This study examined children's attention to formal features and other attributes during television viewing. Subjects were 40 children, ages 2, 5, 8 and 11 years old, who were videotaped watching television at home during a 10-day period. Among other attributes, children's visual attention to television was coded, along with television program attributes including movement, cuts, animation, text, nonhuman characters, men, women, and children. Also coded were two content-related features: purposeful action by a character (other than talking) and violence. Analysis revealed that the children's attention increased significantly in the presence of movement, animation, cuts, purposeful action, violence, and nonhuman characters. Attention was depressed in the presence of text and adult human characters. (MM)
Children's Visual Attention to Formal Features of Television at Home

by

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Abstract

Prior laboratory based research indicates that certain formal features of television are reliably associated with enhanced or depressed attention. The present research analyzes attention to formal features during TV viewing as it occurred naturally at home. Forty two- to eleven- year old children from different families were observed by means of automated video observation for 10 days. Children attended significantly more in the presence than the absence of movement, animation, cuts, purposeful action, violence, and nonhuman characters. Attention was depressed in the presence of text, and adult human TV characters.
Introduction

While prior research has shown that much of children's attention to TV is driven by comprehension and appreciation of content, several studies have shown that visual attention is also related to the occurrence of attributes uniquely characteristic of television. These attributes, called "formal features", can be described without specific reference to thematic content. They include the presence or absence of movement, animation, cuts, text, or types of characters, such as men or women. The prior research has found that, in children 3 to 10 years of age, attention is depressed in the presence of men, neutral in the presence of women, and enhanced by animation, movement, children, and nonhuman characters (e.g. puppets; Alwitt et al. 1980; Anderson & Levin, 1976; Calvert et al., 1982). The effects of some formal features, such as animation and cuts, were found to be diminished in children under 3 years of age (Levin & Anderson, 1976). All the prior research was done in laboratory settings using relatively small amounts of children's programming.

This study extends the prior laboratory research by examining attention to formal features and other attributes during television viewing as it occurred over 10 days in the home.

Method

Subjects were 2-5-8- and 11-year-old children (10 at each age, equally divided by sex) who were videotaped at home over 10 days. The observation procedure involved time-lapse video equipment (recording at approximately 1 frame/sec) which automatically began recording when the TV set was turned on and stopped recording when the TV set was turned off. One camera with a wide angle lens shot the viewing area and another shot the TV screen. Nearly all the children's TV viewing at home was thus recorded. Detailed descriptions of data collection are available in Anderson et al. (1985).

Videotapes were time-sampled by means of a computer-controlled coding system every 5 minutes of cumulative time the child spent in the viewing room. Among other behaviors, the child's visual attention to the TV was coded, along with TV program attributes including movement, cuts (within 6 seconds prior to sample), animation, text, nonhuman characters, men, women, and children. Also coded were two content related features: purposeful action by a character (other than talking), and violence.
Results and Discussion

The analyses were multivariate ANOVAs for each attribute with percent visual attention as the dependent variable. The design for each MANOVA was 4 (age) by 2 (sex) by 2 (presence versus absence). See Table 1 for significant results. These analyses exactly parallel those reported in prior research. Also reported are 4 (age) by 2 (sex) ANOVAs for percent occurrence of the attributes while the children were present in the viewing room (see Table 2). Means are plotted in the accompanying figures.

Results for formal features strongly replicate laboratory studies. Significant (p<.05) enhanced attention was found for movement, cuts, animation, and nonhumans. Depressed attention was found to adult male TV characters, adult female TV characters, and text. Age by attribute interactions were found for child TV characters, adult male TV characters, and text. There was only one interaction with sex of subjects, due to girls attention being less depressed in the presence of adult female TV characters than boys attention. Percent exposure significantly increased with age for movement, animation, adult male, and adult female characters.

For the content related attributes, attention was enhanced in the presence of violence and purposeful behavior. There was surprisingly little violence coded. Nearly all the analyses showed main effects of age, reflecting overall increases in attention to television as found in prior research.

The present results, obtained from the home environment and including nearly all the TV content to which the children were exposed during the 10 days, largely confirm the findings of the laboratory studies. The study also adds new information about attention to character behavior and violence as well as the actual exposure of children to formal features and attributes of television.
References


Table 1

SUMMARY OF ATTRIBUTE ANALYSES

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Main Effect Presence vs. Absence</th>
<th>Interaction with Age</th>
<th>Interaction with Sex</th>
<th>Interaction with Age and Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>4.65**</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Human Character:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult Male</td>
<td>20.87**</td>
<td>3.53*</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Adult Female</td>
<td>n.s.</td>
<td>n.s.</td>
<td>6.12*</td>
<td>n.s.</td>
</tr>
<tr>
<td>Child</td>
<td>n.s.</td>
<td>2.94*</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Cuts</td>
<td>11.18**</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Format</td>
<td>66.74**</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Movement</td>
<td>27.30**</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Nonhuman</td>
<td>4.93*</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Text</td>
<td>n.s.</td>
<td>6.73**</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Violence</td>
<td>9.876**</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .001

* F ratio based on 1,32 degrees of freedom.  
** F ratio based on 3,32 df.
<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Age</th>
<th>Sex</th>
<th>Age*Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>3.82**</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Human Character:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult Male</td>
<td>8.21**</td>
<td>6.74*</td>
<td>n.s.</td>
</tr>
<tr>
<td>Adult Female</td>
<td>5.26**</td>
<td>5.86*</td>
<td>n.s.</td>
</tr>
<tr>
<td>Child</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Cuts</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Format</td>
<td>5.13**</td>
<td>7.23*</td>
<td>n.s.</td>
</tr>
<tr>
<td>Movement</td>
<td>6.93**</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Nonhuman</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Text</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Violence</td>
<td>n.s.</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .001  
* F ratio based on 3, 32 degrees of freedom.  
** F ratio based on 1, 32 df.
Percent Attention and Exposure to Action

- Action
- + Not Action
* Pct. Exposure

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Percent of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>11</td>
<td>80</td>
</tr>
</tbody>
</table>

Purposeful overt behavior (not talking)
Percent Attention and Exposure to Men TV Characters

Age in Years

Men

Not Men

Pct. Exposure

Percent of Samples

0
10
20
30
40
50
60
70
80
90
100

2 5 8 11
Boys' Percent Attention and Exposure to Adult Female TV Characters

Girls' Percent Attention and Exposure to Adult Female TV Characters

Percent of Samples

Age in Years
Percent Attention and Exposure to Child TV Characters

- Children
- Not Children
- Pct. Exposure

Age in Years

Percent of Samples
Percent Attention and Exposure to Cuts

Age in Years

Percent of Samples

- Cuts
- No Cuts
* Pct. Exposure

At least one cut in prior 6 seconds
Percent Attention and Exposure to Animation

- Animation
- Not Animation
- Pct. Exposure

Age in Years

Percent of Samples

0 10 20 30 40 50 60 70 80 90 100

2 5 8 11
Percent Attention and Exposure to Movement

- Movement
- Not Movement
* Pct. Exposure

Character or object moving through space
Percent Attention and Exposure to Nonhumans

Includes puppets, robots, animals, etc.
Percent Attention and Exposure to Text

- Text
- Not Text
- Pct. Exposure

Age in Years

Percent of Samples