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Children's Susceptibility to Television Advertising: A Behavioral Test of Cognition and Attitude

John R. Rossiter
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Children's Susceptibility to Television Advertising: A Behavioral Test of Cognition and Attitude

Abstract

Television's alleged effects on children have been the object of considerable debate since the early 1950's. The effects of television commercials, however, have been the focus of only a handful of studies. According to recent FCC figures, television commercials now comprise 20 percent--12 minutes or more per hour--of television broadcast content (Johnson, 1973). Earlier figures reported by Steiner (1963) placed commercials as the third largest content category on television, following movies and comedy-variety, but ahead of action dramas and eight other programming categories. Although content emphasis may have changed over the decade, e.g. an increase in action dramas, advertising is still a paramount content category occupying one-fifth of air time. At today's viewing levels, this means the average child is exposed to approximately 100 television commercials per day (Action for Children's Television, 1971).

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CHILDREN'S SUSCEPTIBILITY TO TELEVISION ADVERTISING:

A BEHAVIORAL TEST OF COGNITION AND ATTITUDE

John R. Rossiter

A DISSERTATION

in

Communications

Presented to the Faculty of the Graduate School of Arts and Sciences of the University of Pennsylvania in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy.

1974



Supervisor of Dissertation



Graduate Group Chairman

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A. THE RESEARCH PROBLEM

1. Television Advertising and Children

Television's alleged effects on children have been the object of considerable debate since the early 1950's. The effects of television commercials, however, have been the focus of only a handful of studies. According to recent FCC figures, television commercials now comprise 20 percent--12 minutes or more per hour--of television broadcast content (Johnson, 1973). Earlier figures reported by Steiner (1963) placed commercials as the third largest content category on television, following movies and comedy-variety, but ahead of action dramas and eight other programming categories. Although content emphasis may have changed over the decade, e.g. an increase in action dramas, advertising is still a paramount content category occupying one-fifth of air time. At today's viewing levels, this means the average child is exposed to approximately 100 television commercials per day (Action for Children's Television, 1971).

All too little is known about how children actually process television commercial input. Two major lines of research--the well known Choate studies on cereal advertising (Choate, 1972) and Winick's content analysis of children's television commercials (Winick, Williamson, Chuzmir & Winick, 1973)--have virtually assumed direct commercial influence without giving sufficient, if any, attention to the active cognitive abilities of the child. The other major research effort, headed by Scott Ward at Harvard, has utilized a more child-centered

approach. However, Ward's research, heavily empirical rather than theoretically based, has yet to produce a good conceptual model of children's reactions to advertising. In particular, the relevant cognitive operations necessary for even a rudimentary understanding of commercials have yet to be specified. Also requiring investigation are factors which contribute not only to the child's increased understanding of commercials, but correspondingly, to his reduced susceptibility to persuasive influence. We do not know whether children can benefit from social training in this respect, or whether increased sophistication is primarily dependent upon a "fixed," age-related developmental progression. Similarly, assuming the child must have some degree of experience with commercials in order to build cognitive and attitudinal defenses to them, there is the unresolved question of minimally sufficient exposure versus possibly excessive exposure to television. These questions hold very important implications for social policy. Regulatory agencies, as well as parents themselves, need factually based guidelines to replace the generally uninformed speculations and counter-speculations so evident at present.

A second aspect of the research problem centers on the complex issue of television advertising's broader effects. Given that children may exhibit differential competence in their ability to screen advertising messages, this should produce, as an overt effect, differences in propensity to select tv-promoted items. If one were to generalize the traditional Klapperian view of media effects to the case of children's commercials, little other than a moderate strengthening of already existing attitudes and response tendencies might be predicted

(Klapper, 1960; see also Lazarsfeld & Merton, 1948 and Weiss, 1969). An alternative view, predicting much stronger effects, is advanced by Professors Gerbner & Gross of the Annenberg School of Communications. The following excerpt from the current ASC Cultural Indicators project rationale (see also Gerbner 1973a) illustrates the alternative conceptualization of television's impact:

The basic assumption...is that television drama is in the mainstream--or is the mainstream--of the symbolic environment cultivating common conceptions of life, society, and the world...Television dominates the prevailing climate of the mass-produced symbolic environment. (Gerbner & Gross, 1973, pp. 2-3, italics in original).

The "strong effects" theory is bolstered by a good deal of anecdotal evidence but has yet to undergo extensive empirical testing. Children's television advertising, particularly the advertising of toys and games, provides a potential testing ground. Children's toys and games constitute a \$3 billion industry (by way of perspective, this is a sales volume which ranks with new car purchases) with an astounding retail sales growth of 10 percent per year (Swartz, 1971). Television commercials for toys and games, according to the most recent aggregate figures, ran to \$33.5 million in 1972 and formed the second largest of the three primary commercial categories on children's television; 28% of all children's commercials were for toys and games, vs. 50% for foods and beverages and 10% for vitamins. Fully half of this tremendous commercial onslaught for toys and games occurs in just two months of the year, November and December. The fact that the most popular toys and games in any recent year are consistently among those promoted on television would seem to be prima facie evidence of the "mass homo-

genization" effect suggested by the Gerbner & Gross view. However, no data have yet been provided on the actual permeation of television advertised toys and games versus alternative play item choices children may make. Nor have the contributions of information sources other than television, for example peer and parental influence, been documented.

2. The Present Study: Overview

The present study has three general objectives: (a) to construct a comprehensive model of children's understanding of television commercials; (b) to determine the relative importance of developmental, tv-experiential and social factors as inputs to the model; and (c) to examine output consequences in terms of the effects of television advertising on children's choice of play items.

The cognitive model was developed in the course of Dr. Gross' 1973 ASC seminar on attribution/inference theory. Central to the model are the accuracy and sophistication of the inferences children make regarding the source or sponsorship of commercial messages, the communicative intent of commercials, their symbolic representational nature, and the concept of an implied audience. The cognitive elements are then related to the child's overall attitude toward commercials, providing a measure of the child's general capacity to effectively screen advertising input. An opportunity to test the model was generously provided by Professor Thomas S. Robertson of the Wharton School who allowed the measures to be incorporated in a large scale project on children and media. The sample covers first, third and fifth grade children (approximately 100 at each level) with broad demographic representation.

As the main project included a panel survey of the impact of Christmas period television advertising on children, it presented an excellent vehicle for investigating communication effects under unusually well defined television input conditions.

B. RESEARCH DESIGN AND PROCEDURE

1. Research Design

The basic research design may be summarized as follows. Personal interviews were conducted with children representing three grade levels, 1st, 3rd and 5th. Structured, open-end interviews were used to measure each child's level of understanding of television commercials (TVC Cognition) and his associated attitudinal response (TVC Attitude). These measures formed the central part of the research design. As potential predictors of cognition and attitude, developmental, tv-experiential and social measures were also obtained from the children and, where appropriate, from their parents. The Wharton research project from which the present data were drawn was oriented around the pre- and post-Christmas period of 1972-73. The children were interviewed five weeks before Christmas, then again one week before Christmas, and finally two weeks after Christmas (parents were interviewed by telephone immediately after this on an unannounced basis). Thus it was possible to obtain choice measures of children's play items at the beginning and at the conclusion of the peak television toy and game advertising period, allowing an assessment of advertising effects. A schematic overview of the research design is provided in Table 1. The measurement chronology is detailed in Footnote 1.¹

2. Sample

The sample consisted of approximately 300 boys from five schools within the Philadelphia Catholic School System (Table 2). School and

Table 1

OVERALL RESEARCH DESIGN

Variables Measured at Each Grade Level	First Grade (n = 92)	Third Grade (n = 101)	Fifth Grade (n = 96)
Predictor Variables	AGE	AGE	AGE
	TELEVISION EXPOSURE	TELEVISION EXPOSURE	TELEVISION EXPOSURE
	SOCIALIZATION	SOCIALIZATION	SOCIALIZATION
Cognition and Attitude Variables	TVC COGNITION	TVC COGNITION	TVC COGNITION
	TVC ATTITUDE	TVC ATTITUDE	TVC ATTITUDE
Behavioral Choices	PREFERENCE FOR TV-PROMOTED ITEMS (Time 1 ----> Time 2)	PREFERENCE FOR TV-PROMOTED ITEMS (Time 1 ----> Time 2)	PREFERENCE FOR TV-PROMOTED ITEMS (Time 1 ----> Time 2)

Table 2

INITIAL SAMPLE PROFILE

School	Waldron	Rosemont	Drexel Hill	Sharon Hill	Darby	
Estimated Area SES*	(Upper Middle and Above)	(Upper Middle)	(Upper Middle to Lower Middle)	(Lower Middle to Upper Lower)	(Upper Lower)	
1st Grade	36	7	8	28	21	(100)
3rd Grade	25	9	11	43	18	(106)
5th Grade	39	7	8	15	37	(106)
Totals	100	23	27	86	76	(312)

* Occupational status for the total sample (heads of household) was distributed as follows: Upper management and professional, 21%; Middle management and proprietary, 21%; Lower level supervisory and proprietary, 22%; Blue collar skilled and white collar clerical and sales, 22%; Semi-skilled and below, 14%. Parental education levels were similarly well distributed. Personal income questions were not asked.

area selection provided broad socioeconomic representation. Two limitations were imposed by the Wharton study plan. Since the focus of the investigation was on Christmas advertising impact, sample selection was confined to Catholic Schools in order to maintain some control over both the religious implications of Christmas and the request-receipt timing of children's item requests. Also, the sample was confined to first, third and fifth grade boys, as possible hypotheses relating to sex differences were assigned lower priority in the general study plan. The rationale here was that processes could be adequately investigated within either sex without the customary procedure of having to "lump" data, or conversely, of having to resort to smaller "split" samples for subgroup analyses. Across the five schools, 23 students were absent for the second wave of interviews (the final stage of child interviews for the present study) yielding a final sample of 289 children: 92 first graders, 101 third graders, and 96 fifth graders. Parental interviews were completed with 92% of households. Slight discrepancies introduced by households having more than one child in the study meant that parental data were matched for 87% of the child sample (n=252).

3. Interview Methodology

The interviewing team comprised seven female and three male graduate students selected from a larger pool of applicants on the basis of practice interview performance. The team underwent extensive training on child interviewing techniques, including two full simulated interviews per person prior to each questionnaire wave. During the training sessions, particular emphasis was given to the following points: to

concentrate on developing good rapport, especially with very young children; not to paraphrase but to repeat exact wording if required; to use standard prompts such as "why?," "tell me more about that," "what else?" until full answers were obtained; not to accept "don't know" for an answer unless repeated probing indicated the child really didn't know; and to record the whole transaction verbatim. To assist in the latter task, interviewers were encouraged to ask the child to repeat or slow down if necessary to ensure complete recording. Also, the open-ended measures forming the central focus of the present study were administered on the second wave of interviewing to ensure that good rapport had already been established with more concrete questions before attempting the more abstract questioning required by the cognitive and attitudinal measures.

The children's interviews were conducted on a one-to-one, face-to-face basis. Each school provided a number of private interviewing areas which minimized external distractions. Interviews with the fifth grade children generally required only about 20 minutes per session, whereas the same material averaged about 30 minutes with first graders. However, the primary subject matter of toys, games and television kept all but an occasional child fully motivated and attentive. The children were taken straight back to class after the interview and, to further prevent post interview discussion, were asked not to talk about their answers "because other children have not had their turn yet, and it wouldn't be fair."

The same 10 interviewers conducted the parental interviews: a telephone survey interview requiring approximately an hour to an hour and

fifteen minutes per respondent. The decision rule adopted was to interview the child's mother; if unavailable, and in some single-parent households, the father was interviewed. In about two percent of the cases other guardians were accepted once it was established that this individual had primary contact with the child. An introductory letter and extensive callbacks for convenient interview times facilitated parental cooperation. Eleven foreign language problems, six unreachable respondents and 11 outright refusals or terminations accounted for the 8% parental non-response rate.

Questionnaire Pretests. The children's questionnaires were pretested with second grade students from one of the participant schools (Drexel Hill). This grade level was decided upon for pilot testing because it avoided having to make arrangements with an additional school for first-graders or having to omit any from the main study at the selected schools. Whereas first graders, the youngest group to be interviewed, would have been the ideal test sample for the questionnaires, it was reasoned that questions fully understandable by second graders would be a workable compromise. For the pretest, synonyms anticipated for possible problem words were available as ready substitutes. Questions were kept as short and simple as possible. Children were specifically asked to explain what various key words meant to them by giving definitions, examples and their own synonym equivalents. Overall, the pretest for each questionnaire wave occupied seven to ten days of trial interviews, interviewer discussions, and subsequent retesting until the best versions were achieved. The parental questionnaire items were similarly subjected to thorough pretesting prior to the actual survey.

C. VARIABLES AND MEASUREMENT

1. The Cognition-Attitude Model

The model of children's understanding of commercials contains a cognitive component and an attitude component. The cognition component (hereafter labeled TVC Cognition, with TVC referring to TV Commercial) consisted of six variables designed to gauge the child's understanding of structural and functional aspects of the television commercial as a generalized concept. The variables were selected according to a four dimensional theoretical framework suggested by the work of J.P. Guilford and Jean Piaget; the dimensions are derived from Guilford's structure-of-intellect model while the scale categorization is based on Piaget's stage theory of cognitive development. A brief review of these contributions will aid in explicating the origin of the model.

Guilford distinguishes five categories of cognitive products which result from mental processing (through the mechanisms of cognition, memory, evaluation, convergent thinking, and divergent or creative thinking) of information inputted via various modes (which he designates as figural, symbolic, semantic, and behavioral, though other classifications could be constructed). The five products are: Units, Classes, Relations, Implications, and Transformations (Guilford, 1968). As units are simply subsets of classes, they can be regarded as essentially four products. (1) Classifications (or classes) are basic to cognition in that the to-be-cognized object or event must be discriminable from other objects and events in the stimulus field. Discriminative abilities are usually manifest in discriminative responses and equivalence responses

(Flavell, 1970). In the case of television it is entirely possible that young children cannot differentiate between commercial and programmatic audiovisual events. They may be all "pictures" to him just as all small crawling objects may be "snail" to the 2 to 4-year old preconceptual child (Piaget, 1970b). Pilot research by Blatt, Spencer & Ward (1971) suggests that discrimination between commercials and other programming may be absent or incomplete in some children even by the end of first grade. (2) Relations constitute another aspect of cognitive processing ability. In terms of television advertising, the principal relations which must be grasped eventually by the child are those between the event and its source, on the one hand, and the relationship between the event and the intended audience, on the other. Both relationships tie in with Piaget's notion of "de-centering," whereupon the developing child becomes increasingly able to recognize and adopt, when necessary, the perspective of others (cf. G.H. Mead, 1934). Full relational understanding of commercials, then, would include the ability to perceive (a) the causal role of the external sponsor or message sender, as well as (b) the existence of heterogeneous classes of message receivers (Wright, 1959). Flavell (1970) reports that sociocentric recognition of the perspective of "other" is only partly accomplished during earlier years of schooling. (3) Implications are closely related to relational understanding. Flavell notes that development of sociocentric perspective involves not only recognition of an external source but also sensitivity to the presence of "covert perceptual, cognitive and motivational processes in other people" (1970, p.1029)--in other words, attribution of intent. Adult research (Bauer & Greyser, 1968) has identified two

broad categories of perceived intent with regard to advertising: (a) "persuasive intent," which is invariably negative in tone, and (b) what is here labeled "assistive intent," which refers to the positive informative function commercials may provide. Adequate understanding of the function of TVCs by children, therefore, should include implicational recognition of both types of intent. (4) Transformations are central to Piaget's theory as well as Guilford's, and are at the core of symbolic activity. Commercials, of course, are symbolic representations of the products they are designed to sell, and conceptual understanding of them must include the ability to recognize their representational nature. Sophisticated audiovisual techniques making for often remarkable transformations of objects and characters, time and space, require perceptual and cognitive decoding. And, as recent FTC review boards have discovered, linguistic-semantic decoding of quite complex order maybe necessary for the average adult to accurately understand certain advertising messages. With children, alleged inability to discriminate codic forms from referential reality has been the major theme of media critics, who charge that television advertising capitalizes on representational exaggerations, distortions and omissions (Action for Children's Television, 1971; Morris, 1971).

The relationships of the six specific variables in the TVC Cognition model to the four, more basic cognitive products may be summarized as follows:

COGNITIVE PRODUCTS
(GUILFORD/PIAGET)TVC COGNITION VARIABLES

1. Classification	Commercial-Program Discrimination
2. Relations	(a) Source-Message (b) Message-Audience
3. Implications	(a) Persuasive Intent (b) Assistive Intent
4. Transformations	Symbolic Representational Recognition

The second part of the model examines the child's attitude or "response set" toward commercials (TVC Attitude). The attitudinal part of the model has a relatively standard theoretical origin. Three variables are involved: Belief, Affect, and Behavior Disposition. Although many alternative conceptualizations of "attitude" have been proposed over the years, recent theorizing has heralded a return to the tri-component concept of attitude advanced by 19th century psychologists Brentano and William James, which in turn was based on early philosophical distinctions of the basic human conditions of knowing, feeling, and acting. The tri-component view regards "attitude" as a relatively enduring though modifiable system of beliefs, affective feelings, and action dispositions evoked by an object or event (Krech, Crutchfield & Ballachey, 1962). McGuire (1969) reports that generally high correlations have been observed between belief, affect and conative dimensions, although he acknowledges that the majority of research has simply studied the affective component. He notes further (p.157) that theorists who adhere to the distinction should prove its justification. Martin Fishbein's widely adopted approach provides logical and empirical justification for retaining the individual attitude dimensions. In an

important paper, Fishbein (who personally advocates restricting the term attitude to the affective component) demonstrates the functional independence of beliefs, attitudes (affect) and behavior dispositions (1966; see also Fishbein & Ajzen, 1972). The tri-component distinction is directly applicable in the case of television advertising where, for example, it is quite clear that one can like a commercial without necessarily believing its premise, or like and believe a commercial without feeling disposed to purchase the advertised product.

Krech et al., maintaining the term "attitude" to summarize all three components, conceptualize it in terms of psychological "set," akin to an internalized structure or scheme in Piaget's sense (see especially Bruner, Olver & Greenfield, 1966). In this view the "entire 'package' of beliefs, feelings, and response tendencies is henceforth always there, on the ready, whenever the individual is confronted by the appropriate object." (Krech et al., 1962, p.137) In the instance of television commercials, people may be expected to have developed normative levels of believability, affect, and motivation which form an internalized attitudinal frame or "response set" operative on any given exposure. This frame-of-reference operation may of course be entirely tacit rather than consciously explicit, as Polanyi (1967) has shown.

Cognition and Attitude Measurement. Measurement procedures for determining cognition and attitude encompassed six open-ended questions modified from Ward's Harvard research (1971, 1972). The first three questions were designed to gauge the child's level of cognitive understanding of the nature and purpose of television advertising, while the last three questions were primarily directed toward attitudinal response

outcomes. However, since the child was always asked to provide reasons for every response, evidence for cognitive understanding was derived from these later questions also, i.e., from the total response protocol.

The six questions were:

1. What is a television commercial?
2. Why are commercials shown on television?
3. What do television commercials try to get you to do?
4. Do you believe what television commercials tell you?
5. Do you like television commercials?
6. Do you want every toy or game that you see advertised on television?

Responses were transcribed to standardized typed versions for coding purposes, with interview protocols identified by 5-digit random numbers to eliminate subject status cues. Judges were three graduate students, none of whom participated in the original interviewing. Fifteen protocols, five from each grade level, were randomly selected to serve as a basis for coder training. Actual coding commenced only after full understanding of each dimension and category was demonstrated by each judge. The 289 protocols, including the practice set renumbered and replaced, were arranged in random order across schools and grades before judging. In all, there were nine content dimensions, six for TVC Cognition and three for the tri-component TVC Attitude measure. Coders were explicitly instructed to make independent judgements across dimensions, having been warned about the operation of positive and negative halo effects.

Reliability. A straightforward though relatively unsophisticated

reliability criterion was adopted for cognition and attitude score assignment: agreement between at least two of the three coders (modal agreement). It was found that, although over all nine variable dimensions all three coders attained perfect agreement in only 56.1% of instances (agreement levels ranged from 40.5% to 85.1%), modal agreement was attained in 99.2% of the instances (range = 95.5% to 100.0%).² Cases in which all three judges disagreed were deleted from the analysis as missing data.

Scaling Procedures. The six variables comprising the TVC Cognition set, with their associated scale values, are shown in Table 3. Scale construction was determined by two theoretical considerations. The first, seen in the first-second and sixth variables, involves increasing explicitness in ability to demonstrate concept acquisition. The second, seen in the third, fourth and fifth variables, involves decreasing egocentrism, or in other words, increasing ability to adopt perspectives other than one's own. Zero-level responses signify inability to provide adequate answers to various interview questions even after repeated probing. For the most part these were "I don't know" responses prevalent among the first grade children. Responses illustrating the supra-zero scale values for each cognitive dimension are illustrated by verbatim examples below.

Commercial-Program Discrimination measures the extent to which the child can discriminate commercials from other television programming fare. Implicit Discrimination (level 1) is exemplified by absence of program-commercial confusion but inability to articulate the distinction:

Table 3

TVC COGNITION SCALE VALUES

Cognitive Variable	0	1	2	3	4
Commercial-Program Discrimination	None	Implicit Discrimination	Explicit Discrimination		
Source-Message Relationship	None	Ambiguous Source Reference	Explicit Source Recognition		
Message-Audience Relationship	None	Ego Audience	Peer Audience	General Audience	Segmented General Audience
Assistive Intent Attribution	None	Egocentric Consequence	Sociocentric Perspective		
Persuasive Intent Attribution	None	Egocentric Consequence	Sociocentric Perspective		
Symbolic Representational Recognition	None	Implicit Distinction	Explicit Discrepancy	Explicit Commercial Techniques	

(Q: What is a television commercial?)
It's just takin' a picture and you put it
on television...Sometimes there's toy tv
commercials. (Interview #1015)

About all funny things and they make
up funny stories and all. (What else?)
They tell about all these toys and where
you can buy them all. (#1338)

Explicit Discrimination (level 2) is demonstrated through terminological
contrasting of commercials with programs:

Something that advertises and pays for
a show... (#5672)

It's a few minutes of time on the tv
that they announce things or tell you about
things. (What else do you know about it?)
It's a part in between or after a show that
advertises things... (#1686)

Source-Message Relationship is a relational concept involving abil-
ity to recognize the existence of a sender or source responsible for the
commercial message. Ambiguous Source Reference (level 1) is exemplified
by sole use of pronouns such as "they" or "it" so that it is not clear
whether the referent is an external source or the commercial itself:

(Q: What do commercials try to get you
to do?) To get what they have on the com-
mercial. (What else?) To get to like what
they have. (Else?) That's all. (#2343)

It's for telling people what they have
--for telling the parents what toys they
have so they can buy them for their child-
ren. (#4338)

Explicit Source Recognition (level 2) clearly demonstrates the concept
of advertiser or product company sponsorship:

For the people selling stuff to notify
other people what they're selling and what
it's like. (#3668)

It's an ad that pays for the show you are watching and tries to get people to buy the company's products. (#5668)

Message-Audience Relationship is the second basic relational concept. According to the Piagetian model, the child should increasingly be capable of recognizing the existence of an implied audience wider than his own subjective domain. At the Ego Audience stage (level 1) the child sees commercials as being directed to "me":

(Q: What is a commercial?) Advertisement for all the things I want for Christmas. (#1030)

They tell me nice things about toys and other things. (#1013)

At the Peer Audience stage (level 2) the child sees commercials as directed to peers as well as to himself, i.e. "people like me":

Because they show you the new stuff they have. They have a Knight Set and they want to show little kids it and they put it on tv. (#3002)

So kids could pick out toys that they want, like for their birthday or Xmas... (#4343)

At the General Audience stage (level 3) the child recognizes that commercials are directed at a still wider audience, i.e. "people":

It's something for a certain brand they're advertising and it shows people what it does and how good it is. (#4679)

It's an advertisement of some product. They tell the city or country about it so it will become popular. (#1682)

A full grasp of the audience concept is exhibited when the child recognizes a Segmented General Audience (level 4), i.e., that different commercials are directed to different groups within the total audience:

Well if you're 16 and they show Play-Skool you wouldn't want it. Or if you're 12 and they show a shaver... (#1677)

I really don't like commercials for clothes and all, just some cars...Sometimes it is for girls' stuff and sometimes it is not for something you would really want to use. (#2373)

Assistive Intent Attribution is one of the two primary implicational notions which involve attribution of perceived intentionality or purpose. At the first stage (level 1) the child perceives beneficial intent mainly in terms of its Egocentric Consequences rather than as a motivation on the part of "other":

Show you what you want for Christmas.
(What else?) Show you what you will get if you want. (#3334)

I don't think that commercials try to get you to do nothing. You just watch commercials to see what you want for Xmas.
(#2004)

Responses focusing on the sponsor's informative attempt signify a Sociocentric Perspective (level 2):

To let people know things are in stock and things are available and you can buy them. (#4681)

It's a form of telling people about the product, let them know where they can get it, tell them how much it is. (#1673)

Persuasive Intent Attribution similarly encompasses two stages of concept acquisition, the first (level 1) exhibited by Egocentric Consequence focus:

It's like in the beginning of a show they're advertising about things so you will go to the store and buy them. (#3344)

They make you buy toys or something like that. (#4333)

Consideration of the seller's persuasive intent, rather than just the consequences, indicates adoption of a Sociocentric Perspective (level 2):

They try to get you to be interested in what they're trying to advertise. And it might help them to sell their product easier. (#1682)

An advertisement...trying to persuade people to get what they are trying to sell. (#2670)

Symbolic Representational Recognition is a transformational recognition concept in the sense that the child is able to see that the product image created by commercials may differ from the product in reality. The child initially gives evidence of Implicit Distinction (level 1) without noting any discrepancy between image and object:

(Q: Do you believe what commercials tell you?) Yes. (Why?) 'Cause I seen some at the store. (What does that mean?) I believe it because I seen it on a commercial and at the store. (#4005)

Because I bought G.I. Joes and they told me about him and they told me the right thing. I had some Magic Cards and I did the tricks and they came out like they said they would. (#1007)

At a subsequent stage the child is able to point out Explicit Discrepancies (level 2):

'Cause last time I sent away for a record with 30 Monster Hits, and when I got it, it only had 10 and a bonus album of five. (Anything else?) Well all the times it says it will be back in two weeks and it not always is. (#4688)

Like once I got this plane that I saw and it was supposed to be unbreakable metal.

One time when I was playing it hit the ground and broke in half. (#2351)

Explicit Commercial Techniques (level 3) are cited by the more cognitively sophisticated child as evidence of symbolic staging or visual and verbal distortions:

Because sometimes they say the product is good, but then when you get it it's not as good as they say it is. (Any other?) Sometimes they say things that can't be done. They're like impossible. (For example?) When they have a commercial with a car and the car goes over all these axes and they say it's really true. (#4671)

Because of the setting. (What do you mean?) Because in Action Jackson and G.I. Joe they always show you're outside in the jungle or something and nobody in Asia or Africa has much of that--I mean nobody here has that kind of terrain. Like in G.I. Joe they show a stream running through your backyard and that's kind of impossible. (#3672)

. . .

These examples illustrate the depth of response produced by the open-end interview methodology. Similar examples could be listed for the attitudinal scaling procedure; however, the scaling categories for the three TVC Attitude variables are quite straightforward (Table 4). Attitude measurement was based primarily upon responses to the three questions corresponding to the tri-component index, i.e.: Do you believe what television commercials tell you? (Belief); Do you like television commercials? (Affect); Do you want every toy or game that you see advertised on television? (Behavior Disposition).

The two components of the model, TVC Cognition and TVC Attitude, thus consist of six sub-variables and three sub-variables respectively.

Table 4

TVC ATTITUDE SCALE VALUES

Attitude Variable	Scale Values				
	1	2	3	4	5
Belief	Disbelieves All	Disbelieves Some	Believes All		
Affect	Dislikes All	Dislikes Some	Likes All Peer	Likes All	
Behavior Disposition	Wants No Products Advertised	Wants Some Peer Products	Wants All Peer Products	Wants All But Sees External Limitations (e.g. expense)	Wants All Products Advertised

In anticipation of the need for a total cognition index and an overall attitude score, the following procedures were adopted. For TVC Cognition, since each scale category for each variable was included for explicit theoretical reasons, a purposely unweighted total score was computed. Referring to Table 3, it can be seen that this produces a total TVC Cognition score range of 0-15. For TVC Attitude, on the other hand, tri-component attitude theory dictates that the belief, affect and motivation variables be given equal weight. This was achieved by weighting each variable in inverse ratio to the number of scale categories (Table 4) so that those with higher score ranges are not overrepresented in the total index. The equally weighted scale was then converted to a convenient integer base by the following formula: $\frac{3}{4} (20B + 15A + 12BD - 47)$ where B = Belief, A = Affect and BD = Behavior Disposition. By inserting the minimum scale values of 1 for each of the three attitude dimensions, and alternatively, by inserting the maximum scores (3, 4 and 5 for B, A and BD) this formula is seen to yield a 0-100 total score for TVC Attitude.³ The fact that the cognitive index is based on a 0-15 scale and the attitude index on a 0-100 scale does not mean the latter component of the model is given greater overall weight, because the two components are sequential in the research framework and are not combined at any stage.

2. Predictor Variables

In selecting correlates or "predictors" of the child's cognitive and attitudinal responses to commercials, a logical starting point is Piagetian theory. The Piagetian model, of course, is paramount in

contemporary developmental research. Piaget has sometimes been interpreted as a maturational theorist who attributes little importance to social and environmental factors. While maturation or internal development is certainly the dominant construct in his approach, the theory does in fact incorporate social and individual experiential factors. Because of its clear application to the present research, basic Piagetian theory is outlined below.

Piaget is best known for his notion of "developmental stages," an invariant sequence through which every normal child proceeds as a consequence of intellectual growth. Many researchers, including Piaget's Genevan group, have utilized chronological age as the most readily obtainable index or correlate of the child's stage of development. The concept of age-related developmental stages implies, to many, an almost automatic maturational unfolding of internal cognitive structures, a process which takes place independently of, or at least takes precedence over, social and environmental influences. The conceptual appeal and logical conciseness of innate structure theories such as those recently advanced by Noam Chomsky and Eric Lenneberg to explain human linguistic competence has undoubtedly contributed to this type of interpretation.

However, Piaget himself has gone to considerable lengths in recent publications (1969, 1970a) to point out the essential difference between his position and that of the simple maturational or innate structure theorists, at one extreme, and that of the strict environmentalists, at the other. Piaget regards mental development as being the resultant of three fundamental factors plus a fourth which serves as an organizer and coordinator of the basic three. The three are: (1) biological

maturation; (2) experience acquired through contact with the external physical environment; and (3) action of the social environment. These he refers to as the "fundamental" or "classical" factors of development because, in his own words, "The last two cannot account for the sequential character of development, and the first one is not sufficient by itself because the development of intelligence does not include a hereditary programming factor like the ones underlying instincts." (1970a, p.719)

Piaget thus presents an interactionist model of cognitive development which stresses the interplay between internal and external factors. The child does not passively register the impact of physical and social stimuli; rather, he actively seeks and interprets them in line with his internal capacities. This introduces the fourth factor in development, the organizing or coordinating principle which Piaget has termed "equilibration" or "autoregulation" and which clearly illustrates the interdependence of internal and external experience. Equilibration refers to the balance or ratio between two basic modes of handling sensory input: assimilation and accommodation. Assimilation is the integration of external information to conform with a pre-existing internal cognitive structure or "scheme." Accommodation involves actual modification of the scheme itself to incorporate new information. In most cases both processes take place to a certain degree. Dominance of one or the other depends jointly on the intensity of the incoming stimulus information and the plasticity of the relevant internal scheme at a given stage in development. Obviously, for children at various stages of mental development, accommodatory capacity will be quite substantial.

For adults, on the other hand, whose cognitive schemes have attained a more permanent state, the more frequently occurring process is assimilation and an extremely strong environmental encounter may be necessary to produce structure-modifying accommodation. Finally, Piaget groups biological maturation and physical object-event interaction together, because another fundamental tenet of his theory is that knowledge is acquired through action ("operations") rather than passively through perception alone. The grouping forms the ontogenetic component in development. "Ontogenetic" refers to the developmental history of the individual organism. The ontogenetic component is distinguished from the social component built up through information transmitted by interaction with other people (as opposed to interaction with physical objects and events).

Piaget thus provides a comprehensive three-factor (or two-component) model of the inputs to cognitive development. While inspection of his work does clearly show the priority of ontogenetic biological maturation and object interaction factors in development, social interaction is also assigned a significant position. However, in the vast majority of studies based on Piagetian models of development, biological maturation has been the only independent variable considered (see, for example, the comprehensive review by Flavell, 1970). Usually this factor is indexed by age; sometimes by I.Q.⁴ Scott Ward's research on children's reactions to television advertising employed age exclusively yet claims to be a Piagetian interpretation. The fact is that, in the absence of alternative independent variables representing social and physical environmental factors, a definitive explanation of how children acquire

an understanding of television advertising is not possible.

One objective of the present study is to employ a more comprehensive set of input variables in accord with Piaget's three-factor model. Biological maturation is examined through age and grade correlates. Interaction with the specific physical stimulus environment is examined through television exposure levels. Social transmission is examined through the child's access to and interaction with older, more sophisticated models such as parents and elder sibs, and his social interaction with peers. Socialization influences are undoubtedly complex and multifaceted. For example, there is good reason to believe that peer influence may not be as significant as "advanced model" influence in the child's cognitive development. This and other aspects of socialization theory, along with relevant research findings, are reviewed next.

Social information can be transmitted to children "vertically," from older, more socialized models, or transmitted "horizontally" within the child's like-aged peer group. Social models such as parents, teachers and older siblings should, by virtue of their relatively greater degree of sophistication, be higher probability sources of inputs appropriate to the child's own acquisition of sophisticated constructs than should peers. In interacting with peers, the child is likely to encounter a majority of potential models who are no more sophisticated than he, and just as likely to attach to somewhat less sophisticated models as more sophisticated ones among the remainder of his peer contacts. However, his peer group is likely to be a primary source of information which validates and maintains his present level of sophistication, as regards expressed attitudes and beliefs, and behavioral

choices (cf. McCandless, 1969). Evidence from research on childhood political socialization (Hess & Torney, 1968) generally supports this view. Peer interaction was found to be unrelated to developmental understanding of political concepts. Interestingly, parental transmission was found to have little effect on the child's cognitive understanding of political concepts, though it does affect broad political attitudes (Hyman, 1959). Hess & Torney also documented the role of school experiences, notably "civics" instruction by teachers, in fostering political understanding. However, such instruction is institutionally encouraged in our society, as the authors note, whereas this would not seem to be true in the case of socialization pertaining to advertising. In general, teacher influence on the child's acquisition of social knowledge, other than purely academic kinds, is below that of parents, and peers (McCandless, 1969).

Postulation of socialization mechanisms should include specification of processes by which socialization is presumed to occur (Gerwitz, 1969). In particular, the present research designates parents and older sibs as the primary agents of vertical socialization. The extensive literature on socialization indicates that the probable mechanisms involved with parents and siblings are as outlined below.

Parental socialization can be either deliberate or incidental. Deliberate socialization, as Aronfreed (1968) observes, is often undertaken not only to educate the child but also with the parents' benefit in mind. In the case of television commercials, minimization of children's requests for advertised products may well be a consideration. A second factor determining deliberate parental socialization is the

parents' attitude toward the need for it. Attitudes favoring planned socialization are, as might be expected, a function of social class and parental education (Levine, 1969), the latter perhaps reflecting "competence" as a modeling characteristic (Bandura, 1962). Socialization may also proceed on an unplanned basis, simply as a consequence of parent-child interaction. This includes transmission via nonverbal as well as verbal cues (again, see Levine, 1969). In the context of television, and specifically during commercials, the nonverbal aspect has probably been underrated or ignored. For example, Weiss (1969), citing earlier research by Maccoby (1951) and others, notes: "Though the family may be in each other's presence while watching television...conversation is usually inhibited and interaction is minimized." However, it seems feasible that even a monosyllabic expression of dislike, disbelief, or whatever, in response to commercials, or gestures such as uneasy shifts or even leaving the room⁵, could serve as significant modeling cues.

The presence of older siblings offers another opportunity for social transmission to occur. One would expect, if the developmental sophistication hypothesis is accurate, that older sibs would constitute convenient and appropriate models. McCandless (1969) warns, however, that sibling influence can be a complex variable. A lot depends on the absolute ages and levels of sophistication of the children involved, as well as relative age differences, which, if large, may actually attenuate sibling interaction. Nevertheless, the possibility remains that in multi-child households, younger children who watch television in the presence of older sibs may show somewhat accelerated sophistication.

Peer group relationships provide the child with opportunities to

test his present level of personal and social competence. Piaget (1948) notes that peers are more important than parents in this capacity since the child is in a relationship of "unilateral respect" for parents and is distanced from them by essential egocentric disparity. From a process perspective, degree of peer integration is the principal functional parameter. McCandless (1969) reports a linear relationship between sociometric popularity and personal and social adjustment, although certain extremely popular "stars" may sometimes be relatively deviant. Furthermore, since effective peer interaction requires role-taking (Piaget, 1948), it follows that contact with many peers should bring greater familiarity with diverse roles, not to mention diverse play-things, as well as stimulating adaptive, cooperative play. Television viewing, however, is generally an individual or family activity rather than a peer group experience. While the content of programs may be discussed later among peers, including of course products advertised in children's commercials, it seems unlikely that children gain greater sophistication about the actual structure and function of advertising from similarly oriented acquaintances. Consequently, in the present research, peer integration is expected to influence play item selection but not comprehension of commercials.

Predictor Variable Measurement. Altogether, eight independent predictor variables were employed, forming three sets according to the three-factor Piagetian model. The three sets, along with associated sub-variables, are: Biodevelopment (age, grade level); Television Exposure (television exposure, multisets); and Socialization (parent-child interaction, parental education, older sibs, peer integration).

Operational measurement details and summary rationales are as follows.

Age was selected as the best available index of the child's biological level of development, as it was not possible within the confines of the present study to administer detailed Piagetian tests of stage development.

Grade Level was added to the biodevelopment set on the supposition that it represents a major source of common intellectual input for the child. Also, since the sample was stratified at first, third and fifth grade levels, this measure affords larger n's for descriptive summaries as well as a larger base for analytic examination with other multicategorized variables.

TV Exposure is an obvious choice as a measure of the child's experience with television commercials. However, a fact often overlooked in connection with degree of exposure to television (and, by implication, exposure to television advertising) is that exposure automatically accumulates with age. It would be most unusual for an older child to be less experienced with the medium than a child one or two years his junior and quite improbable as the age difference expands from, say first to fifth grade.⁶ Strictly speaking, then, a biodevelopmental measure such as age should be a closer correlate of exposure in the cumulative sense of total time spent with the medium. Nonetheless, one may further wish to examine differences attributable to light vs. heavy viewing within age levels with a static measure of television exposure, recognizing that it is cross-sectional rather than intra-individual. (This procedure was adopted in the present study by controlling statistically for age variation.) TV Exposure was measured by the child's

self-report on a checklist of weekday and weekend viewing periods.⁷ The time-spot measure correlates significantly with alternative measures of television viewing such as self-maintained diaries or next-day program recall. Although none of these measures is as precise as detailed observational recording, most are capable of providing a reliable differentiation of heavy and light viewers (Lyle, 1971).

Multisets (number of television sets in household) was the second variable included in the Television Exposure set. With the recent wide diffusion of color television and mini-sets, a majority of contemporary families are now multiset households. The underlying theoretical construct relating number of tv sets to the child's television exposure experience is the probable opportunity for children to view with less restriction when separate receivers are available. For example Bower (1973), reporting the results of a 1970 survey, notes that "Extra sets are now used for joint viewing by children 43% of the time and by the entire family 12% of the time." (pp.147-148) The Multisets measure tabulates the number of operative "in use" television receivers in the household. Confirming the multiset ownership trend, the mean in the present sample was 2.33 sets per family with, as expected, a correspondingly large standard deviation of 0.90.

The Socialization set comprised four variables:

Parent-Child Interaction was designed to measure opportunities for socialization to occur through parental contact. The measure was a summated frequency index consisting of seven potential interaction activities involving the child and either parent: indoor play, outdoor play, eating out, attending sports events, pre-Christmas shopping, and

joint viewing of the child's favorite television programs. The child's perception of activity frequency was utilized because it was thought to be less subject to social desirability bias and per-child memory limitations than a parental report.⁸

Parental Education Level was included as a second social influence variable, on the basis noted earlier that better educated parents are more likely to hold attitudes favoring deliberate socialization. In normal two-parent households, the highest stage of formal education attained by each parent was summed to yield a combined parental education index, while single-parent education scores were double-weighted.

Older Sibs refers to the presence of older siblings who could also serve as intrafamily social models for the child. Ideally, the age disparity between sibs should be taken into account, as well as the number of older sibs living at home. However, as only about a third of the children had older brothers or sisters present in the household, these refinements would have produced a rather complicated and possibly hybrid scale since the number and age disparity of younger sibs would appear to be of lesser importance.⁹ Accordingly, the Older Sib variable was scored for each child in the sample by recording whether he was the youngest, middle order, or oldest sibling. This scale was then reverse scored so that oldest children, with no older sibs as potential models, received a scale value of 1; middle children, with older and younger models, a scale value of 2; and youngest children, with only older sib models, the highest scale value of 3.

Peer Integration was included as the fourth variable in the Socialization set. As discussed previously, peer influence taps a "horizontal"

social transmission process in contrast with the vertical influence of parents and older sibs. The measure of peer integration selected for the present study was a sociometric choice index based on the number of friendship nominations the child received from his peer group. This is not as precise as certain other lengthier measures (e.g. the Peer Intercommunications measure described in Riley & Flowerman, 1951, which assesses nominations across 20 discussion topic areas). However, McCandless notes that with the exception of "stars," or greatly over-accepted children, the friendship measure is "perhaps the single best indicator of a child's personal-social adjustment." (1969, p.809)

Operationally, the sociometric popularity measure of peer integration required each child to provide the names of his three best friends at school. A check on nominations revealed that nominations outside the child's own grade level (i.e. "non peers") were minimal (4%). The child was then assigned a peer integration score based on number of nominations received. The range of nominations was 0 to 8, with a mean of 2.29 and standard deviation of 2.14. While 6.9% of the children received more than six votes, a popularity level which might be considered in the star category, this subset was too small either to justify a special analysis or to create significant departures from the linearity of the peer integration measure.

3. Behavioral Variables

The child's increased understanding of commercials should result not only in reduced attitudinal responsiveness to them, but also in certain behavioral consequences. Within the present research framework,

behavioral consequences center on the extent to which the child's Christmas item choices reflect the influence of television advertising. Demonstration of television advertising effects requires three basic analytic steps. First, the children's item requests have to be classified into at least two categories: tv-advertised items and non-tv items. Secondly, before even an initial claim of effects can be made, it must be demonstrated that the proportion of "tv item" choices does in fact increase over the pre-Christmas television toy and game advertising period. Thirdly, if unequivocal effects are to be attributed to commercials, other possible influences on tv-item choices--peer influence in particular--must be accounted for. Procedurally, these steps were established as follows. The children were asked to list their top five Christmas item choices at two time periods in the panel survey: five weeks before Christmas and then just one week prior to Christmas. These two time periods constituted pre- and post-peak measures for assessing the effects of television toy and game advertising. In order to assess pure effects, unencumbered by situational constraints such as family financial status or parental intervention, the children were specifically requested to nominate the items they most wanted as presents, regardless of their actual receipt expectations. For each play item nominated, the child was also asked the unaided recall question: "Where did you see (item) or hear about it?" The relative influence of television as an information source could thus be introduced to corroborate any apparent advertising-induced changes in pre-post item choices.

Play items were allocated to one of four mutually exclusive categories for measurement purposes: (1) TV Toys & Games; (2) Educational &

Artistic items; (3) Leisure & Personal items; and (4) Sports Equipment.

The principal research interest was in the first two categories as these represent the clearest opportunity for choice alternatives between television-promoted items and items with ostensible educational or artistic merit. The category breakdowns are listed below in order to provide an indication of category assignment criteria. As toys and games are the main focus of the advertising effects analysis, the listing is elaborated to show the most popular branded items. Further explanatory notes: miscellaneous items refer to single-child mentions not classifiable in the respective subcategories, and all percentages represent rounded averages across the pre and post interview waves.

	<u>Percent of Total Requests</u>
CATEGORY 1: TV TOYS & GAMES	47%
<u>Popular toys (excluding race cars)</u>	
G.I. Joe and accessories, Action Jackson and accessories, Big Jim and accessories, Johnny West, Rock'em Sock'em Robots, Lionel Train Set, Vertibird, Superstar, etc.	15%
<u>Race car sets and accessories</u>	
Hot Wheels, Sizzler cars, Sizzler Fat Track, SSP cars, SSP Smashup Derby, Johnny Lightning, Dune Buggy, A/FX cars, Hot Shot cars, Impostors, Class A Crash Course, etc.	11%
<u>Table and card games</u>	
NFL Electric Football games, Pro and Family Cup Hockey, Aurora Skittle Pool, Pivot Pool by Milton Bradley, Marksman and BB Electric Shooting Gallery, Monopoly, Magic Cards, Game of Life, Manhunt, Clue Game, Don't Break the Ice, etc.	15%
Miscellaneous	6%

CATEGORY 2: EDUCATIONAL & ARTISTIC	<u>10%</u>
Science kits and instruments	2%
Modeling and construction sets	2%
Painting and drawing supplies	1%
Books	1%
Musical instruments	2%
Miscellaneous	2%

CATEGORY 3: LEISURE & PERSONAL	<u>15%</u>
Radios, recording and playback equipment, records	7%
Clothes, furniture, watches	5%
Pets and pet supplies	1%
Miscellaneous	2%

CATEGORY 4: SPORTS EQUIPMENT	<u>28%</u>
Bicycles	8%
Football equipment	5%
Hockey equipment	3%
Basketball equipment	3%
Roller skates, go-karts, sleds, swimming and camping equipment	6%
Miscellaneous	2%

TV Toys & Games classification was accomplished by checking November and December network television advertising logs for the brand name items mentioned by the children (Broadcast Advertisers Reports, Inc.

Philadelphia Market Reports, 1972). In instances where brand names were not mentioned, generic entries were included in the toys and games category when they clearly referred to the same type of toy or game as the branded items. For example, "Racing cars, unspecified" were included with branded racing cars such as Sizzlers, Hot Wheels, SSP Cars and SSP Smash-Up Derby. Actually, brand nomination was very prevalent, so that generic assignment did not result in a high incidence of arbitrary decisions. Educational & Artistic classification included items traditionally recognized as contributing to academic learning, artistic skills, or both. Some of these items were undoubtedly promoted via television; however, if so, none received sufficient promotion to warrant an individual tabular entry in the BAR network advertising log. Moreover, the purpose of this classification was principally to separate from general toys, games, and other play items those which could be regarded by common standards as primarily educational. Leisure & Personal classification was quite straightforward. It could be contended that one of the sub-categories, recording equipment and records, can be artistically instructive. This would not seem to be a strongly applicable generalization, however; thus, only musical instruments were separated from the leisure item group and placed in the educational & artistic category. Sports Equipment classification included only items used for actual outdoor physical activities. Indoor "simulated" games, e.g. NFL Electric Football, were classified with the toys. In sum, the fourfold categorization scheme inevitably involves a degree of arbitrariness, but this is unlikely to be of sufficient magnitude to seriously affect the overall output variable designation. In particular, the "TV Toys & Games"

category is clearly dominated by commercially promoted items, whereas the "Educational & Artistic" category is not.

As noted earlier, information source measures were also obtained for each item. The child's informational utilization allows an additional assessment of advertising effects. For present purposes, two indices were constructed to serve as control variables. The first, labeled TV Only, isolates choices which, by the child's report, were solely influenced by television. The second, labeled Personal Influence, refers to all cases in which the choice included at least some degree of personal influence (even if television or other media were also instrumental). Personal influence was dominated by other-child rather than parental influence. The respective contributions, allowing for some overlap, were as follows: friends or school peers, 59%; sibs, 23%; parents, 17%. So few instances of "pure" personal influence--that is, personal influence unaccompanied by either tv, catalog or in-store influence--were recorded that personal influence alone could not be employed as a discriminating information source variable. The "personal influence involved" measure was therefore utilized as a surrogate variable representing an informational alternative to direct reliance on tv. TV Only thus implies an exclusive reliance on tv commercials and, consequently, a direct tv effect. Personal Influence, on the other hand, gives the child a rather liberal "benefit of the doubt" in that any personal mediation is regarded as a non-tv effect.

The research variables are summarized in Table 5.

SUMMARY LISTING OF RESEARCH VARIABLES

Major Variables	Individual Measures
<u>Input Variables</u>	
A. Biodevelopment	1. Age 2. Grade
B. Television Exposure	3. TV Exposure 4. Multisets (number of tv sets in household)
C. Socialization	5. Parent-Child Interaction 6. Parental Education Level 7. Older Sibs 8. Peer Integration
<u>Cognition-Attitude Variables</u>	
A. TVC Cognition	1. Commercial-Program Discrimination 2. Source-Message Relationship 3. Message-Audience Relationship 4. Assistive Intent Attribution 5. Persuasive Intent Attribution 6. Symbolic Representational Recognition
B. TVC Attitude	7. Belief 8. Affect 9. Behavior Disposition
<u>Output Variables</u>	
A. Children's Choice of Play Items	1. TV Toys & Games 2. Educational & Artistic Items 3. Leisure & Personal Items 4. Sports Equipment
B. Information Sources (Control Variables)	5. TV Only 6. Personal Influence

D. HYPOTHESES

The research hypotheses fall into three categories corresponding to the overall research objectives. The first set of hypotheses is designed to test the cognitive model for internal consistency. The second set evaluates the contributions of the predictor variables to cognition and attitude. The third set investigates advertising effects.

1. Test of the Model

The basic assumption underlying the cognitive model is that the respective component variables of TVC Cognition exhibit sequential acquisition patterns, i.e., that the six cognitive dimensions are hierarchically scaled in a developmental sense. Thus it is expected that:

H1: the following variables will be positive functions of biodevelopment, as indexed by age and grade: (a) commercial-program discrimination, (b) source concept acquisition, (c) audience concept acquisition, (d) assistive intent attribution, (e) persuasive intent attribution, (f) symbolic representational recognition.

A second assumption concerns the cognition and attitude components of the model, namely; that increased cognitive sophistication should be accompanied by a more "defensive" attitudinal response. This may be simply stated as:

H2: attitude will be an inverse function of cognition.

2. Predictors of Cognition and Attitude

Cognition and attitude are expected to depend on a number of antecedent factors, principal among which are developmental, tv-experiential and socialization inputs. The specific predictor variables are examined first. All except peer integration are theorized to contribute to

increased cognitive sophistication and, correspondingly, decreased attitudinal response. Peer integration, representing "horizontal" rather than "handed down" information, is not expected to affect cognition or attitude. Specific bivariate predictions, therefore, are:

H3: cognition will be positively associated--and attitude negatively associated--with (a) age, (b) grade, (c) tv exposure, (d) number of tv sets in household, (e) parent-child interaction, (f) parental education level, (g) presence of older sibs; and unassociated with (h) peer integration.

Next, the general issue of maturation vs. social learning is investigated by comparing individual ontogenetic development with socialization factors as alternative determinants of cognition and attitude. The analysis employs canonical correlation to go beyond the particular bivariate relationships of the previous hypothesis, examining multivariate relationships between sets of predictor and criterion variables.¹⁰ Since there are no a priori expectations concerning relative contributions, this hypothesis is stated in the null form:

H4: there will be no differences in the canonical contributions of the predictor variable sets--biodevelopment, television exposure, and socialization--to the respective cognitive and attitudinal criterion sets.

3. Behavioral Effects

The next section of the analysis investigates the effects of television advertising on children's overt choice behavior--specifically, on their relative preference for television-promoted toys and games. This analysis utilizes the panel survey data on behavioral choices. First, the general claim of television commercial effects is examined by comparing the proportion of tv-toy & game choices before the peak

advertising period with the proportion of such choices at its culmination. Here, a directional prediction is made:

H5: tv-toy & game choices will increase over the peak television advertising period.

Having examined, in a broad sense, advertising's effects on the child, consideration of what the child "brings to" the toy advertising situation will allow a more precise assessment of television effects. Most obviously, the child brings his maturational status, representing his cumulative store of experience with television (and with toys and games). If the earlier supposition regarding cognitive and attitudinal development is correct (Hypothesis 3), maturation and experience should generate increased resistance to commercial influence, which in turn should be manifest in lower behavioral propensity to select television-promoted items. It might therefore be expected that:

H6: tv-toy & game choices will decline with increasing age and grade level.

Within grade levels, children differ with respect to two main factors which might additionally affect their propensity to select television-promoted items. One would expect, firstly, that children who maintain a high level of television viewing relative to their age group and who rely on television as an information source for selecting play items would consequently choose a higher proportion of television-promoted items than their low exposure, low tv-reliance peers. Conversely, it might be predicted that a high degree of peer integration and greater reliance on personal information sources should offset possible tv dependencies. Thus, the "within grade" effects hypothesis is that:

H7: tv-toy & game choices will be positively associated with television exposure and with reliance on tv as an information source, but negatively associated with peer integration and personal influence.

The final hypothesis examines the relationship between advertising effectiveness and the model of cognition and attitude developed in the present study. Again the principal concern is with the effects on children at the same grade level, but who differ with respect to cognitive sophistication and attitudinal responsiveness toward television commercials. Increased cognitive sophistication and decreased attitudinal response should jointly serve a screening function for the child, reducing his propensity to select television-promoted toys and games. Considering cognitive sophistication as cognitive defense, and attitudinal negativity as attitudinal defense, the final hypothesis may be stated as follows:

H8: cognitive and attitudinal defenses to television advertising will result in lower tv-toy & game choice levels.

E. RESULTS

1. Sequential Acquisition of Cognitive Concepts

The first hypothesis examines the internal validity of TVC Cognition by testing for sequential acquisition of the respective cognitive concepts. Two types of statistical analyses were performed: a general correlational analysis, and a more specific stage-wise analysis by grade level.

Correlational analysis¹¹ revealed the cognitive variables, with one exception, to be highly correlated with the biodevelopment indices of age and grade (Table 6). The exception, with much lower coefficients, is the Assistive Intent concept. It may also be noted that the correlations with grade level are all slightly higher than with age. This is to be expected in that grade was the stratifying factor in the research sample (i.e. grades 1, 3, and 5). The right-hand column in Table 6 shows a useful index of the relative importance of each cognitive variable to the overall cognitive factor. These figures are "canonical structure correlations" (related to beta weights in multiple regression or factor loadings in factor analysis; see Footnote 10) which show the correlations between the individual variables and the principal "linear compound" (similar to a "factor" in factor analysis) which TVC Cognition forms with Biodevelopment. The canonical structure correlations indicate that four of the variables--Commercial-Program Discrimination, Source Relationship, Audience Relationship, and Persuasive Intent attribution--are about equal contributors to TVC Cognition, to the order of .6 or .7. The two standouts are Assistive Intent attribution, which

Table 6.

CORRELATIONS OF COGNITIVE VARIABLES
WITH BIODEVELOPMENT VARIABLES

Cognitive Variable	Age	Grade	Biodevelopment ^a
Commercial-Program Discrimination	.31***	.33***	(.57)
Source-Message Relationship	.42***	.45***	(.68)
Message-Audience Relationship	.35***	.40***	(.63)
Assistive Intent Attribution	.08*	.06	(-.06)
Persuasive Intent Attribution	.33***	.35***	(.59)
Symbolic Representational Recognition	.45***	.49***	(.86)

^a Canonical structure correlations of TVC Cognition component variables with Biodevelopment.

*** $p < .001$

* $p < .05$

has a slight negative but essentially zero relationship, and understanding of Symbolic Representation, which appears to be the single most important element in cognitive understanding as it relates to development.

Although the correlational results, with one exception, are supportive of developmentally sequential cognitive concept acquisition, a more precise test of the stage-wise notion is provided by comparing each variable's theory-generated category ordering with obtained category ordering by age or grade level. Grade-related patterns for the six cognitive variables and the composite TVC Cognition Index are shown in Table 7. Grade level was selected for present purposes since the larger cell sizes enable computation of X^2 tests of significance.

The X^2 relationships, again with the exception of Assistive Intent attribution, are all highly significant ($p/$.0001, one-tailed tests). However, there are a number of departures from strict stage-like sequences. Departures can be assessed in two ways. First, cross-sectional comparisons can be made by comparing the proportion of children at each grade level (i.e. across rows) showing various levels of concept acquisition. By this criterion, transitive ordering is excellent. For example, focusing on full concept acquisition (top row for each variable), the acquisition percentages increase linearly through first, third and fifth grades. The single exception to this trend is assistive intent, with children's attribution as to the helpfulness of commercials reaching a peak in third grade. This nonlinearity would account for the previously observed low correlations of assistive intent with age and grade. For all other cognitive variables, the biodevelopment correla-

LEVEL OF COGNITIVE CONCEPT ATTAINMENT BY GRADE^a

Cognitive Variable	Attainment Level	First Grade	Third Grade	Fifth Grade
Commercial-Program Discrimination ($X^2 = 44.4$; $p/ .0001$)	Explicit	<u>36</u>	<u>41</u>	<u>69</u>
	Implicit	38	49	31
	None	26	10	0
Source-Message Relationship ($X^2 = 70.0$; $p/ .0001$)	Explicit	<u>3</u>	<u>17</u>	<u>36</u>
	Ambiguous	45	64	59
	None	52	19	5
Message-Audience Relationship ^b ($X^2 = 53.5$; $p/ .0001$)	Segmented	<u>15</u>	<u>33</u>	<u>56</u>
	General	18	25	28
	Peer	17	16	4
	None (Ego)	50	26	12
Assistive Intent Attribution ($X^2 = 11.5$; $p/ .05$)	Sociocentric	<u>40</u>	<u>52</u>	<u>51</u>
	Egocentric	11	16	4
	None	48	32	45
Persuasive Intent Attribution ($X^2 = 68.3$; $p/ .0001$)	Sociocentric	<u>15</u>	<u>24</u>	<u>32</u>
	Egocentric	37	63	67
	None	47	13	1
Symbolic Represen- tational Recognition ($X^2 = 93.1$; $p/ .0001$)	Explicit	<u>2</u>	<u>8</u>	<u>22</u>
	Techniques			
	Explicit	10	41	59
	Discrepancy			
	Implicit	31	23	13
	None	57	29	6

^a Table entries are percentages showing concept attainment levels within each grade. Percentages were rounded to nearest integer to facilitate visual comparisons. Underlined entries designate full concept attainment.

^b Zero level and level 1 categories for the audience concept variable, None, and Ego, were combined to meet X^2 cell frequency requirements.

tions are strongly confirmed by the percentage data.

However, the within-grade (i.e. within column) acquisition percentages are not as clear-cut. One would expect, if the stagewise acquisition model is accurate, that first graders should be concentrated at the lower concept levels, third graders somewhere near the middle levels, and the fifth graders concentrated at the upper levels. Principal deviations from idealized patterns are seen for first grade commercial-program discrimination, assistive intent throughout, persuasive intent in the fifth grade, and symbolic recognition in the fifth grade. In the latter two cases, the pattern is one of leveling of acquisition levels of apparently difficult concepts after third grade.

Generally, though, instances of "premature" concept attainment are fairly few, especially in relation to null versus full comprehension extremes. Internally, the data do not form neat "scalogram" patterns, but ordinal relationships are in the majority. Given the measurement allocation for each variable, the internal consistency of the cognition model is most encouraging.

Test for Spurious Articulation Effects. One final issue should be addressed in relation to cognitive measurement. An obvious question when interviewing children is whether the data are affected by differential articulation abilities. This is a point worthy of elaboration since the cognition measures are of an open-ended nature and poor articulation could possibly "mask" valid sophistication, even though great care was taken to give each child ample opportunity to express his ideas (hence the longer interview duration with younger children). To test for possible effects due to articulation differences, the correla-

tions in Table 6 were recomputed partialling out the effects of parental education. It was felt that parental education level might provide a reasonable surrogate index of the child's verbal facility. Correlations adjusted for parental education differences are shown in Table 8. It is quite clear that the cognition results are unaffected by this variable; the coefficients were negligibly altered, with only one minor change in obtained significance.

2. Cognition and Attitude

Having examined TVC Cognition in detail, the next step is to document its hypothesized inverse relationship with TVC Attitude. Whereas cognition increases with age and grade, attitudes toward commercials decrease, becoming predominantly negative by fifth grade (Table 9). Correlations between TVC Cognition and the respective TVC Attitude variables are shown in Table 10. In all cases the relationships are significant ($p/ .001$) and negative, indicating that greater cognitive understanding of commercials is associated with greater disbelief, less liking, and lower response tendency. The overall correlation between cognition and attitude is also highly significant ($r = -.30, p/ .001$).

An important conceptual question arises as to whether the cognition-attitude relationships are merely due to simultaneous maturational effects on cognition and attitude (i.e. a "third variable" effect; see correlations, Table 6) rather than to an independently valid link between the two. The right-hand column in Table 10 demonstrates this is not the case. The cognition-attitude relationships hold even when biodevelopmental effects are partialled out, although the major role of

Table 8.

COGNITIVE CONCEPT ACQUISITION CORRECTED FOR
THE EFFECTS OF PARENTAL EDUCATION

Cognitive Variable	Age		Grade	
	Initial Correlation	Corrected Correlation	Initial Correlation	Corrected Correlation
Commercial Discrimination	.31***	.30***	.33***	.32***
Source Concept	.42***	.41***	.45***	.44***
Audience Concept	.35***	.34***	.40***	.36***
Assistive Intent	.08*	.07	.06	.05
Persuasive Intent	.33***	.32***	.35***	.34***
Symbolic Recognition	.45***	.46***	.49***	.48***

*** $p < .001$

* $p < .05$

Table 9

ATTITUDE CHANGES BY GRADE^a

Attitude Component	Response	First Grade	Third Grade	Fifth Grade
Belief ($\chi^2 = 67.8$; $p < .0001$)	Believes All	<u>64</u>	<u>31</u>	<u>9</u>
	Disbelieves Some	<u>21</u>	<u>51</u>	<u>72</u>
	Disbelieves All	15	18	19
Affect ^b ($\chi^2 = 35.3$; $p < .0001$)	Likes All	<u>69</u>	<u>56</u>	<u>27</u>
	Dislikes Some	<u>15</u>	<u>27</u>	<u>43</u>
	Dislikes All	16	17	30
Behavior Disposition ^c ($\chi^2 = 57.8$; $p < .0001$)	Wants All Products Advertised	<u>54</u>	<u>27</u>	<u>6</u>
	Wants All Peer Products	7	12	10
	Wants only some Peer Products	40	61	83

^a Table entries are percentages showing response levels within each grade. Percentages were rounded to nearest integer to facilitate visual comparisons. Underlined entries highlight favorable attitude decline by grade.

^b Scale categories 3 and 4 (see Table 4 earlier) were combined to meet χ^2 cell frequency requirements.

^c Scale categories 1 and 2 were combined to meet χ^2 cell frequency requirements as very few children said they wanted no advertised products.

Table 10

COGNITION-ATTITUDE RELATIONSHIPS

Attitude Variable	Correlation with TVC Cognition	Corrected for Biodevelopment
Belief	-.26***	-.12*
Affect	-.22***	-.11*
Behavior Disposition	-.26***	-.12*
TVC Attitude	<u>-.30***</u>	<u>-.15**</u>

*** $p \leq .001$

** $p \leq .01$

* $p \leq .05$

maturation is very evident by the large reduction (approximately 75%) in explained variance.

3. Specific Predictors of Cognition and Attitude

The third hypothesis examines the relationship between the specific predictor variables and the cognition and attitude variables. These relationships are shown in Table 11. Predictor variables affected by the age of the child were adjusted accordingly to enable determination of input variable effects on an independent basis, that is, unconfounded by age differences.

Age and grade were found to be the strongest predictors of cognitive comprehension and attitudinal response to television commercials ($p/ .001$ in all cases; one-tailed tests). Grade level is of course highly correlated with age, the more specific biodevelopment variable ($r = .91$). As hypothesized directionally, maturational processes result in greater sophistication coupled with a more defensive attitude toward commercial messages.

Television exposure, corrected for age variation, was found to be unrelated to cognitive understanding of commercials. However, a significant positive relationship was observed between tv exposure and attitude ($p/ .05$). Contrary to prediction but in line, perhaps, with intuitive expectation, this result suggests that children who are heavy viewers (relative to their age level) are the most favorably disposed toward television advertising. While the causal issues cannot be conclusively settled with correlational data, it seems unlikely that children watch more tv simply because they like the commercials. Surely,

Table 11

PREDICTORS OF COGNITION AND ATTITUDE

Predictor Variable	TVC Cognition ^a	TVC Attitudinal Response ^b
<u>Biodevelopment</u>		
Age	.45***	-.35***
Grade	.47***	-.39***
<u>Television Exposure</u>		
TV Exposure ^c	-.06	.10*
Multisets	.06	-.05
<u>Socialization</u>		
Parent-Child Interaction ^c	.02	.06
Parental Education	.18***	-.13***
Older Sibs ^c	-.15***	.00
Peer Integration ^c	.01	.02

^a Positive correlation indicates higher level of cognitive comprehension

^b Positive correlation indicates more positive (favorable) attitude.

^c Corrected for age of child (1st order partials).

*** $p/ .001$

** $p/ .01$

* $p/ .05$

programming is the main attraction, implying that greater apparent gullibility to commercials is a consequence of heavy viewing (or, alternatively, that greater susceptibility is a consequence of possible personality characteristics of heavy viewers).

The number of television sets available in the home (Multisets) apparently has no significant effect on cognition or attitude. Although the directional results were as hypothesized, no reliance should be placed on the coefficients, which essentially indicate zero relationships. Thus it appears that opportunities for non-parentally supervised viewing via additional sets in the home do not affect the child's understanding of, or attitude toward, commercials.

The socialization variables produced interesting results. First, children of better educated parents exhibit greater understanding of advertising ($p/ .001$) and stronger attitudinal defenses ($p/ .01$). This could be the result of an educationally enriched home environment with more responsible parental attitudes toward child socialization. However, frequency of interaction between parents and children was not found to be a significant variable. Possibly, a minimal amount of interaction may be sufficient to impart relevant socialization; alternatively, a more specific measure of social training with respect to advertising may be required.

The significant relationship between sib order and cognitive sophistication ($p/ .001$) was counter to the hypothesized direction. The negative coefficient ($-.15$) indicates that cognitive advancement is associated with the absence of older siblings--i.e., a first-born (or only child) effect. A look ahead to Table 12 sheds some light on this

result. Table 12 shows the independent variable intercorrelations (discussed separately below). A significant correlation exists between sib order and parental interaction, suggesting that greater parental attention is apparently given to the first child in the family. Perhaps this child is "steered through" commercials by parents, whereas later children are more often left to view in the custody of sibs. In any case, the findings are that older siblings do not function as significant models for advertising-oriented socialization.

Finally, peer integration, representing potential information gain through contact with a wider circle of friends, has negligible effects on the child's cognitive understanding of commercials and his attitude toward them. This was exactly as predicted in theory.

Social and Experiential Variable Relationships. Although not a part of the hypotheses, some rather interesting results were obtained from comparisons between the predictor variables. Table 12 shows the correlations between the social and experiential measures. The coefficients are adjusted for biodevelopment (age and grade level) in order to examine unequivocal effects.

Children of better educated parents tend to watch less television ($p/ .05$). This holds despite the not too surprising finding that more television sets are available in upper education households. Additionally, children of higher educated parents tend to be better integrated with peers ($p/ .05$).

The other interesting finding is that peer integration is negatively associated with television viewing (again, across all age and grade levels). In other words, less popular and perhaps socially isolated

Table 12

CORRELATIONS BETWEEN SOCIAL AND EXPERIENTIAL VARIABLES^a

Variable	Parent-Child Interaction	Older Sibs	Peer Integration	TV Exposure	Multi- Sets
Parental Education	-.01	-.01	.10*	-.10*	.17***
Parent-Child Interaction		-.12*	-.05	.00	-.03
Older Sibs			.07	-.02	.08
Peer Integration				-.13**	.04
TV Exposure					-.08

^a All correlations are corrected for age and grade level (second order partials).

*** $p/$.001

** $p/$.01

* $p/$.05

children are the heaviest viewers ($p/ .05$). This recalls a conclusion in the classic 1955 Katz & Lazarsfeld study: that gregariousness is inversely related to media-fiction consumption.¹²

4. Relative Contributions of Developmental, Experiential, and Socialization Factors

The analysis so far has used bivariate correlations between individual pairs of variables to examine specific hypothesized relationships. The fifth hypothesis seeks a more general answer to the question of the primary determinants of children's cognitive understanding of commercials and resultant attitudinal development through canonical interpretation of overall relationships.¹³ The particular advantage of canonical correlation procedures is that they allow investigation of the relationships between sets or groups of variables acting "in concert." Thus, as in the present study, three groups of independent variables might be assembled to represent, respectively, the maturational or "biodevelopmental" effect, the tv-experiential effect, and the socialization effect. These might be considered approximations to Piaget's "three fundamental factors of development," namely, biological maturation, experience acquired through contact with relevant stimuli in the external physical environment, and the action of the social environment. Canonical correlation also allows the use of groups of variables as the dependent set (whereas in regression analysis or discriminant analysis, which are formally part of the same family of procedures as canonical analysis, one is restricted to a single dependent variable, be it continuous or categorically discrete). The procedure can therefore

integrate all of the cognitive variables as the cognitive criterion set, and belief, affect and behavior disposition as the attitudinal criterion set. This is a useful analytic alternative to constructing summated cognition and attitude scores, as was done for the previous analyses, since it involves empirical rather than a priori weighting of the component measures.

In applying canonical analysis to sets of variables, then, the major requirement is that each set of variables can be given logical and theoretical meaning as a set. Given this, a feature of canonical analysis is that independent contributions of various sets of predictor variables can be directly compared through an eigenvalue equivalent to the r^2 index of "explained" or accounted-for variance.

Five variable sets were constructed from the predictor variables and the cognition and attitude variables. Acronymic labels are used to conveniently identify each set. Two dependent variable sets were constructed: TVCCOGN, comprising the six TVC Cognition variables, and TVCATT, comprising the three TVC Attitude variables. Three independent variable sets were then constructed as follows: BIODEVTV, comprising age and grade level; TVEXP, comprising television exposure and multiset availability as experiential variables; and SOCMOD, comprising the vertical socialization variables relating to parental and sib models, i.e., parent-child interaction, parental education, and presence of older sibs. Horizontal social transmission was not included in this analysis since its single component variable, Peer Integration, has already been shown to be unrelated to cognition or attitude; nor does it fit theoretically into the "vertical transmission" SOCMOD set.

Contributions to Cognitive Understanding of Television Commercials.

Canonical correlations between TVCCOGN and BIODVET, SOCMOD and TVEXP are shown in Table 13 along with canonical factor eigenvalue equivalents of jointly explained variance (r^2) and associated significance levels (see Footnote 10). In all cases, the first canonical variate accounted for the strongest linear relationship observed between variable set pairs, so minor, clearly non-significant orthogonal variates are not shown.

The maturational factor represented the largest contribution to TVCCOGN, with shared variance of approximately 40%. Socialization accounted for about 9%, a smaller but statistically meaningful contribution. Television viewing experience contributed only 4% and did not (apparently) reach statistical significance.

Inspection of canonical function coefficients indicating the contribution of individual variables to their respective canonical variates revealed that age and grade level, as expected, had positive weights of .25 and .75 in the BIODVET variate, which in turn was positively correlated with TVCCOGN. The greater relative weighting of grade level, as noted earlier, may have been due to the linear but discontinuous selection of first, third and fifth grades rather than subservience as a variable to age.

Within the second predictor variable set, SOCMOD, the highest canonical variate contribution was made by parental education level (.81), followed by sibling position (-.50) and parent-child interaction (.34). The negative coefficient for sib order confirms the first-born effect shown in the bivariate data, indicating that older sibs do not

Table 13

CANONICAL RELATIONSHIPS BETWEEN INDEPENDENT
AND CRITERION VARIABLE SETS

Independent Variable Set	Canonical Correlation ^a	Eigenvalue (r ² %)	Significance Level ^b
<u>Criterion Set: TVCCOGN</u>			
BIODEVTV	.63	39.57	.001
SOCMOD	.29	8.73	.05
TVEXP	(-).20	3.94	n.s.
<u>Criterion Set: TVCATT</u>			
BIODEVTV	(-).55	30.78	.001
SOCMOD	(-).27	7.33	.02
TVEXP	.24	5.74	.02
<u>Criterion Set: TVCATT</u>			
TVCCOGN	(-).65	41.92	.001

^a Canonical correlation coefficients range from 0 to 1.00 since within-set variables are grouped regardless of sign; directionality is assessed from the input matrix.

^b Significance levels weaker than .001 should be interpreted as tentative (see Footnote 10, final paragraph).

provide influential models for understanding of television advertising. Better educated parents seem to be the main social accelerator of cognitive understanding.

Contributions to TVC Attitude. Canonical correlations between TVCATT and BIDEVPT, SOCMOD and TVEXP are also shown in Table 13. Maturation contributes approximately 31%, socialization 7%, and experiential interaction with tv, 6%, to shared variance with attitudinal response. Despite its small contribution, television exposure apparently has a significant effect on attitudes toward commercials. (The claim of significance here is bolstered by the significant bivariate correlation between exposure and attitude.) While maturation and socialization engender a more negative or "defensive" attitude toward commercials, heavy exposure has the opposite tendency. For the TVEXP canonical variate, viewing level contributed greater weight (.94) than did number of tv sets (.27), which fits intuitive expectation.

Cognition and Attitude. Lastly, the direct relationship between TVCCOGN and TVCATT, as canonical variates, confirms the TVC Cognition and TVC Attitude index correlations reported earlier. The child's level of cognitive understanding of television advertising is clearly associated with his attitudinal response to it. Coefficients for the TVCATT set revealed that its component variables--belief, affect, and behavior disposition--are all negatively affected by increased cognitive sophistication.

While it may not be overly surprising that attitudinal response should be substantially predictable from cognitive understanding of the attitude object, perhaps the most revealing finding is that the three-factor "Piagetian model" is an equally good predictor. Noting

that its component measures such as age, parental education level, and television exposure are conceptually far removed from the dependent measures, the Piagetian model accounted for 44% of the variance associated with TVCATT (vs. 42% for cognitive understanding treated as a predictor variable) and 54% of the variance associated with TVCCOGN.

5. Television Advertising Effects on Play Item Choices

Analysis of advertising effects commences with the fifth hypothesis, which examines changes in play item choices over the peak advertising period. Changes can be measured in a number of ways.¹³ Two were utilized in the present analysis. First, recalling that each child nominated five items per survey wave for the pre and post measures, changes in item category distributions can be measured on an aggregate basis, using the item as the unit of analysis. This allows an assessment of the absolute permeation of tv-toy & game choices. Alternatively, each child can be assigned a separate score for each of the four item categories (ranging from 0 to 5 per category), with the individual child thus becoming the unit of analysis in an assessment of mean differences. Both measures were in fact computed, with identical pre-post change patterns resulting. That is, aggregate effects do represent a summation of individual effects, as will be shown later in the analysis. However, changes in item distributions are most clearly evaluated on an aggregate basis, via percentage differences. Since grade level differences were very large, this avoids having to interpret the complex analyses of variance and multiple order interactions necessitated by individual unit analysis. Consequently, significance

tests were conducted on the aggregate data except where individual analysis was conceptually required.

Pre-post changes in play item choices, by item category and by grade level, are shown in Table 14. For the total sample, tv-toy & game selections increased from 45.0% to 48.3% over the four-week period. (On an individual basis, this represents, of the five selections allowed in each wave, a mean, per-child increase of 2.2 to 2.4 tv-toy & game items.) On a net (absolute) aggregate basis, this represents an increase of 3.3%; on a relative basis, considering the pre-level, an increase of 7.3%; and on a percent-of-possible-increase basis, an increase of 6.0%. The significance tests in Table 14 are based on the first of these differences, since this is the only measure with a specifiable sampling distribution for computing the statistical significance of changes (see Footnote 13). The aggregate tv-item increase is only marginally significant ($t = 1.65$, $df = 1443$, $p = .10$). Increases in toy and games choices were also observed at each grade level, but in relation to smaller item n's by grade, these changes did not attain the marginal .10 significance level.

6. Behavioral Choices as a Function of Age and Grade

The sixth hypothesis examines play item choices as a function of age and grade. The child's age has a strong effect on his behavioral choice of play items. On an individual level, tv-toy & game choices decline as the child grows older, while choices of the three other types of play items show significant age-related increases. This trend held on both pre and post choice measures. (On the final choice

CHANGES IN PLAY ITEM SELECTION OVER THE PEAK TELEVISION
ADVERTISING PERIOD

Category	Pre	Post	Change Direction	Significance Level ^a
<u>Total Sample</u>				
TV Toys & Games	45.0%	48.3%	+	.10
Educational & Artistic items	10.4%	9.6%	-	n.s.
Leisure & Personal items	16.9%	14.3%	-	.08
Sports Equipment	27.8%	27.8%	0	n.s.
<u>First Grade</u>				
TV Toys & Games	53.7%	57.5%	+	n.s.
Educational & Artistic items	7.1%	7.1%	0	n.s.
Leisure & Personal items	12.5%	11.6%	-	n.s.
Sports Equipment	26.7%	23.8%	-	n.s.
<u>Third Grade</u>				
TV Toys & Games	49.7%	52.9%	+	n.s.
Educational & Artistic items	8.7%	7.0%	-	n.s.
Leisure & Personal items	16.1%	14.9%	-	n.s.
Sports Equipment	25.5%	25.1%	-	n.s.
<u>Fifth Grade</u>				
TV Toys & Games	29.5%	34.2%	+	n.s.
Educational & Artistic items	15.7%	15.3%	-	n.s.
Leisure & Personal items	22.7%	16.6%	-	.05
Sports Equipment	32.2%	33.9%	+	n.s.

^a Established by t tests for differences in proportions, i.e.,
 $t = \frac{p_1 - p_2}{\sigma_{p_1 - p_2}}$ (where p_1 = pre proportion, p_2 = post proportion,
and $\sigma_{p_1 - p_2} = \sqrt{(p_1q_1/n_1 + p_2q_2/n_2)}$ with $df = n_1 + n_2 - 2$).

measures, for example, item category correlations with age were: tv-toys & games, $r = -.27$, $p/ .001$; educational & artistic items, $r = .15$, $p/ .001$; leisure & personal items, $r = .11$, $p/ .004$; sports equipment, $r = .14$, $p/ .001$.) However, the grade level data in Table 14 show that the change in play item preferences at the fifth grade (10-11 year olds) is primarily responsible for these trends. Although tv-toy & game choices reveal a consistent decline by grade level at both the pre and the post measurement periods, aggregate percentage comparisons reveal that the first to third grade decreases are not significant ($p \geq .10$), while the third to fifth grade decreases are highly significant ($p/ .001$ for both pre and post measures). Correspondingly, it is not until fifth grade that preferences for non-tv items show noticeable increases as alternatives to tv-toys & games.

7. Television Exposure, Peer Influence, and Advertising Effects

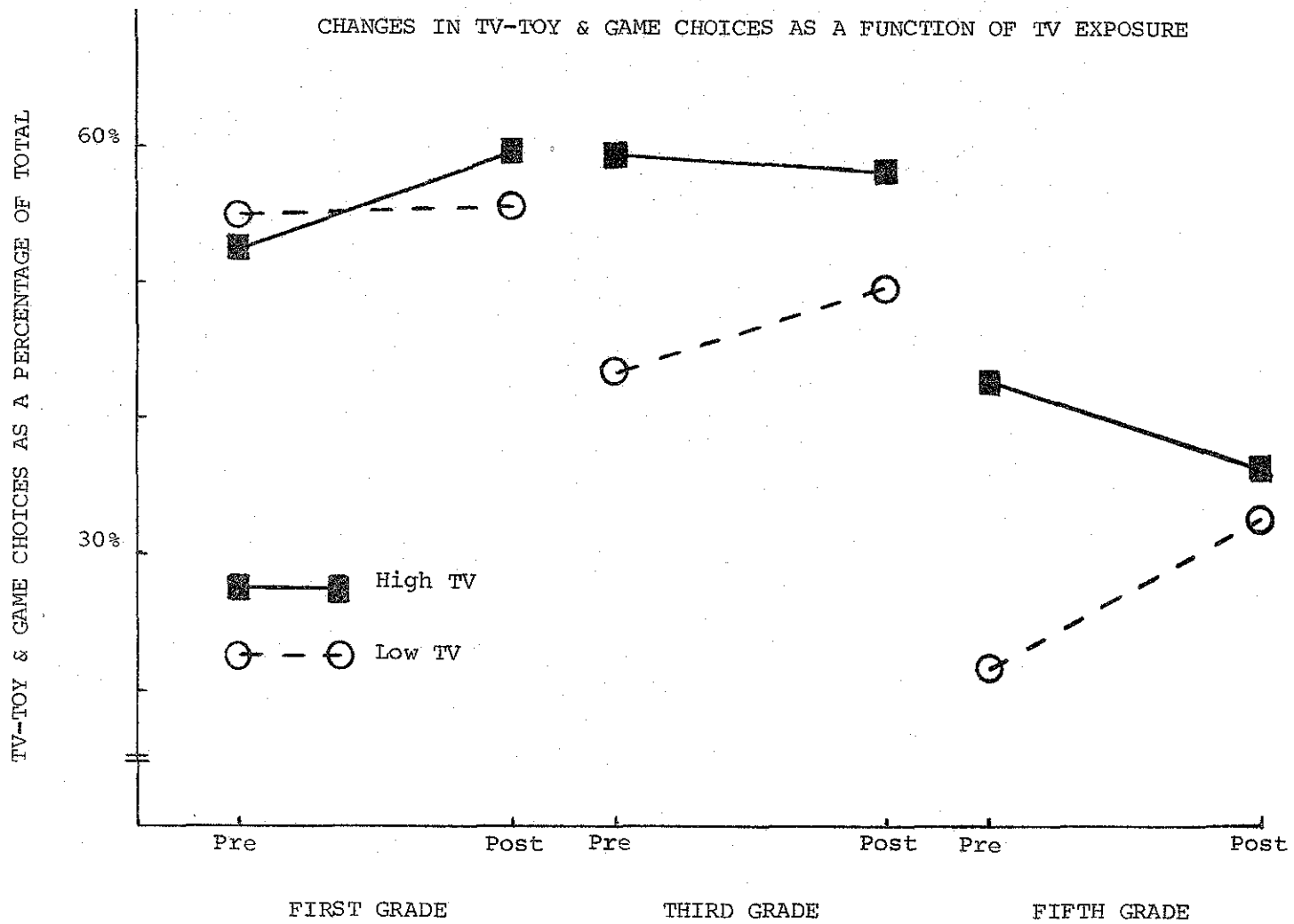
The pre-post percentage data in Table 14, as noted earlier, revealed little evidence of short-term advertising effectiveness. Although increases in preferences for television-promoted items were observed at all grade levels, the net increases were only to the order of three to five percent and all were nonsignificant. However, before dismissing the advertising effectiveness hypothesis because of marginal or insignificant change scores, it should be recognized that the absolute level of initial tv-toy & game choices is extremely high: approximately 50% for first and third graders, and a lower but still substantial 30% of all choices for fifth graders. High initial choice levels suggest that the pre measure, approximately five weeks prior to

Christmas, may have been timed somewhat late in the advertising cycle. That is, at this early stage, substantial numbers of children may have already determined their preference for television promoted items. If so, one would expect that habitually heavy viewers at each grade level would have an "exposure advantage" in that they would presumably have seen more toy and game commercials than their lower viewing peers at this point in time. Accordingly, analysis of high vs. low tv exposure subgroups at each grade level should reveal differences in pre measure choice levels.

Analysis of tv-toy & game choices by television exposure (within grade) indicates that pre-measure choice differences indeed existed. When the children are divided into High and Low TV groups by median television exposure, pre-measure differences between the two viewing groups, except at the first grade level, are found to be large and significant. (Pre and post choice levels for the high and low tv groups are plotted by grade level in Figure 1; percentages for this figure are cited here in the text rather than in an additional table.) The pre-measure difference for the first graders is clearly nonsignificant. However, pre-measure differences for third graders and for fifth graders demonstrate that high exposure children, soon after the onset of tv-toy & game advertising, have already established firm tv-toy & game preferences. One-tailed t-tests confirm that the pre-difference at third grade is highly significant ($t = 3.23$, $p/ .005$) as is the even larger pre-difference at fifth grade ($t = 4.16$, $p/ .0001$).

Despite very different pre-peak "entry" levels, the effectiveness of currently received advertising for tv-toys & games is strongly

Figure 1



apparent from the pre-post changes shown in Figure 1. Apart from first graders, where high and low tv groups reveal "saturation" choice levels, increases in tv-item selections are most dramatic among the low exposure children. At the third grade level, the difference between the high and the low tv groups is seen to persist throughout the advertising period--but the increased susceptibility of low tv children has reduced an initial 59.0% vs. 43.5% choice difference ($p/ .005$) to a final 58.5% vs. 49.2% choice difference ($t = 1.94$, $p/ .07$ only). At the fifth grade level, advertising effects totally wash out the pre-period differences. Whereas high tv and low tv fifth graders had tv-item preferences of 42.6% and 21.8%, respectively, prior to the peak commercial period ($p/ .0001$), their post measure preferences, 36.7 and 32.8%, are insignificantly separated. As indicated in Figure 1, this is partly accounted for by a decline in tv-item choices in the high tv group, although the decline is not statistically significant ($t = 1.00$, $p = .24$). The preference increase for the low tv group is significant, however ($t = 2.97$, $p/ .005$). Nevertheless, the high tv decrease raises a question of possible peer or personal intervention in what initially appeared to be a "childish" fifth grade choice pattern.¹⁴

In order to document the influence of television more precisely, and to examine personal influence as a potential explanation for the fifth grade high tv group's diminishing toy and game preferences, an individual-level analysis was performed. A single pre-post change score was computed for each child, representing the difference in the number of tv-toy & game items selected on the pre and post interview waves. Change scores were then correlated with the TV Exposure

variable and the TV Only information source variable (as a further test of television impact), and also with Peer Integration and the Personal Influence information source variables. These correlations are shown in Table 15. With one minor departure in terms of significance, the individual level data strongly corroborate the aggregate effects analysis.

For first graders, whose already high level of tv-item choices did not change significantly over the peak commercial period, television and interpersonal predictors are, as expected, nonsignificantly correlated with changes in tv-item preference.

For third graders, however, increases in tv-item choices were negatively correlated with the child's habitual viewing level ($r = -.18$, $p/ .01$; which supports the conclusion of greater impact on low tv children) but positively correlated with current reliance on television as an information source ($r = .18$, $p/ .01$). These results, of course, provide powerful confirmation of television commercial effectiveness at this grade level.

For fifth graders, the tendency for low tv children to exhibit the highest tv-item susceptibility was again strongly apparent from the negative correlation with (chronic) tv exposure ($r = -.21$, $p/ .001$). However, the tv information variable in this case provides only a partial demonstration of current television commercial impact ($r = .07$, $p = .13$).

Table 15 also reveals an unexpected outcome: the relative failure of peer integration and personal influence to offset the trend toward increased tv-item selection. Directional coefficients suggest that

Table 15

CORRELATION OF CHANGES IN TV-ITEM PREFERENCES WITH TELEVISION
EXPOSURE AND PERSONAL INFLUENCE

TV Toy & Game Change Correlates ^a	First Grade	Third Grade	Fifth Grade
<u>Predictor Variable</u>			
TV Exposure	.04	-.18**	-.21***
Peer Integration	-.00	-.01	-.04
<u>Information Source</u>			
TV Only	-.06	.18**	.07
Personal Influence	.06	.03	.07

^a Positive correlations indicate that the respective predictor variable or information source variable is associated with an increase in tv-toy & game selection; negative correlations, a decrease.

*** p/ .001

** p/ .01

better integrated children do show a slightly reduced selection tendency, but even at the fifth grade the peer integration relationship is nonsignificant. Personal influence fared even more poorly. Although none of the correlations is significant, the fact that all the personal influence coefficients are positively signed suggests that personal influence may actually amplify television effects.

Television Viewing and Choice of Educational & Artistic Items.

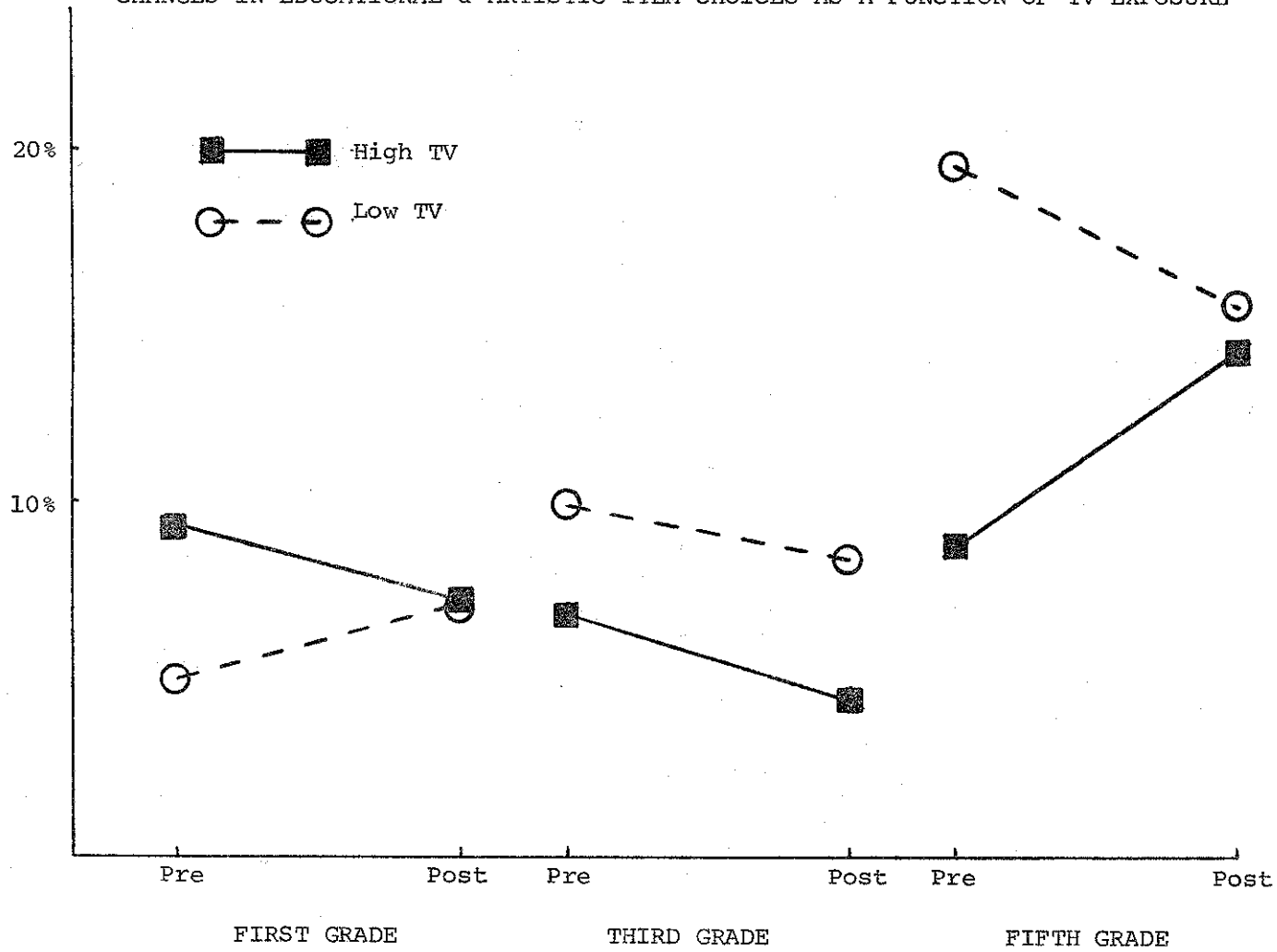
Although not formally hypothesized, it may be of interest to briefly examine the choice of educational and artistic types of play items as one alternative to tv-toys & games. As shown earlier, in Table 14, the absolute level of educational and artistic item choices is disappointingly low (approximately 7% of all choices at first grade and 15% at fifth grade). These choices are plotted by grade and by tv exposure in Figure 2.

At the first grade level, the high tv group exhibits the greater preference for educational and artistic items. The "reversal" here recalls the well known finding of academic acceleration among high tv-watchers upon entering school (Schramm, Lyle & Parker, 1961). The marginally significant first grade pre difference of 9.4% vs. 5.0% ($t = 1.83$, $p/ .08$) is, however, eliminated during the peak advertising period (7.3% vs. 7.0% for high tv and low tv groups respectively). The third graders, in general, revealed a similar preference level to first graders for educational and artistic play items. Although the third grade low tv group remains above the high tv group throughout (again recalling the Schramm et al. findings of only a temporary early advantage for high tv children), neither pre nor post tv group differ-

Figure 2

CHANGES IN EDUCATIONAL & ARTISTIC ITEM CHOICES AS A FUNCTION OF TV EXPOSURE

EDUCATIONAL & ARTISTIC ITEM CHOICES AS A PERCENTAGE OF TOTAL



ences are significant. The fifth graders, in line with their generally lower tv-item preferences, do reveal correspondingly higher educational and artistic item preferences. But, as suspected from the tv-item analysis, the significantly higher educational and artistic preference level exhibited initially by the low tv children (19.7% vs. 8.8%; $t = 3.03$, $p/ .005$) is reduced to the common level of approximately 15% for both groups over the television advertising period.

The overall trend in grade patterns therefore indicates that play items conventionally regarded as contributing to either educational or artistic skills are detrimentally affected by television commercial impact.

8. The Cognition-Attitude Model and Advertising Effects

The eighth and final hypothesis integrates the overall research endeavour by examining the capacity of cognition and attitude, as developed in the two-component model, to effectively screen television advertising impact. Since individual differences are at issue, non-aggregated data are employed in this analysis. Up until this point in the analysis the TVC Attitude variable, due to its "positive" score directionality, has been inversely correlated with TVC Cognition. That is, (greater) cognition produces an inverse (lower) attitude. Consequently, opposite-signed coefficients occur in the tabular data involving the two variables. This sign difference would unnecessarily complicate visual interpretation of the detailed correlational analyses to follow. To facilitate interpretation, therefore, the TVC Attitude variable was reversed in score direction and re-labeled "Attitudinal

Defense." TVC Cognition, scored positively as before to reflect increased cognitive sophistication, is also re-labeled simply as "Cognitive Defense." This clarifies the tabular presentation in that each variable can now be considered as a screening mechanism, one cognitive and the other attitudinal.

To evaluate the capacity of cognitive and attitudinal defenses to mitigate the impact of tv-toy & game advertising, three data points are needed: (1) pre-peak, (2) transitional, and (3) post-peak. These correspond to the pre-measure, the change score measure, and the post-measure for the TV Toy & Game variable, as defined in the previous section of the analysis. Correlations between cognitive and attitudinal defenses and these three dependent measures are shown in Table 16.

Taking the "Pre" column first, the negative correlations indicate that cognitive and attitudinal defenses are indeed operative at the onset of peak advertising. In general, sounder defenses produce lower preferences for tv-toys & games. Before proceeding, however, it might be noted that only one of the defense components is significant at each grade level. This has a logical explanation. At the first grade level, attitude is an effective screen ($p/ .05$) but cognition is not. Considering the low absolute level of cognitive sophistication among first graders (Table 7 earlier), this result is understandable. Similarly, moving to the other age extreme, for fifth graders, cognition (rather than attitude) is now seen to be the effective screen ($p/ .05$). The steep decline in favorable attitudes by the fifth grade (Table 9 earlier), with a consequently restricted variance, is undoubtedly the cause of the nonsignificant discriminating capacity of

COGNITIVE AND ATTITUDINAL DEFENSE EFFECTIVENESS OVER THE PEAK
TELEVISION TOY AND GAME ADVERTISING PERIOD

Defense Component	TV-Item Preference		
	Pre	Transitional	Post
<u>First Grade</u>			
Cognition	-.02	.02	-.00
Attitude	-.13*	.09	-.04
<u>Third Grade</u>			
Cognition	-.09	.13*	.05
Attitude	-.17**	.17**	-.05
<u>Fifth Grade</u>			
Cognition	-.11*	.03	-.09
Attitude	.04	.02	.06

** $p < .01$

* $p < .05$

attitudinal response at this level. (In fact, it has a slight "negative" screening capacity, discussed later.) In support of this "component variance" interpretation, at the third grade level--which, of course, is chronologically intermediate to first and fifth grades--both components exert a relatively stronger screening effect. Although cognition is "not yet" highly discriminating ($p/ .10$ only), attitudinal discrimination is clearly effective at the intermediate grade ($p/ .01$).

But what happens after the Christmas toy and game advertising has had time to take effect? Inspection of the "Post" column indicates that, with one marginal exception, cognitive and attitudinal defenses operative at the outset have been almost totally overridden. Apart from the minor effectiveness of the fifth grade cognitive screen ($p/ .11$), the relationships of cognitive and attitudinal defenses with ultimate tv-toy & game preferences are all, statistically speaking, reduced to zero. As confirmation of this rather astounding demonstration of television advertising impact, the transitional change score correlations, although reaching significance only at the third grade level, are all positive, indicating that increases in tv-item preferences are indeed exhibited by children with previously active defenses.

Finally, in the light of the previous finding that children with typically low television watching patterns were most affected by toy and game advertising, the data of Table 15 were analysed by tv exposure levels, (within grade). Cognitive defense correlations are shown in Table 17, and attitudinal defense correlations in Table 18.

Cognitive defense, inoperative in general at the first grade level (see Table 16 earlier), was similarly inoperative in both high tv and

Table 17

COGNITIVE DEFENSE EFFECTIVENESS WITHIN HIGH AND LOW
TELEVISION EXPOSURE GROUPS

Television Exposure Level	TV-Item Preference		
	Pre	Transitional	Post
<u>First Grade</u>			
High TV	.01	.08	.09
Low TV	-.05	-.03	-.10
<u>Third Grade</u>			
High TV	.01	.00	.05
Low TV	-.14*	.19*	.06
<u>Fifth Grade</u>			
High TV	-.20*	-.05	-.24**
Low TV	-.14*	.10	-.02

** $p < .01$

* $p < .05$

Table 18

ATTITUDINAL DEFENSE EFFECTIVENESS WITHIN HIGH AND LOW
TELEVISION EXPOSURE GROUPS

Television Exposure Level	TV-Item Preference		
	Pre	Transitional	Post
<u>First Grade</u>			
High TV	-.17*	-.07	-.17*
Low TV	-.10	.30**	.08
<u>Third Grade</u>			
High TV	.02	.16	.08
Low TV	-.23**	.11	-.12
<u>Fifth Grade</u>			
High TV	.03	.15	.22*
Low TV	.06	-.04	.01

** $p < .01$

* $p < .05$

low tv children. By third grade, however, the marginally operative cognitive defense variable (again, see Table 16) has already been overridden at the pre-measure period for the chronic tv viewers. Only the low exposure third graders show a significant initial defense ($p/ .05$), but this, too is overcome by advertising. By fifth grade, as demonstrated earlier, cognitive defenses are strongly in effect at the pre-test period regardless of viewing level differences ($p/ .05$ for both the high tv and the low tv groups). Now, a most interesting result. Recalling the decline in tv-item choices exhibited by high tv fifth graders (Figure 1), it seems that this may well have been confined to those children within this age and viewing subgroup who watch a lot of television yet maintain high cognitive defensiveness toward commercials. In fact, the combination of heavy viewing plus advanced cognition seems to have produced a "satiation" effect, because the low tv fifth graders, despite similar cognitive awareness, reveal the standard susceptibility pattern.

Attitudinal defense patterns, shown in Table 18, add an even more intriguing nuance to the fifth grade results. Whereas cognitive competence was a "corrective" mechanism for heavy viewing fifth graders, attitudinal defense alone has just the opposite tendency. In the high tv subgroup, those with the strongest attitudinal defenses displayed a significant increase (rather than the overall subgroup tendency for a decrease) in tv-item choices ($p/ .05$). Thus, at this grade level, and under conditions of heavy television exposure, the cognitive and attitudinal defense components are seen to function in a contrary and apparently independent manner. Negative attitudes alone are not a

preventive. It is cognitive advancement that is the relevant factor. This result has important implications for the general tendency to regard the increasing cynicism expressed toward commercials as children grow older (Ward, 1971; Ward, Levinson & Wackman, 1971) as a sign of reduced susceptibility to commercial influence. Before leaving the fifth grade analysis, it can be noticed from Table 18, too, that negative attitudes are not an effective defense under low exposure conditions either, although the low tv fifth grade children do not show the tendency for attitude screen "reversal" in terms of final choice level.

Returning now to the earlier grade levels, it may be recalled that neither the high tv nor the low tv first graders showed a significant increase in tv-toy & game choices. (First graders were at probable "near saturation" tv-item choice levels to begin with, see Figure 1). Further recalling that attitudinal defense (rather than cognitive defense which is not yet developed) is the relevant screening component at first grade, the data in Table 18 show yet another interesting pattern. Attitudinal defense is only an effective screen for the high tv watchers at this age; this subgroup shows an acceleration effect here reminiscent of the school performance acceleration found among high tv children in Schramm, Lyle & Parker's well known study (1961). The results for low tv children, however, repeat the general tendency described earlier for less exposed children to be the more susceptible to commercial influence. This is evident especially by third grade, where low tv children start with significant attitudinal defense effectiveness only to have it reduced to an insignificant level following the peak commercial period. At third grade, also, the high tv

correlations indicate that the high tv advantage of younger children is merely temporary, as similarly found in the Schramm et al. study.

The correlational results, in sum, while being rather complex and, due to reduced subsample sizes, not always revealing extreme shifts in magnitude, do support a widespread tendency for cognitive and attitudinal "breakdown." This is particularly true for children who, on average, watch less television. While cognitive and attitudinal defenses are seemingly capable of screening commercial input initially (at least one defense component does so at each grade level), the impact of concentrated television advertising for toys and games can effectively neutralize them.

F. CONCLUSIONS AND IMPLICATIONS

Children do, of course, build a general resistance to television advertising as they grow older. This is certainly seen in the present study in that by fifth grade, preference for toys and games of the tv-promoted variety declined, from the first and third grade levels of almost 50%, to about 32%. Nevertheless, the absolute effects of toy and game advertising on first and third grade children--and the relative effects at all grade levels--show just how powerful commercial persuasion can become. Children whose television viewing is limited, comparatively speaking, and whose cognitive and attitudinal defenses are ostensibly intact under normal circumstances, are found to be almost as strongly affected, ultimately, as their higher exposure, lower defensive peers.

1. Measurement Considerations and the Issue of Generalizability

A first criticism that might be raised concerns possible measurement defects. There are a number of sub-issues to consider here. One is whether the cognition and attitude measures were in some way invalid or at least superficial. This seems most unlikely. Cognitive and attitudinal defenses were, after all, initially effective.¹⁵ Only after the peak onslaught of toy and game advertising did they fail to hold up. Also, partial correlation controls for the effects of parental education indicated that articulation differences between children did not affect cognition and attitude assessment, so the objection of spuriousness or superficiality seems untenable. A second sub-issue

relates to the validity of the "tv-toy & game" classification. In particular the classification includes a number of items not identified by brand and therefore not definitively traceable as television-promoted products. However, the non-branded items were certainly of the same type or genus as the branded items with which they were categorized, and the most likely assumption is that the same items were involved but that brand recall or brand specificity was simply incomplete on the child's part. It might be commented, in this respect, that the advertising effects would probably have been more pronounced had the tv-toys & games category been restricted to branded items; presumably, undecided or "partial" choices by lower exposure children may crystallize into brand-specific choices and produce an even more dramatic rise on the post measure. Another contingency, not reported in the main results, is that toy and game store catalogs, rather than television commercials, may have been an influential information source. To check this possibility, the use of catalogs as an information source was correlated against the pre-post change scores for tv-items. The correlation was zero (-.004). Catalogs could well have been instrumental in the children's preferences, since they include nearly all of the same items as advertised on television, but it was clearly reliance on television as an information source that produced the effects documented in the present study.

A final note on the issue of item classification deals with the feasible observation that children may select different toys or games at each grade level. This is probable in the case of games, for example, where some are designed for the 5 or 6 year old and others for

more advanced, perhaps total family use. However, evidence that children select different toy or games at different age levels would not affect the tv-item conclusions, because the dependent measure was just this--tv items--and this category of choices was found to be influenced as shown. A more problematic argument along these lines might be that, within grade levels, changes may have occurred toward more (or less) "advanced" toy and game choices. Coding of play items in the present study did not include an age-appropriate classification. However, inspection of the individual item pre and post distributions showed no marked trends in this respect; that is, items popular at fifth grade, for example, did not suddenly appear with increased frequency at the third grade level. The "type of toy" argument thus does not appear to be an empirical oversight in the grade-specific analysis. And, in any case, it would not alter the conclusions regarding advertising effects per se.

Turning next to generalizability considerations, various limitations are immediately apparent in terms of the representativeness of the sample. The first, and probably the only serious one, is the restriction of sampling to boys. While cognitions and attitudes toward commercials in general may not be sex-linked, play item choices probably are. One would have to conduct a similar study of girl's preferences for Barbie dolls, model sewing machines, and the like, in order to be able to generalize the findings across sex groups. Note, however, that there are no strong a priori reasons for predicting a different pattern of results. Next, the religion factor, and also, perhaps, race. The children were all from Catholic homes and predominantly white. One

might suspect, however, that both factors would mitigate children's unmonitored access to television and would perhaps favor closer family socialization. If so, a less religious, less white sample should produce even stronger television effects than those observed here.

Finally, sampling was confined to the greater Philadelphia area. Socio-geographic factors would seem to be the least constraining of the limitations on generalizability.

A different generalizability question is raised by the behavioral situation in which cognition and attitude were tested. The advertising effects were obtained under somewhat atypical commercial input conditions, i.e., the pre-Christmas toy and game peak. Food product commercials, for example, constitute a larger proportion of children's time-slot advertising but are more thinly distributed over time. If Robert Choate's allegations regarding cereal advertising are correct, distributed exposure can have very strong effects. Rigidly viewed, though, the fact remains that until the massed vs. distributed input factor is better isolated by experimental or survey design, the "atypicality" issue cannot conclusively be resolved. The present results demonstrate what can happen in actual, if relatively extreme, massed-exposure situations.

It may also be noticed that the dependent measure concerns requests rather than receipts. That is, the children may never receive all the toys and games that they undoubtedly want. Preliminary results from Dr. Robertson's major survey suggest that approximately 43% of requests are honored by parents, although this figure will probably be found to vary according to economic factors, the age of the child, and the total

volume of requests. More pertinently, though, it has not been established at present whether excessive toy and game requests are differentially denied. But other evidence indicates this to be fairly unlikely. A survey conducted in 1965 by A.J. Wood Research Corporation, for the Toy Manufacturers of America, showed that the main purchase rationale cited by parents (who purchase 70% of all children's toys) was "because the child wanted it." Moreover, purchases seem poorly planned: 85% of parents visited only one store, with 24% having no intention of buying a toy at all and another 19% having no particular type of toy in mind. A more recent study by Frideres (1973) found that 87% of parents nominated "child's desires" as the overwhelming basis for their Christmas toy purchases (vs. only 6% "educational" reasons). As this level of acquiescence was observed in a sample of parents of 5 to 8 year-olders, an age group corresponding with the younger half of the present sample, fulfillment of children's toy and game requests can hardly be expected to be any less "automatic" as the child reaches 11 or 12. Any disparity between requests and receipts may therefore be numerical rather than qualitative. While the whole issue has obvious pragmatic implications, it should be reiterated, with reference to the present findings, that because of the possibility of parental intervention, receipts would not be a clean measure of advertising's effects.

2. Theoretical Implications and Directions for Further Research

The present study was introduced with reference to two general theoretical issues concerning television advertising and children. The first called attention to the need for a more precise conceptualization

of the way children process television commercial input. The present study demonstrated that an internally consistent, broad-based model can be constructed to describe the dimensions and stages of children's cognitive advancement in their understanding of the structure and function of television commercials. The dominant maturational predictability of the model indicated that children of different ages differ with respect to basic information-processing capacities. Specifically, the present results add weight to an innovative theory of symbolic interpretation proposed recently by Gross and colleagues (Gross, 1973; Murphy, 1973; Worth & Gross, 1974). The new theory assigns a central role to perception of intent, or attribution of intentionality. Murphy's research, conducted with children, showed that attributional and inferential abilities vary significantly--and in a "quantum" or stage-wise progression--with age of the child. This was corroborated by the present study in terms of persuasive intent attribution. Most children at the first grade level and a substantial number at the third grade level were not capable of detecting persuasive intent in commercials. By fifth grade, this ability was considerably higher, but only if a fairly rudimentary detection criterion is adopted (Level 1; see Tables 3 and 7). Correspondingly, the present cognitive analysis demonstrated that the interpretive skill necessary to understand the symbolic aspects of product representation in commercials is an even more difficult stage of cognitive attainment. Competence in symbolic interpretation (see especially Gross, 1973) was poorly developed even among 10-11 year olds, the upper age group in the study. This particular mode of children's competence may be the most critical and pressing area for future research in the

field of advertising effects. Its importance is underscored by the realization that, while visual and verbal symbolic practices in advertising are very elusive targets for legislative control, the "deceptiveness" arena is precisely where the child advertising controversy will gravitate unless advertising to children is banned outright.

The present study also compared maturational factors with social and experiential factors as alternative "sources of variance" in cognitive and attitudinal development. This constitutes an appreciable advance over previous studies with children which have taken only age differences into account. The present study joins with these studies (and those of other disciplines) in emphasizing the need to incorporate maturation as an additional, perhaps even central construct in nonadult communications research.

A second theoretical issue posed at the outset sought an answer to whether the prevalent view of mass communication effects espoused by such theorists as Klapper (1960) is applicable in the case of television advertising and children. This view was only alluded to in the introduction and may be more clearly positioned by the following excerpt:

Mass communications is most often a "contributory agent" in a process of reinforcing existing conditions. When mass communication does serve to change, it is because...mediating factors are inoperative or are themselves favoring change.
(Klapper, 1960, p.8)

In the present study, television commercials were shown to be much more than a "contributory agent" to the observed behavioral changes. Commercials were, in the short run, the single most important change agent.

Also, although mediating factors--cognitive and attitudinal defenses--were apparently rendered inoperative by heavy advertising input, this is not the same as saying the change was made possible by their "relaxation," as the Klapperian view implies. Nor did these defenses "favor" change at any time during the measurement period. Clearly, Klapper's conceptualization does not present an adequate theoretical perspective for the present findings.

Another statement typifying the prevailing mass communication effects viewpoint is also worth examining for its general theoretical implications (Bauer, 1967):

...influencing people via communication is a most difficult business...Typical communication experiments, including advertising tests, show that only a few percentages of the people exposed to the communication ever change their mind on anything important. (p.1)

If the present analysis had proceeded only as far as examining aggregate sample trends over the pre and post-peak toy and game advertising period, a "few percentages" of change would have been the conclusion (3.3% in fact, on an absolute basis). But the analysis went further to demonstrate that substantial amounts of change occurred--up to 10% (and higher on a net or percent-of-possible change basis) in certain subgroups. Strongly implied here was that low-change subgroups simply had earlier exposure than the high-change subgroups; the ultimate effects were about the same. What is more, the effects can reasonably be described as involving "changes of mind" in that non-tv items selected on the pre-measure were replaced in the child's top five choices by tv-items on the post-measure.

What other theories might aid in explaining these phenomena? Robertson (1974), in an extremely insightful extension and synthesis of some very recent directions in communications research, offers one possibility. He notes that, under conditions of low personal commitment to an attitude object, behavioral change may occur without, or independently of, attitude change. An example might be a low priced product with low ego-involvement connotations, a new brand of aspirin perhaps. A person may simply buy it, thus exhibiting new or altered behavior without or perhaps, if the new aspirin works well, followed by, attitude change. Robertson further notes that behavior change without immediate attitude change might also occur under high commitment conditions:

...even for "important" (high commitment) consumer decisions, the consumer may simply process information more slowly and deliberately, resulting in a delayed change of attitude which is not measured in a short-term...test. (1974, p.3)

However, it appears (to the present author) that Professor Robertson's exceptions to the Klapper-Bauer theory would not explain the present findings either. First, a good case could be made for toys and games as high commitment products for children. While the high-price or "risk" criterion for commitment may not involve the child directly, toys and games appear to meet Robertson's other two high commitment criteria: "social relevance" (e.g. showing toys to peers) and "brand emphasis" (many toys and games were requested only by brand, e.g. Lionel Train Set, Pivot Pool by Milton Bradley). Also, the very nature of Christmas requests, preparing lists for Santa, etc., implies

high commitment. It is possible, in terms of Robertson's high commitment corollary, that attitude change was merely delayed. However, as noted previously (Footnote 15 also) attitudes in the present study were measured comparatively late in the effects sequence. The zero attitude-behavior correlations found on the post-effects measure, therefore, would belie any trend toward delayed attitude shifts in accordance with increased behavioral commitment. Consequently, while the low commitment model might at first appear to fit the present data, neither its defining criterion of low commitment nor the modified high commitment hypothesis of delayed attitude change make it a suitable candidate.

Another attempt to explain the obtained results in terms of extant theory involves information-processing concepts identified by McGuire (1969). Attitudes, in the present study, were measured not with respect to the actual tv-toy and game products but rather with respect to tv commercials. Commercials here were conceptualized as a generic class (which presumably included commercials for toys and games). But commercials in general, as an "attitude object," would presumably not be isomorphic with the real objects nor with toys and games as a generic class of attitude object. This raises the possibility that attitudes toward commercials may become "separated" from attitudes--most pertinently, the behavior disposition component of attitude--toward the items. One's attitude toward television commercials in general (in the "response set" sense of Krech et al., 1962 or Bruner et al., 1966) may function as a type of ever-present cue (perhaps tacitly; Polanyi, 1967) in the commercial exposure situation which operates virtually independently of one's attitude toward the particular commercial being watched or one's attitude towards the advertised product. If one's attitude toward commercials

is negative, the cue may be described as a "discounting cue" (McGuire, 1969) in that this negative attitude predisposes you to be skeptical about or "discount" any given commercial message. The following process may then occur:

...if the persuasive content of a message is presented in conjunction with a discounting cue, its initial impact will be attenuated by that cue, but as time goes by the cue is... dissociated from the message, so that the attitude change impact of the persuasive content will gradually be manifested. (McGuire, 1969, p.255)

This process was originally identified by Hovland, Lumsdaine & Sheffield (1949) as the " sleeper effect." However, their earlier conceptualization required that the discounting cue be forgotten. Subsequent studies by McGuire and others have shown that forgetting of the cue is an unnecessary assumption; dissociation is sufficient and, indeed, the cue may be quite well remembered or salient afterward. The discounting-cue phenomenon appears to rather accurately describe the attitude-behavior results in the present study (especially if "impact" in the above sense is regarded as a behavior disposition change toward requesting tv-toys & games). Behavior dispositions were apparently "attenuated" on the pre-peak or early campaign measure by negative attitudes toward commercials. Four weeks later, behavior dispositions toward toys and games were seen to increase despite the co-existence of negative attitudes toward commercials. Empirical support for this theoretical interpretation of the attitude relationships comes from the Ward research. In two studies with adolescents (Ward & Robertson, 1972; Ward & Wackman, 1972), at which age attitudinal negativity toward

television commercials was found to be widespread, these apparently mature attitudinal defenses had no relation to self-reported effects on subsequent purchasing behavior. Although these studies did not involve time-related (panel) measurement, and used a slightly different attitudinal measure (closed-ended) than the present study, the focus on year-round advertised products suggests a parallel with the post results found here. Year-round advertising would provide plenty of time for "completed" exposure and cue dissociation. A discounting cue process may well have been operating.

McGuire also offers some theoretical insights as to the cognitive defense "override" in the present data. Following a comprehensive review of communicator source effects, McGuire concludes that although the "prestige" aspect of perceived source valence is an influential factor in effecting change, the "disinterestedness" or "trustworthiness" component has virtually no effect. He notes:

...although there is much research relevant to the question, the evidence in support of the "obvious" hypothesis (that sources lose persuasive effectiveness when their bias and persuasive intent are perceived by the audiences) is small almost to the vanishing point."
(1969, p.185)

McGuire further suggests that skill in detecting persuasive intent-- and cognitive message interpretation skills in general--may even have an opposite effect to the one intended (i.e. the intended defense against persuasion). The reason is that application of these skills may serve to heighten message reception:

It may be that training in analyzing and evaluating may enhance the effective reception of the persuasive message more than it lowers

the amount of yielding to what is received, thus producing a net increase in influenceability." (1969, p.260)

In the present study, it may be recalled children with greater cognitive sophistication at each grade level (apart from the "pre-cognitive" first graders) showed the larger yielding response in terms of choice shifts over the peak advertising period.

The distinction between reception and yielding may also explain the television exposure group differences in the present study. Recalling first that chronic exposure habits were unrelated to cognition (only the attitude- exposure relationships were significant), it could be argued that children in the high and low tv groups (within grade) had equal "cognitive yielding potential" and that the exposure-group difference on the pre-measure was primarily the result of lower reception of toy and game commercial messages by low tv-viewing children. Over the massed campaign period, reception may have "caught up" sufficiently to equalize both the yielding and the reception levels of heavy and light viewers (chronically speaking) on the post-measure. The net level of influenceability would therefore also be equal. The observed similarity of the two group's ultimate tv-item choice levels strongly suggests this outcome.

In general, then, it appears that McGuire's idea of cognitive over-reception, and his notion of a dual attitude discounting cue process, offer the best theoretical explanations of present findings regarding cognition, attitude, and susceptibility. McGuire, in particular, has favored an approach to communication theory which aims at specifying situational and receiver-related conditional models. Overly general

models such as those exemplified by the Klapper-Bauer approach are thus replaced by a set of multiplex but more accurate models. The present study might therefore be seen as a beginning in the development of an appropriate model for characterizing children's communication behavior under massed exposure conditions, although it hardly needs to be added that much more research is necessary in this theoretically and socially important field.

3. Implications for Social Policy

The present study contains findings of potential relevance to social policy. Implications for parental guidance can be identified, as well as empirical implications for broader decisions regarding television advertising and children.

First of all, the study documents the role of maturation as a central determinant of the child's cognitive capacity to adequately interpret commercial messages. At the preadolescent level it is inadequate and even inaccurate to talk in terms of the effects of advertising on children when "the child" progressing through this rapid maturational phase is a qualitatively different informational evaluator. The examples set by older role models in the child's social environment do account for some of the variance in child sophistication and play item preference; and the additional likelihood exists that social processes of intrafamily and peer control were underestimated by the non-interactive or "trait measurement" approach utilized in the present research. Even if they were not, responsible social training is still the most constructive immediate avenue for teaching children to become dis-

criminating judges of advertising and advertised products.

A second finding with social policy overtones is the apparent potency of massed television commercial input. At all three grade levels studied, the seasonally concentrated toy and game campaign affected children who typically watched lower amounts of television very nearly as strongly as it affected high exposure contemporaries. Moreover, and more specifically, the impact was sufficient to overcome (at least temporarily) cognitive and attitudinal defenses which might otherwise operate as internal safeguards to direct susceptibility. Taken together, the exposure pattern and "defense override" findings suggest that limiting a child's television viewing (as an externally imposed safeguard) may not alone be sufficient to reduce persuasive influence. Advertising in sufficient volume can eventually affect the low-viewing child. If reduced susceptibility to persuasion is a desired goal, the present findings can be regarded as evidence in support of policies which advocate a limit on the volume of advertising directed at children.

On the other hand, it can reasonably be argued that some experience with commercials is a necessary prerequisite for cognitive advancement in this domain (e.g. Banks, 1971). Piaget's general ontogenetic theory would also suggest a degree of necessary exposure. However, the social context for this experience would seem to be most important. The social accompaniment aspect has correctly been identified as an overlooked element in Piaget's "sheer physical experience" conceptualization (Zaporozhets, Zinchenko & Elkonin, 1971). From a socialization standpoint, the Zaporozhets et al. studies suggest that close parental

governance of children's introductory experience with commercials might produce the desired outcome of inoculation against persuasion (McGuire, 1969), whereas unmonitored early exposure may not.

An even broader question for social policy (and further research) is of course "the effects of the effects." It is tempting to speculate about the cultural significance of the television-abetted permeation of toys and games (recall the industry sales growth rate of 10% per annum, well above the child population growth). Lazarsfeld observed almost 20 years ago that "the present type of television program may very easily parallel the traditional production of toys and guns and cowboy suits" (1955, p.248). It is not too difficult to draw a similar parallel between currently popular toys such as "Rock'em Sock'em Robots," games such as "Bops'n Robbers," and the present media pre-occupation with police, crime and western-become-urbanized violence (cf. Gerbner, 1973b). To cite a second example, the tremendous popularity of race car sets (sufficiently popular to warrant a subcategory of its own in the present study) invites common-sense questioning of value emphasis inherent in children's playthings. Also questionable is a not-so-subtle trend toward "secondary advertising," or promotion not conventionally classified as advertising (Wright, 1959). A recent instance is the license granted by toy manufacturers for companies like Pan Am, McDonald's, Kentucky Fried Chicken, Holiday Inn, and Gulf Oil to have their brand names placed on children's toys (Forkan, 1974). Brand competition under free enterprise, for presumably discriminating adults, is one thing. But for children?

The types of objects comprising the everyday environment of young

children must exert some degree of influence on their ideational structure and social behavior. And while speculations regarding socio-cultural effects inevitably involve complicated value judgements, perhaps it is time to look not just at "how" but also at what is being so effectively promoted to our children.

G. FOOTNOTES

1 The actual timing of the measures in Table 1 is shown by interview wave in Table 19 (following). The chronological sequence of certain measurements is rather critical to various arguments advanced in the study. These issues are footnoted as they occur in the text (specifically, footnotes 7, 8, and 15) with appropriate reference to Table 19. The reader should be generally reminded that although the behavioral effects aspect of the design incorporates a real time short-term panel study, the overall design is static and cross-sectional. Longitudinal processes--e.g. age-related maturation, cumulative television exposure, socialization, and long-term behavioral preference changes--are thus operationally simulated in the present study by selection of increasing grade levels.

2 Various alternative measures are available for computing reliability. Three methods are reported here so that the reader may judge the precision level of the data more accurately.

(a). The Effectiveness Index (Hovland, Lumsdaine & Sheffield, 1949) measures the percentage improvement above chance as a proportion of maximum possible improvement. Chance here means the level of inter-coder agreement that would be obtained if the judges assigned codes totally at random, a level which will of course vary inversely with the number of categories per variable or dimension. Table 20 shows the percentage improvement under perfect (3-coder) agreement conditions. Table 21 shows the percentage improvement under "modal" (at least 2-coder) agreement conditions, the criterion employed in the present study. Clearly, the obtained levels of agreement are well above purely random expectancies.

(b). The Composite Reliability Coefficient (Block, 1961) is also an appropriate measure for the present data. This is a composite reliability coefficient which takes into account the effect of employing more than two judges, utilizing the psychometric principle that "consensus will cumulate validity disproportionately more rapidly than it will cumulate error." (Block, 1961, p.38). The formula is $CR = N(\text{average inter-judge agreement}) / \sqrt{1 + (N-1)(\text{average inter-judge agreement})}$, where N = the number of judges or coders employed in the analysis. The Block formula involves prior computation of pairwise inter-judge agreement matrices (see Holsti, 1969, p.137). These were inspected to ensure that the modal agreement levels represented the judgements of all three coders and were not simply the product of two "consistently biased" judges. The Composite Reliability coefficients for the six cognitive variables and the three attitudinal variables are shown in Table 22. All are to the order of .80 or .90; that is, well within the upper bracket of conventional reliability acceptance levels (.70-.98; see Guilford, 1965).

(c). The Agreement Coefficient (Krippendorff, 1973) was also computed. As 3-coder disagreements were deleted in the present data as "unreliable" (in one instance 4.5%, and in all others, under 1.5% of cases for the nine variables), agreement coefficients were computed firstly for the

Table 19

MEASUREMENT CHRONOLOGY FOR THE STUDY

	Wave #1 (5 weeks before Xmas)	Wave #2 (1 week before Xmas)	Wave #3 (2 weeks before Xmas)	Wave #4 (Parental: 2-3 weeks after Xmas)
BEHAVIOR VARIABLE	Pre-peak Item Requests	Post-peak Item Requests		
ADVERTISING PREDISPOSITION VARIABLES		TVC Cognition TVC Attitude		
PREDICTOR VARIABLES	Age & Grade TV Exposure ^b Peer Integration ^c	Information Sources ^a	Parent-Child Interaction ^c	Parental Education ^c Multisets ^b Sibling Order ^c

^a Information Source variables were utilized in the behavioral effects analysis but for clarity of exposition are not shown in Table 1.

^b These two variables are subsumed under "Television Exposure" in Table 1. Multisets refers to number of tv sets in household, hypothesized as an additional parameter of the chronic viewing patterns indexed by the specific TV Exposure variable.

^c Subsumed under "Socialization" in Table 1.

Table 20

EFFECTIVENESS INDEX MEASURE OF RELIABILITY
(PERFECT AGREEMENT)^a

Variable	No. of Categories	Chance Agreement	Actual Agreement	Effectiveness Index
<u>TVC Cognition</u>				
Commercial-Program Discrimination	(3)	.110	.502	+44%
Source-Message Relationship	(3)	.110	.446	+38
Message-Audience Relationship	(5)	.070	.405	+36
Assistive Intent Attribution	(3)	.110	.502	+44
Persuasive Intent Attribution	(3)	.110	.650	+61
Symbolic Represent- ational Recognition	(4)	.080	.478	+43
<u>TVC Attitude</u>				
Belief	(3)	.110	.851	+83
Affect	(4)	.080	.689	+66
Behavior Disposition	(5)	.070	.533	+43
Mean Agreement		.094	.561	+51%

^a Agreement levels are expressed as proportions here to avoid confusion with the Effectiveness Index percentages.

Table 21

EFFECTIVENESS INDEX MEASURE OF RELIABILITY
(MODAL AGREEMENT)^a

Variable	No. of Categories	Chance Agreement	Actual Agreement	Effectiveness Index
<u>TVC Cognition</u>				
Commercial-Program Discrimination	(3)	.780	1.000	+100%
Source-Message Relationship	(3)	.780	.993	+ 97
Message-Audience Relationship	(5)	.200	.955	+ 94
Assistive Intent Attribution	(3)	.780	.986	+ 94
Persuasive Intent Attribution	(3)	.780	1.000	+100
Symbolic Represent- ational Recognition	(4)	.500	.996	+ 99
<u>TVC Attitude</u>				
Belief	(3)	.780	1.000	+100
Affect	(4)	.500	1.000	+100
Behavior Disposition	(5)	<u>.200</u>	<u>.996</u>	<u>+ 98</u>
Mean Agreement		.589	.992	98%

^a Agreement levels are expressed as proportions here to avoid confusion with the Effectiveness Index percentages.

Table 22

COMPOSITE RELIABILITY COEFFICIENTS

Va variable	Coders 1&2	Coders 1&3	Coders 2&3	Average Inter- Judge Agreement	Composite Reliability ^a
<u>TVC Cognition</u>					
Commercial-Program Discrimination	.70	.71	.85	.75	<u>.90</u>
Source-Message Relationship	.65	.61	.58	.61	<u>.82</u>
Message-Audience Relationship	.55	.50	.60	.55	<u>.79</u>
Assistive Intent Attribution	.65	.67	.60	.64	<u>.84</u>
Persuasive Intent Attribution	.82	.72	.75	.76	<u>.90</u>
Symbolic Represent- ational Recognition	.64	.63	.63	.63	<u>.84</u>
<u>TVC Attitude</u>					
Belief	.89	.93	.91	.91	<u>.97</u>
Affect	.83	.77	.78	.79	<u>.92</u>
Behavior Disposition	.66	.73	.63	.67	<u>.86</u>

$$^a \text{ CR} = \frac{N(\text{average inter-judge agreement})}{I + (N-1)(\text{average inter-judge agreement})}$$

Table 23

ORDINAL AGREEMENT COEFFICIENTS^a
(KRIPPENDORFF, 1973)

Variable	Coefficient for Original Judgements	Coefficient with 3-way Disagreements Omitted
<u>TVC Cognition</u>		
Commercial-Program Discrimination	.53	.60
Source-Message Relationship	.45	.49
Message-Audience Relationship	.61	.70
Assistive Intent Attribution	.53	.58
Persuasive Intent Attribution	.64	.67
Symbolic Represent- ational Recognition	.65	.69
<u>TVC Attitude</u>		
Belief	.84	.82
Affect	.84	.83
Behavior Disposition	.67	.70
Mean Agreement	.64	.67

^a Agreement expected by chance, using marginal frequency estimates, averaged about .40 for the coefficients shown here. That this is a conservatively high estimate can be seen by comparing the average random agreement estimate of .09 from Table 20. The formula essentially compares observed agreement with expected agreement, so that higher expected agreement produces lower reliability coefficients.

original observations and then with the 3-way disagreements omitted. Agreement coefficients under ordinal scale assumptions are shown in Table 23. In all instances these are lower than the reliability coefficients obtained by the previous two methods. There are at least two reasons for this. First, Dr. Krippendorff's coefficient (see also Scott, 1955) computes the chance level of agreement from obtained category frequency margins under the assumption that these frequencies may represent the idiosyncratic category preferences of the coders, which of course may be entirely independent of the actual content judged. This stringent assumption leads to relatively high "expected" or "chance" agreement levels and thus generally lower supra-chance agreement coefficients. The second reason for lower coefficients is that ordinal deviations from the perfect agreement diagonal in the inter-coder agreement matrix are weighted into the computations. These deviations would have been reflected in the present data had a mean rather than a modal score been assigned as the final data entry. However, with ordinally scaled variables, the mean is not always the most appropriate average statistic, as it can easily be influenced by extreme scores or non-normal distributions. Another measure of central tendency such as the median or mode is generally preferred. In the present case, computation of a true median would have produced unnecessarily fractionated scores. Hence the mode (or "highest frequency" score) was used. With three coders, this is equivalent to discarding deviant judgments (except in the few cases of "total" or 3-way disagreement; 3-way agreements, approximately 56% of all judgments, are naturally not affected). The Krippendorff formula, as noted, incorporates these deviations. The Table 22 coefficients thus represent refined and conservative estimates of agreement-above-chance (chance in an idiosyncratic bias sense) showing reliability prior to the modal assignment procedure. The Block coefficients, on the other hand, which are based on "average modal agreement," perhaps better reflect the reliability of the final cognition and attitude data entries in the present study.

The issue of reliability assumptions and concomitant acceptability is a vastly complicated and partly judgmental matter. A leading exponent of content analysis observes that:

Defining an acceptable level of reliability is one of the many problems in content analysis for which there is no single solution... Thus, in formulating research design the analyst may be forced to strike some balance between reliability and relevance of categories and units; the coefficient of reliability cannot be the sole criterion for making such decisions. (Holsti, 1969, p.142).

The alternative reliability estimates reported here should therefore also be evaluated in relation to the apparent validity of the cognition and attitude measures. Theoretical or "construct" validity can be inferred from the rationale underlying the model, whereas "concurrent" predictive validity (with a behavioral criterion) is discussed later

in the text as a primary finding in the study.

³ Subsequent to the computational phase of the present investigation, a more precise weighting formula for the attitude components was suggested by Professor Krippendorff: $100/3 \sqrt{(B-1)/2 + (A-1)/3 + (BD-1)/4}$. This yields a minimum value for TVC Attitude of 0, as does the present formula, but also yields a maximum of exactly 100, whereas the present maximum is 99.8. In effect, however, both formulae produce identical ordinal matrixes and result in only slight differences in inter-point distances. For example, tricomponent scores of (2, 2, 2) translate to an overall score of 36.1 by the Krippendorff formula and 35.2 by the present one. Other examples representing a range of possibilities are (3, 1, 3) = 50.0, 48.0; (2, 3, 4) = 63.9, 64.5; (3, 4, 3) = 83.3, 81.8. Due to the minimal interval differences and nonexistent ordinal differences, the attitude index was not recomputed. The author is indebted to Professor Krippendorff for suggesting the new equation.

⁴ I.Q. is actually an inappropriate developmental measure, for two reasons. I.Q. remains relatively constant over time and thus cannot reflect maturational increases within a given individual. Secondly, even though one could use M.A. uncorrected for C.A., traditional intelligence tests are far removed from Piaget's conceptualization of mental development, which includes social and emotional maturity in addition to intellect in its more common referential sense (e.g. Piaget, 1970a).

⁵ While in-house recording shows that viewers frequently leave the room during commercials (Bechtel, Achelpohl & Akers, 1971), research specifically with children shows that younger viewers do so only about 9% of the time (Ward, Levinson & Wackman, 1971).

⁶ Although it is well known that viewing time diminishes as the child enters adolescence, the difference is only about one 30-minute program less per day. Average viewing time is 3 hrs. 20 min. daily for 2-11 year-olds and 2 hrs. 50 min. daily for 12-17 year-olds (Winick et al., 1973).

⁷ TV Exposure in this study refers to the child's chronic viewing pattern (at his particular age or grade level). The index of television exposure was administered on the first interview wave (Table 19) and refers categorically to recent but retrospective viewing habits ("Do you usually watch television before school on weekday mornings?" and so on). In this sense, although measured simultaneously, television exposure can logically be considered to precede cognition, attitude and behavioral preference measurement. Inferences regarding the effects of Light vs. Heavy viewing or Low vs. High exposure are thus based on pre-existing, or "chronic," child-specific viewing patterns. A corollary note: in the case of panel measurement of advertising effects, TV Exposure does not refer to short-term exposure during the peak advertising period. Possible variations from habitual viewing patterns

during this time span which may be relevant to the analysis of advertising effects are assumed to be reflected in the TV Only information source measure (see pp. 38,42). Identical reasoning is applicable to Peer Integration (chronic) and Personal Influence (short-term).

⁸ Reference to Table 19 shows that Parent-Child Interaction was measured after the two time periods of interest in the present study (i.e. those surrounding the toy and game advertising period). So also were the three parentally obtained measures, Parental Education, Multisets and Sibling Order. It is just possible that some error was introduced with this "post measurement" procedure. Parental Education would presumably be unaffected. Multisets may be affected somewhat through Christmas-gift television sets (and remotely probable, sibling order too). But Parent-Child Interaction may be more seriously affected in that activity frequencies were assessed on a "last week" or "last month" basis. This would center on the Christmas season, a probably atypical period. Although the all-Catholic sample may be similarly affected with respect to general interaction opportunities, specific patterns of receipt and non-receipt of presents may vary across the sample with differential effects on interaction. Post-measurement of this factor and multiple tv set ownership constitute shortcomings of the design, though hopefully minor ones.

⁹ The variable was labeled "Older Sibs" because the author had originally expected only an older model effect. It was brought to my attention by Professors Wright and Gross that younger sibs may exert a regressive effect, in contrast to the progressive influence postulated for older models. Fortuitously, the measure does reflect this; it is the label that is misleading. Oldest children (i.e. first-borns, approximately half of whom were only-children while half had only younger sibs) were given the lowest score (1); middle order children, with potentially progressive and regressive models, the middle score (2); and youngest children, with progressive models but no potential regressive models, the highest score (3). Sibling position and its attendant interaction dynamics are obviously more complex than described here. For example, the only child (12.8% of the present sample) or the widely age-distanced child may be quite special cases. However, the present measure would seem to provide a simplistic though adequate relative differentiation of non-parental model availability in the child's home viewing environment, with allowance for both regressive and progressive modeling. (It may be noted that the conclusions regarding the sibling order variable are unaffected by the labeling).

10 Canonical correlation analysis is a highly useful analytic tool which is receiving increasing recognition and usage. It is formally related to the more familiar multivariate techniques of factor analysis, regression analysis and discriminant analysis. Elementary descriptions of the technique are provided in Green & Tull (1972) and Nie, Bent & Hull (1971; an addition to their popular SPSS computer program series); a more detailed description can be found in Cooley & Lohnes (1962). As the reader may not have ready access to these sources, a brief overview, with attention given to features relevant to the present analysis, seems in order. The author hereby wishes to acknowledge adaption of material from the preceding references.

Many analytic problems involve multiple (independent) predictor variables, but only a single (dependent) criterion variable. For example, employment, income, and other economic indicators might be used to predict the gross national product. With the single linear dependent variable, regression could be used. If the dependent variable is nonlinear or discretely categorized, for example the contribution to national productivity of whites vs. non-whites, discriminant analysis could be used. Note however that we are still dealing with a single (though now dichotomous) dependent variable. The problem arises when we have multiple predictor variables and multiple criterion variables. In this case we might run a principal component, "best fit" vector or centroid through both sets of variables (predictor and criterion) and then correlate the centroids. This is not unlike correlating two factors in factor analysis; both factors are simply vectors representing a weighted "best fit" sum of the individual variable loadings.

Canonical correlation is something like correlating two centroids. But just as in factor analysis there may be other factors beside the principal one in a battery of variables, in canonical analysis there may be other pairs of vectors--orthogonal (unrelated) to the "main" pair--which can also be correlated. A simplistic factor-analytic analogy might be a correlation between the "g" factor in intelligence and SAT scores (the main pair of vectors) followed by a second correlation between motor dexterity and number of items attempted (the second pair of vectors).

The description may be picked up at a slightly more advanced and more accurate level from Nie et al. (1971, pp.2-3). Longer parenthetical comments and underlinings are mine and have particular application to the present study. The text is otherwise verbatim:

The basic idea behind canonical correlation is to find the linear combination of variables in each set in such a way that the resultant correlation between the two composite indexes--known as canonical variates--is maximum. If there is no significant linear association between the two sets of variables, there will be no significant set of canonical variates. On the other hand, if there is significant linear association between the two sets of variables, we may further examine whether or not the relationship is completely accounted for by the first set of canonical variates. If the first set of canonical variates successfully accounts for the relationship between the two sets of variables, there will be no more significant canonical variates to be extracted. If, on the other hand, some linear relationship between the

dependent and independent variable sets still remains unaccounted for by the first set of canonical variates, we can continue the process of finding new linear combinations that would best account for the residual relationships between the two sets. This process can go on until there are no significant linear associations left.

The correlations between such linear combinations are called canonical correlations, and the meaning is equivalent to the simple product moment r . The only modification is that the independent and dependent variables are composite indices and are not simple variables. By definition, the first canonical correlation is the largest, and the first set of canonical variates may be taken as the best predictive indices representing the respective set of variables. The second canonical correlation, if it exists, is the second largest, and so forth. Furthermore, each set of canonical variates is, by definition, orthogonal to (or unrelated to) other canonical variates. One of the main purposes of canonical-correlation analysis is to arrive at a reasonably smaller set of canonical variates than there are variables in the smaller set of the two. (In the case of Biodevelopment, composed of $n=2$ variables, Age and Grade Level, this means the $n-1 = \text{first}$ pair of canonical variates must exhibit the only significant canonical correlation. In the SPSS CANCORR program, used here, canonical correlations are tested for significance by a X^2 approximation to Wilk's lamda statistic.)

Some of the advantages as well as disadvantages of canonical correlation are the results of the particular data-reduction strategy of the method, which differs significantly from principal-component analysis techniques. In principal-component analysis, the variables are combined in such a way that the resultant index explains maximally the overall variation in a single set of variables. In canonical correlation, on the other hand, variables in one set are combined to predict maximally the variations of the variables in the other set. Therefore, if the principal interest of the researcher is the optimal prediction of one set by another, the logical choice would be the first canonical variates. On the other hand, the user has to examine two sets of coefficients simultaneously, and the result may often be very complex and difficult to interpret. (This problem did not arise in the present study because the first canonical variates were the only significant ones for the variable-sets compared.)

(Two other technical terms appear in the analysis section of the present study. The first--canonical function coefficient or canonical weight--is simply an individual variable's "weight" or "loading" on the first canonical variate extracted from that variable's membership set. This is equivalent to a (standardized) "regression weight" or "beta weight" associated with each predictor variable in regression analysis, except that in regression we have a single weighted sum of predictor variables correlated with a single criterion variable (in a "two-variable" correlational sense) whereas canonical analysis involves the "two-variable" correlation of two weighted sums (or more, if more than one pair of canonical variates is significant). The second--canonical structure correlation--is a slightly more refined version of a canonical function coefficient. It involves returning to the original (bivariate) correlation matrix and multiplying each variable's function coefficient by its own vector (i.e. its "row" correlations with all other variables

in the same set. Comparisons with regular function coefficients are too complicated to adequately summarize here (see Green & Tull, 1972, chapter 13), but the structure correlations can safely be regarded as slightly more refined "weights" or "relative importance" contributions to the canonical variate in question. Q.v. the TVCCOGN variate in the present study.)

Before the advent of canonical correlation, the researcher's available options in multiple predictor variable-multiple criterion variable situations were quite limited and unsatisfactory. The limitations of bivariate examinations of all the pairs of variables from each set are obvious. First, even with a moderate number of variables in each set, there will be many relationships to be examined. Second, individual relationships may not tell very much about the overall relationship between the two sets of variables. Normally, the researcher has been forced, prior to examining the relationship between the two sets, to use some data-reduction procedure such as factor analysis or principal-component analysis on each set of variables. As a result, he will usually end up with a much more limited number of linear scales or indices. Only after this data-reduction stage can methods such as multiple regression be utilized in order to assess the relationship between the independent variables, and even here, multiple regression is fully adequate only if the dependent variable set can be reduced to a single linear index. If this much data reduction cannot be attained, the researcher must settle for a situation where he has multiple indices on both sides and where these indices cannot all be put simultaneously in a single linear model. By combining some of the features of both factor analysis and multiple regression, canonical correlation overcomes many of these limitations and thus enables the researcher to examine simultaneously the overall relationship between two sets of variables.

(A final note on the use of canonical correlation in the present analysis: marginal levels of significance (i.e. lower than .001) should be interpreted with caution. For precise statistical significance testing, the individual variables should meet the requirements of multinormality and interval scaling. Inspection of the marginal distributions revealed only one probable normality violation (Assistive Intent). However, the interval scaling requirement was in most cases probably not met. Canonical analysis can still be employed with non-interval, even zero-one variables, provided the objective is primarily descriptive rather than precise prediction or significance testing (Green & Tull, 1972). Conclusions regarding significance are thus presented with necessary caveats in the Results section, with primary attention given to general descriptive relationships.)

11 With the single exception of the canonical correlation analysis, all correlations in the present data were computed as Kendall tau coefficients. Kendall's tau requires only an ordinal metric, and while some of the variables in the study may conform to interval scale requirements, ordinality is a safer general assumption. The use of tau avoids having to apply "normalizing" transformations needed to compute valid parametric correlations such as the Pearson product-moment r

coefficient. Power-efficiency for τ is 91% and negligible differences from r result with samples of the present size (Siegel, 1956). A further note with regard to correlation interpretation is that relatively small absolute coefficients are to be expected with the restricted category ranges employed for certain variables. However, the large sample size and resulting degrees of freedom ensure the reliability of the observed significance levels.

¹² I am indebted to Dr. Gross for pointing out this parallel. Katz & Lazarsfeld (Appendix D) also found popular fiction consumption (fan magazines, daytime radio serials) to be related to anxiety as a personality trait.

¹³ Two other methods for analyzing changes are widely used. The first is the Effectiveness Index. This measure incorporates a correction for "ceiling effects" in percentage change scores by computing actual change in relation to maximum possible change ($EI = P_2 - P_1 / 100 - P_1$). While this is a useful and rational procedure for interpretation of change scores, a major problem with the statistic is that an appropriate sampling distribution has yet to be devised for it (Hovland et al., 1949). Thus one cannot determine statistical significance with the procedure. Consequently, standard t-tests for the comparison of proportional differences were preferred for the present aggregate level analyses.

A second widely used procedure for analyzing change is Panel Turnover (Lazarsfeld & Merton, 1954). Panel Turnover analysis is applicable specifically, to individual level data and it provides a very clear presentation for inspection of changes. Two problems precluded the use of this measure in the present context. Firstly, reliable analysis of categorical shifts in cell location generally requires a very large panel size, since subgroups can become extremely segmented and numerically diminished, rendering subsequent interpretation tenuous. A second problem is conceptual and statistical. Unless the primary variables involved in a study are natural dichotomies (or perhaps trichotomies), the issue of where to locate the subsample splits can become rather arbitrary. Where necessary, this can be handled with a median division, as was employed for TV Exposure in the present study. But a more serious problem, especially when multiple splits are necessitated, is loss of statistical information (the multi-categorized TVC Cognition and TVC Attitude indices would be cases in point). Created dichotomies fail to make use of the full range of information (and variance) inherent in the original measure. Consequently, correlational procedures, which maximize informational usage, were utilized for the individual level analyses.

¹⁴ An extremely tentative post hoc explanation of the decline might be that high-tv fifth graders, exposed to a preponderance of toy commercials directed at younger children, thereby reverted toward their age-group norm of fewer toy choices.

15 The claim of initial defense effectiveness actually rests on a crucial but feasible assumption. The measurement chronology (Table 19) shows that cognition and attitude were measured after the peak advertising period, that is, on the post-peak phase of the short-term panel study.

While it would have been ideal from a theoretical standpoint to measure cognitive and attitudinal predispositions towards commercials both prior to and following the peak advertising period, the interview time involved (20 to 30 minutes per child) dictated a choice of one or the other time period. Interview Wave #2 was decided upon for two reasons. First, in view of the open-ended questioning procedure, better rapport could be counted on during the second contact with the child. Second, and much more crucial for interpretive purposes, the measurement of cognition and attitude in conjunction with final behavioral choices is the more conservative procedure (assuming, of course, that one time period has to be selected). Justification for this claim of conservative measurement is needed because although one would not expect the child's cognitive level to alter in the short run, as this involves major stagewise jumps in reasoning and inferential ability, it is possible that attitudes could change more flexibly.

Let us consider the implications of the attitude measurement timing. TVC Attitude was (in fact) measured at the same time as post-peak TV Toy & Game Choices. The post-peak defense-behavior correlations did not differ significantly from zero; consequently, the "defense override" findings can be assumed valid from an actual time-of-measurement standpoint.

The crucial assumption centers on the defense-pre behavior correlations which indicated, by significant (though cross-lagged correlations, that defenses were active "initially." Only behavior was truly measured initially; defense levels were retrospectively inferred from a later measure. If the child's attitude toward commercials did not change over the four week peak period (certainly a reasonable argument in the case of cognitive ability in the very short run), the results would remain exactly as reported. If his attitude did change, all evidence would argue that the change would be toward a more favorable attitude: (a) assuming that the child watched some television over the four weeks, the positive relationship between (chronic) exposure and attitude would predict favorable attitude change; (b) the general increase in tv-toy & game choices over the period would also predict favorable attitude change, to correspond with greater "favoring" of tv-items as Christmas requests; and, relatedly, (c) the fact that the items had not yet been received (one week prior to Christmas) would also preclude any negative change which might be precipitated by disappointment or disaffectation with the commercials "responsible." Favorable attitude change over the peak period would of course imply that true initial attitudes were more negative. Had the lower preferences for tv-items on the pre measure been correlated with these more negative attitudes, initial defense effectiveness would be even stronger than reported. Correspondingly, the alternative timing choice--pre-measurement only--would have pitted lower pre-attitudes, now serving as prospective substitutes for post-attitudes, against higher post-peak

tv-item choices. Lower attitudes and higher choices would lead to a negative correlation between defenses and behavior--i.e., a stronger apparent breakdown effect.

Therefore, because pre-measurement alone (or even pre-measurement plus post-measurement) would presumably have shown stronger initial defenses and stronger (or, in the case of both measurements, the same) apparent breakdown, the obtained panel analysis pattern of significant initial defenses and breakdown-to-zero can be regarded as a quantitatively conservative estimate of what truly occurred at the pre-period (defenses operative) coupled with an actual measurement of what occurred at the post-period (defenses neutralized).