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ABSTRACT

A statistical analysis of the effect of television commercials on children, this study found that children both like and believe television commercials. Middle Western children from grades two through five rated four videotaped TV commercials, selected at random, on a scale of true/false, happy/not happy, real/not real, stupid/smart, nice/not nice, and good/bad, with "I don't know" as an alternative in each category. The basic research question, "Does the child tend to believe a commercial more if he finds it more attractive?" was answered positively, and it was further concluded that girls like and believe TV commercials more than boys do and that children tend to say that commercials are stupid regardless of like or dislike. The findings were based on statistics and derived from the work of Hovland and his associates and Anderson and his associates. (CH)

THE RELATION BETWEEN ATTRACTIVENESS AND CREDIBILITY OF TELEVISION COMMERCIALS AS PERCEIVED BY CHILDREN: A REPLICATION

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> We have now become aware of the possibility of arranging the entire human environment as a work of art, as a teaching machine designed to maximize perception and to make everyday learning a process of discovery.
>
> Marshall McLuhan and Quenton Fiore
> The Medium is the Message

The 1973 television season reflects increased pressures to limit the amount of commercial advertising in children's programming. The Television Code Authority of the National Association of Broadcasters has responded to demands by ACT and other groups by accepting an ABC-TV proposal to limit commercials during children's weekend hours. Adopted as of January 1, 1973, on all code stations is the ABC-TV plan to cut commercials from 16 minutes to 12 minutes per hour. Further, program interruptions are limited to two in 30 minutes or four within one hour. Program hosts and cartoon characters are also forbidden to endorse products or introduce commercials where this implies endorsement.[1]

Michael D. Eisner, ABC Entertainment's vice-president in charge of program development and children's programs, emphasizes that television is not suitable for the conventional style of teaching--"Television is to entertain and in the case of children to educate affectively."[2] Expert testimony,[3,4] critical assessment,[5,6] and quantified studies[7,8,9,10,11,12] provide limited information in the area of the effects of television commercials on children. As late as 1971, Smith and Hanks could report:

> Students checking out post-1955 academic and marketing research found that advertising effectiveness studies sought only to increase sales and not to understand television commercials as reflective or projective of American values.[13]

It seems appropriate at this time to take a new look at the total effects of television commercials on children and the persuasive mechanisms by which they appear to operate. The authors have undertaken a series of studies in an attempt to define some of the basic factors affecting the influence of the TV commercial on children.

The philosophy behind these studies requires strict adherence to operational definitions and the constraints of internal reliability (even at the cost of losing some ability to generalize from the findings).[14] Each succeeding study will be designed according to the findings of its predecessor.

The first step was to recognize the extensive literature on source credibility which has indicated that the effectiveness of the message is directly related to the credibility of the source of the information.[15,16]

This study considered the TV commercial as a source and examined the relationship between the attractiveness of television commercials to children, and the credence that the children attach to the same commercials. The research question can be simply stated as, "Does the child tend to believe a commercial more if he finds it more attractive?" A secondary purpose was to investigate any preference to a particular type of commercial from the samples used, and to determine any patterns of preference which might emerge from age, grade, or sex groupings.

Procedure

In the first study, four thirty-second commercials were videotaped

and prepared for replay in the classroom. The method of selection was random insofar as the commercials were recorded off-the-air at hourly intervals. No attempt was made to set up typologies of commercials, and no systematic bias was acting to select any particular type of commercial. The commercials obtained by this procedure were: Alka-Seltzer, One-A-Day Vitamin, Folger's Coffee, and Quickie Roller.

Because the first study found that children tend to believe commercials they like or tend to like the commercials they believe (see Results below page 7), commercials were selected for the replication. The authors are indebted to Ray Brown for this contribution:

> My last point concerns the selection of commercials. Any research in this area is always bedevilled by programme or commercial content. One way of reducing content specific influence is a deliberate selection of contrasting material. For example, two of your conclusions could possibly be reversed should the replication employ contrasting commercials. Take conclusion 1, children tend to believe commercials they like and vice versa. Could you select two commercials which appear either unpleasant or boring? I agree that such judgments are difficult to make, but I would suggest, for instance, that a commercial with very little movement in it will not be attractive to a child. This first suggestion for your replication then is that by selecting particular commercials you could attempt to reverse the credibility/attractiveness relationship, . . .[17]

He then goes on to say, "Should a replication based on the deliberate selection of content reverse your findings, this in itself would be extremely worthwhile set of results, since a series of such studies would lead to a realistic and meaningful typology of content."

Two commercials adjudged to being well liked were the same Alka-Seltzer commercial as in Study 1 (the famous "spicy meat ball"), and a dog food

commercial featuring a puppy. These were selected along with the two chosen to be unattractive: a Robert Lansing monologue for the Ford Motor Company and a recruitment appeal for policemen with violent scenes predominant.[18]

The site of the first experiment was the Learning Center of the Jefferson Elementary School in DeKalb, Illinois. Two sections of each grade from grades two to five, with approximately 25 in each section, provided the experimental population. Total n was 196, with 106 boys and 90 girls. The range in age was from 7 to 12. Age and sex were not significantly correlated $r = .03$ ($P = .626$).

The site of the replication was the Lincoln Elementary School in DeKalb. Grades from one to five, two sections per grade, provided the experimental population. Total n was 179. Age and sex were not significantly correlated $r = .08$.

The procedure for the first experiment of showing the commercials and gathering the responses was identical for each group and was accomplished in the same afternoon. Each class would file in and be seated at a set of tables. The Learning Center supervisor then gave a short speech regarding their participation. The standard instruction ran: "Students, we need your help to find out what you think of television commercials. Please check your answer with an X. For example, if you think the commercial is true, check the True box. If it is false, check the False box. If you don't know, check the 'I don't know' box. There is no right or wrong answer."

In the replication the students remained in their classrooms and rearranged their seating around the TV monitor which was mounted on a movable stand. The testing was accomplished in two morning sessions.

The commercials were viewed from a 23-inch monochrome Sony receiver. The audio and video were of uniform high quality for the successive presentations.

The Test Instrument

The test instrument consisted of four pages, numbered and color-coded--one for each commercial. The respondents were asked to make an X to indicate their preference on six scales immediately after viewing each commercial. The scales were designed as follows:

A.	True	I don't know	False
B.	Happy	I don't know	Not happy
C.	Real	I don't know	Not real
D.	Stupid	I don't know	Smart
E.	Nice	I don't know	Not nice
F.	Good	I don't know	Bad

A three-point scale was chosen since a five- or seven-point scale was considered too complex for the age of the respondents.[19] The scale "stupid-smart" was chosen to check for the left-right bias, to see if students showed a response bias for left or right. The results indicated that the children paid attention to each scale individually, and did not show response bias. Assuming the scales produced interval data, the scale "False" through "Bad" was assigned 1, "I don't know" given 2, and "True" through "Good" given 3.

A measure of the credibility which the children attributed to the commercials was developed in the following manner: (1) A Pearson correlation $r = .61$ ($p < .001$) between the Real and True scales for every respondent for all four commercials showed that these scales were measuring

substantially the same thing. (2) Hence, the Credibility dimension was operationally defined as the sum of the Real and True scales. The degree of correlation ($r = .61$) was considered adequate internal reliability for this procedure. In the replication $r = .54$ for the correlation between the True and Real scales ($p < .001$).

Similarly, the attractiveness dimension was operationally defined as the sum of the scores of the Nice and Good scales. Again, adequate internal reliability for this procedure was provided by the Pearson correlation $r = .63$ ($p < .001$) between these two scales. In the replication $r = .53$ ($p < .001$).

Analysis

A dichotomy was forced for each of the scales of Attractiveness and Credibility to convert to frequency data. Thus those respondents who marked a score higher than sixteen (which was the midpoint of the range) on the Attractiveness dimension were distinguished from those who marked less than sixteen. (With four commercials the lowest possible score is 8 and the highest is 24.) This operation was repeated to separate respondents who scored higher and lower than sixteen on the Credibility dimension.

Thus, a two-by-two frequency table was generated with dichotomous groups which may be called the Like, Not Like, Believe and Not Believe groups. Because an underlying continuity is assumed, the phi coefficient is appropriate.[20] (See Table 1.)

Table 1

COMPARISON OF FREQUENCIES FOR BOTH HIGH AND LOW SCORERS ON THE CREDIBILITY AND ATTRACTIVENESS DIMENSIONS

Credibility Dimension	Attractiveness Dimension: NOT LIKE	LIKE	ROW TOTAL
DON'T BELIEVE	8 4.7%	28 16.3%	36
BELIEVE	6 3.5%	130 75.6%	136
COLUMN TOTAL	14	158	172

PHI = 0.23 $p < .01$

CORRECTED CHI SQUARE = 9.81 with 1 D/F

Results and Discussion

It is perhaps most significant that this table reveals that most of the children say they like and believe television commercials.[21] Frequency table comparison for high and low scorers on both the Credibility and Attractiveness dimensions revealed a positive relationship between credibility and attractiveness as operationally defined in the first experiment. A phi coefficient of 0.23 was obtained ($p < .01$).

Table 2

COMPARISON OF FREQUENCIES FOR BOTH HIGH AND LOW SCORERS ON THE CREDIBILITY AND ATTRACTIVENESS DIMENSIONS - REPLICATION

Credibility Dimension	Attractiveness Dimension: NOT LIKE	LIKE	ROW TOTAL
DON'T BELIEVE	2 1.3%	10 6.7%	12
BELIEVE	9 6.0%	128 85.9%	137
COLUMN TOTAL	11	138	149

PHI = .05

CORRECTED CHI SQUARE - 0.49 with 1 D/F n s

In the replication (Table 2) the relation was no longer found. The lopsidedness of the distribution reiterates the finding that children say they like and believe television commercials. It should be noted that this illustration is dependent of the prior choice of the cutting point as the middle of the range.

Relationship was shown, however, in both experiments using Pearson correlation. In the first experiment, Credibility and Attractiveness were found to be positively correlated $r = .26$ ($p < .001$).[22] In the replication $r = .23$ ($p < .001$). This indicated that the two dimensions are related, although the size of the correlation did not augur well for prediction. Whether or not the students like what they believe or believe

what they like is not supported by the correlation, as causality is not determined by correlation.

An increase in age was shown to be related to a corresponding decrease in the numbers of students liking the commercials. Attractiveness and age were negatively correlated $r = -.17$ ($p = .016$) in the first experiment, and $r = -.11$ (n.s.) in the replication.

Although in the first experiment there was no significant correlation between Credibility and age $r = .04$ ($p = .52$), in the replication there was significant correlation, with the older students checking a higher score $r = .20$ ($p = .003$).

Another difference in the findings of the two experiments occurred with the correlations between Credibility and sex. In the first experiment, Credibility was significantly correlated with sex $r = .15$ ($p = .03$). The girls felt that the commercials were more credible than did the boys. In the replication $r = .08$ (n.s.).

In the first experiment, attractiveness significantly correlated with sex $r = .23$ ($p = .002$). The girls felt that the commercials were more likeable than did the boys. This finding did not replicate: $r = .02$ (n.s.).

The children responded to each commercial individually with response patterns differing from one commercial to the next. For example, in the first experiment they exhibited different responses to Alka-Seltzer and One-A-Day. The Alka-Seltzer commercial which portrayed the trials of making a commercial about meat balls was tongue-in-check. 63 said this commercial was smart, 49 did not know, while 84 said it was stupid. However, for One-A-Day Vitamins (which pictured a child in a raincoat receiving parental care),

134 checked smart, 35 didn't know, and 27 checked the stupid box.

The selectivity of the children was demonstrated by the Alka-Seltzer commercial which was well liked, although 84 students checked it as stupid. In fact, compared with One-A-Day with 159, it ranked second with 144 checking the "good" response. This (compared with 121 for Coffee and 127 for Quickie Roller) showed that a relatively large number thought it was "good," even though it was relatively "stupid."

Contingency table comparison of all four commercials on each of the six scales gave more detailed evidence of the children's willingness to make selective judgments between commercials, and to differentiate between the qualities of each commercial individually. Out of the 36 possible comparisons, 22 were significantly different at the 5% level (Chi square 5.99 at 2 df), and 19 comparisons exceeded a chi square value of 12.12 ($p < .001$).

As might be expected when deliberately contrasting commercials were chosen this tendency was amplified in the replication. Out of the 36 possible comparisons, 34 were significantly different at the 5% level, and 27 at the 1% level. Both the commercials which were chosen to be more attractive and those to be less attractive fulfilled the expectations made for them. For example, the dog food commercial scored 159 on the Nice scale and 4 on the Not Nice scale. When contrasted with the commercial which was a static monologue for the Ford Motor Company, which scored 50 Nice and 76 Not Nice, this gave a chi square of 141.48. There were 16 and 53 checking the "I don't know" box for the two commercials respectively. The patterns were similar for other comparisons.

Further inspection of the data revealed patterns that one might expect

from a literal interpretation of the messages. One such example from the first experiment was the comparison between Alka-Seltzer and Folger's Coffee. There was no significant difference between the c ... on the True or Stupid scales, but the trials portrayed on the Alka-Seltzer commercial caused a low of 105 checks on the Happy scale compared with the 178 checks gained by Mrs. Olsen, the protagonist of Folger's Coffee. This pattern was repeated in the replication.

Conclusion

This investigation revealed that children generally tend to believe in those commercials they liked, and liked the commercials they believed. The data also indicated that children are capable of making selective judgments about the cleverness, happiness, truth and reality of the messages.

In the first experiment age and sex affected the children's responses as well. The younger children tended to like commercials more than older children did. This trend was noted in the replication but the correlation was not statistically significant. The replication could not find any significant correlation between sex and either credibility or attractiveness.

An anomalous finding in the replication was the modest although significant correlation between age and credibility score for all four commercials. Lyle and Hoffman have reported that older children are very suspicious and distrustful of television commercials.[24] Inspection of contingency tables of the Real and True scales by age and sex does not reveal a trend. Perhaps there is a turning point after the age of ten.

If as Robert Baurenfeind claims, "The principle of replication is the cornerstone of scientific inquiry,"[25] then the modest yet significant relation-

between attractiveness and credibility in the operation of the television commercial has been more firmly established. Failure of findings to replicate also has value. As Baurenfeind puts it: "To quote a popular saying, It's not what we don't know that hurts; it's what we know that ain't so that hurts."

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[10]Ward, "Effects of Television Advertising on Children and Adolescents," ibid., p. 259.

[11]Ward, Levinson, and Wackman, "Children's Attention to Television Advertising," ibid., p. 259.

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[16]Kenneth Anderson and Theodore Clevenger, Jr., "A summary of Experimental Research in Ethos," Speech Monographs, Vol. XXX, June, 1963, p. 59-78.

[17]J. R. Brown, Centre for Television Research, the University of Leeds, England, personal communication.

[18]Transcripts and other data available on request.

[19]Again, a comment from Brown: ". . . three point scales. They seem to have worked well, so I would be tempted to leave well alone. Certainly my experience indicates that children under eleven should not be approached with seven point scales; if they are extremity set usually occurs. We have used five point scales in self-completion questionnaires down to eight years. We have used five point scales in face-to-face interviewing down to five years."

[20]George A. Ferguson, Statistical Analysis in Psychology and Education, New York: McGraw Hill, 1959, p. 196.

[21]We note here a caveat: "Experience in these researches indicates that asked if they liked a program, children unanimously say 'yes'." This quote from: Ralph Garry, Reports on International Evaluation of Children's Reactions to the Czechoslovakian Television Program The Scarecrow, Munich: Internationales Zentralinstitut fur das Jegend und Bildungsfunsenhen, 1970, p. 6.

[22]For a note on interpretation of modest but significant correlation coefficients, see the Surgeon General's report, p. 141-146.

[23]Tests of significance for items 3-6 are two tailed tests.

[24]J. Lyle and H. R. Hoffman, "Children's Use of Television and Other Media," Television in Day-to-Day Life: Patterns of Use, F. A. Rubenstein, G. A. Comstock, and J. P. Murray, eds., Washington, D.C., Government Printing Office, 1972.

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