston-Stein et al., 1981). However, it appears that television forms can influence children’s behavior under some circumstances that suggest a general arousal process (Greer et al., 1982). Once again, such effects may be most likely when there are few constraints on children’s behavior in their immediate environment.

Strong recommendations can be made to television producers and creators of children’s programs from these accumulated findings. Violence is not necessary to hold the interest of child audiences. Rapid character action presented in animated format and combined with humor is effective in attracting and maintaining children’s attention. Eliminating violent content reduces the likelihood of stimulating aggressive behavior without losing the audience appeal of a program.

REFERENCES


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