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**Causal Modeling in the Evaluation
of Educational Television Programmes**

Rose Elizabeth Bene

**A Thesis
In
The Department
of
Educational Technology**

**Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Arts, Educational Technology at
Concordia University
Montréal, Québec, Canada**

June 1986

● **Rose Elizabeth Bene, 1986**

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ABSTRACT

Causal Modeling in the Evaluation of Educational Television Programmes

Rose Elizabeth Bene

A common theme which occurs throughout much of the research on educational television is that even simple production, performance or presentation variables may affect the attitudes and learning of target audiences. However, the many empirical studies and trends towards formative research on television effects have not culminated in a body of knowledge of practical value to educational television (ETV) practitioners. Therefore, the evolution of a causal modeling approach to evaluation may be of value to ETV producers and media researchers in their attempts to apply research findings.

A hypothetical model predicting the causal links among production, performance and presentation variables, viewers' attitudes/knowledge and overall programming effectiveness was proposed in this study. As a test of the relationships in the hypothetical model, a summative evaluation was conducted of an ETV programme called "Child Sense: Observing and Recording Children's Behavior".

In conjunction with multivariate statistical analyses, causal modeling illustrates a research approach which can be applied by ETV media practitioners for testing production, performance and presentation factors during the formative or summative phases of an ETV programme. Such an approach can also provide guidelines for producers and researchers to use in future programming.

DEDICATION

To my mother and father
who believed in and
encouraged my
education.

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PROBLEM STATEMENT

Introduction to the Context of the Problem

Few can dispute the fact that the mass media and in particular television, have had a pervasive impact on society. In most industrialized nations, television is acknowledged as the social institution responsible for informing, entertaining, persuading and socializing large groups of individuals over wide distances.

With such all-inclusive and powerful functions, it is no wonder that there has been an abundance of research on the effects of television on audiences (Adler, 1981; Comstock, 1981; Dorr & Palmer, 1980; Gerbner, Gross, Morgan & Signorelli, 1980; Wartella, 1979). An overview of some of these studies on television effects as they pertain to the theory and practice of ETV programming follows.

Early studies on media effects assumed that the "masses" were a homogeneous group who reacted in a similar and predictable fashion to television. More recent research has shown that people make use of television to gratify certain individual needs, whether for information or entertainment or affective/behavioral guidance (McGuire in Blumler & Katz, 1974).

With the emerging use of television in the classroom, studies focused on such questions as, "Can TV teach?", "Is television better at teaching than teachers?", and "Is television the most effective medium for teaching and achieving knowledge gain in viewers?" Some investigations illustrated that television was not a significant contributor to learning (Chu & Schramm, 1967). In other cases, findings revealed that television could indeed facilitate learning and that it was more effective than other media or live

instruction. According to Schramm (1977), the fact that television is a richer and denser medium than other media means that it can perform some tasks much better than others. Studies related to what television could teach best lead researchers to more in-depth examinations of the effectiveness of the different symbol systems within the media (Olson, 1974) and ultimately to the aptitude-treatment interaction approach to television effects. Those researchers advocating this approach studied the interaction between media attributes and learner characteristics in a particular learning task (Heldt, 1980).

Salomon (1979) conducted several experiments to illustrate the specific attributes of the television medium which interact with learner traits to enhance learning. Strong aptitude-treatment interactions between cue attendance and such filmic codes as zooms, close-ups and other techniques were found. He concluded that television could be designed to explicitly present and thereby activate, short-circuit or supplant what the learner does internally. From this, he went on to distinguish between the structural and functional attributes of the television medium.

Others studied more applied research questions such as, "If the different knowledge bases and experiences of the individual learner and the impact of different presentation modes of television are taken into consideration, could a glossary of all the structural and functional attributes of media be compiled?" and "Could these attributes be matched to instructional tasks?" In Heldt's (1980) opinion, the task of establishing such an inventory would be difficult when the learner's psychological and cognitive characteristics cannot be defined.

One of the first educational television organizations to recognize the need for applied research was the Children's Television Workshop (CTW). CTW

implemented a systematic program for the formative research and evaluation of various television series such as "Sesame Street" (Palmer, 1972), "The Electric Company", and "3-2-1 Contact" (Mielke & Chen, 1980).

Other educational media organizations such as Radio-Quebec, TV Ontario and ACCESS NETWORK have also utilized formative strategies in the design and production of their products. However, time constraints, budget restrictions and the reluctant attitudes of both researchers and production personnel have been responsible for the limited success of these methodologies. This slow acceptance of evaluation research can be attributed to the fact that it is still not thoroughly understood by media practitioners, it carries few professional rewards, it requires exemplary human relations skills and its results can be threatening (Cambre, 1982).

Statement of the Problem

Despite the many empirical studies and recent formative trends, television research has not yet resulted in a body of applied knowledge of value to ETV practitioners. There are still few methods for predicting how changes in production techniques affect viewer reactions (Mielke, 1983). Baggaley (1980) suggests that guidelines in communications media research be established "to assist producers of TV to recognize and anticipate effects when using them to educate and inform..." (p. 168).

ETV instructional designers and producers therefore face a dilemma in deciding which formats, techniques and research strategies are most appropriate in the design and production of their programmes. This dilemma has many underlying issues:

- 1) While some of the outcomes of empirical and formative studies are accessible, they are contradictory, written in jargon or unadaptable to

4

producers' needs. The following comments reflect the feelings of many producers and instructional designers (Morris & Skerry, 1982). "What we need are the results of formative research, clearly and plainly written ... evaluated for research method and importance to the field ... easily accessible to any television and film professional in educational media" (p. 174).

2) Instead of combining variables as in normal TV production contexts and measuring their effects on achievement and attitude, many research studies have approached the task of defining media by isolating variables (Morris, 1983-84). Studying the impact of a specific presentation variable in isolation restricts the impact and value of these experiments.

3) Attempts to provide producers with a scientific formula for the utilization of production factors and presentation techniques in order to obtain predictable reactions on the part of audiences have failed (Kemelfield, 1976).

Perhaps with increasing reliance on formative research methodologies, innovative applied research designs and even "tacit" knowledge or "what we already know," (Hutton, 1980, p. 15), more information on the capabilities of the symbol systems and variables within television can be collected. From this information, some broad guidelines to help producers make programming decisions can be formulated.

This thesis suggests a research approach which may be of practical use to ETV practitioners. The approach attempts to illustrate the causal relationships among the production/presentation variables in an ETV programme and attitudes/cognitive achievement in viewers. Its ease of implementation, its ability to examine different combinations of variables at one time and its ability to act as a framework for establishing guidelines between production

techniques and their influence on viewers make it ideal for dealing with the problems that have plagued previous ETV research studies.

A summative evaluation of a 28:50 minute programme, "Child Sense: Observing and Recording Children's Behavior" was conducted to illustrate how this approach might work in an educational media setting. The programme was designed and produced for the Alberta Educational Communications Corporation by the thesis proposer. A brief discussion of how the results of such an evaluation might serve in a formative manner for future educational television programmes is provided on page 73.

LITERATURE REVIEW

Related Research

A manual search as well as three online searches utilizing the data sources in ERIC and PSYCH-INFO were undertaken in the preparation of this literature review. Four areas of research in the literature of interest to producers and designers of educational television programmes were reviewed. They include: 1) general empirical research which deals with the ~~effects of television programming on viewer attitudes and learning~~; 2) research pertaining to media literacy; 3) formative research on production variables and presentation factors in television; and 4) formative evaluation techniques used by various educational television organizations. While there is a great deal of overlap among these types of research, the delineations were made arbitrarily to show the progression from empirical research methods to more applied research methods such as formative evaluation.

Television effects on viewers' attitudes and learning

Many studies have been devoted to the effects of television programming on viewer attitudes and learning. Reviews of the relevant research can be found in Campeau, 1974; Chu and Schramm, 1967; Coldevin, 1981; Dwyer, 1978; Fleming, 1981; Salomon, 1976; and Unwin, 1978. According to the findings of many of these studies, gains in cognitive achievement have not been as dramatic as expected in comparisons of experimental TV and control groups. In some cases, there were no significant differences when TV was compared to other media or live instruction. In others, only slight long term cognitive gains for television groups were found (Sullivan, Andrews, Maddigan & Noseworthy, 1979).

A surprising trend which occurred among TV viewers, however, was that they appeared to gain steadily in their performance of nonverbal skills and in their ability to process iconic information. In other words, they were learning how to watch television (Schramm, 1977). Salomon (1976) has shown that one of TV's major advantages is its capacity to explicitly visualize the transformation process analogous to that which occurs covertly in our minds. Eventually, heavy television viewers may come to use modes of thinking quite different from those who do not watch television extensively and may develop an intelligence quite different from that developed in school (Huston, Wright, Wartella, Rice, Watkins, Campbell & Potts, 1981).

A great deal of media research has been devoted to how television affects the cognitive domain of the learner. The affective domain has been largely ignored despite the fact that psychological research has already shown that learning is inherently connected to the affective domain (Knapper, 1980). Comstock (1981) has commented on the power of the medium to change children's attitudes about people and activities to reflect those encountered in television programmes.

Television has long been used to model a wide range of behaviors, expectations, attitudes, emotions and concepts (Salomon, 1979). According to Dorr, Doubleday and Field (1983), TV is a good medium for portraying or teaching about emotions and for affecting viewers' emotions. For example, emotion-inducing medical films produced greater compliance with behavioral requests made of audiences than less emotional productions (Hezel, 1982). Sturm (1976) was also able to illustrate the emotional impact of characterization in certain dramatic serials on young viewers. In addition to the content of the programme, all of its visual imagery can be combined using selected camera angles, editing, sequencing, pacing, music and other

techniques to produce exceptionally powerful communications. Certain surveys (Huston et al., 1981) have shown that stimulation of the affective domain is the primary reason most young people give for watching television.

Predictable responses in viewers occur only when the content has some personal meaning, i.e. the person responds to the programme in terms of what s/he can do, feels or wants (Dwyer, 1978). For example, in an evaluation of a film on sealing with students, Smith and Baggaley (1980) found that the film had polarizing effects on the audiences' attitudes, either reinforcing views already held or changing attitudes about the industry.

Two other examples of the prevailing effects of attitudes and emotions on learning in educational television are provided. Muntone (1963) found that the method of television instruction could affect attitudes and information gain in students. Morris (1983-84) found that the use of sophisticated production techniques (i.e. special effects, animation, music, etc.) resulted in more favorable reactions among students and therefore greater achievement in immediate and delayed recall of the material.

Media literacy

Often the viewers' attitudes and learning achievement from television is dependent on their knowledge and ability to decipher the codes of the medium. According to Krendle and Watkins (1983), "The process of attending to and learning from television becomes a function not only of the messages sent but of the perceptual set with which messages are received and interpreted" (p. 212). In their opinion, viewers have become increasingly sophisticated in their understanding of the television medium, its symbol system and genre.

Proficiency in the understanding of television techniques is age-related (Baron, 1980). For example, children's proficiency in processing TV information is dependent on their cognitive level and familiarity with television

coding (Huston et al., 1981). Whereas younger children are attracted to and pay more attention to the formal features of the programme, older children and adults pay more attention to the content of the programme (Rice, Huston & Wright, 1983). Formal features can automatically elicit an orienting reaction in young children by means of a sudden stimulus change, movement or pattern of visual contrast. These "hype" techniques borrowed from commercial television are often the child's first experience with the medium and may make it difficult for the child to be responsive or interested in programming that is slower, less active and more subtle (Rice et al., 1983). Anderson, Alwitt, Lorch and Levin (1979) found that older children learn which formal features are cues to comprehensible content. Children have a "strong tendency to carefully attend to any program or part of a program that promises to be understandable" (p. 11).

Older children, adolescents and adults who are more familiar with a broad range of TV programmes, formats and characters have high standards for the production values in a programme. They state the need for "action", good acting and the elimination of irrelevant or tiresome content.

If audiences do not understand the method of presentation, what they learn may not coincide with what was intended to be taught (Abelman, 1984). Davis (1980) recommends that producers and directors establish a hierarchy of visual devices based on the level of understanding for each age level:

The influence of television on viewers depends in part on what they bring to the television (Salomon 1983; Schramm, 1977). This consists of what they know about their world, their level of cognitive development and their preconceptions of the television medium. Preconceived notions about the nature of the medium often determine the extent to which meanings are actually derived and interpreted from the formal features of television. In

Salomon's opinion, more effort should be expended on teaching good televiewing skills so that viewers will become media literate.

Formative research on television production factors

The need to make a product effective, which viewers will learn from and like, is the most cited goal of educational programming. To accomplish this, it is often necessary to undertake research on the types of content and format techniques which will work for target audiences. It is also necessary to establish some criterion of effectiveness which can be measured. Formative research methodologies, which range from empirical to applied techniques, can provide the diagnostic feedback into the decision-making process during the design and production phases of television programming (Burdach, 1983).

Formative research on audiovisual techniques began in the early 1920's (Cambre, 1982). However, the Children's Television Workshop was the first major educational media institution to set up and systematically employ a formative research model. The model consists of two phases: 1) the pre-production phase in which data from the literature and from field testing is accumulated on audience characteristics that relate to the particular message and viewing situation; 2) the production phase in which testing of segments or prototypes or pilots occurs. Programme design principles are based on the relationships between programme features such as appeal, activity-eliciting potential, comprehensibility and internal compatibility and their contribution to viewer outcomes (Palmer, 1980). A review of this model is provided on page 30.

Production/presentation techniques and modes (use of certain camera angles, editing techniques, sound quality, etc.) can have just as profound effects on audience reaction as the content of the message itself. Several

reviews of the literature (Anderson, 1972; Campeau, 1974; Chu & Schramm, 1967; Coldevin, 1981; Dwyer, 1978; Shepherd, 1967 and Zetl, 1968) discuss the findings of production format effects on audiences. Both Coldevin (1975-82) and Baggaley (1976-86) have conducted extensive studies dealing with presentation/format variables, content/subject matter and performance characteristics which demonstrate the effects of these techniques on attitudes and learning. In one of their studies, Smith and Baggaley (1982) were able to demonstrate a high rate of positive feedback from audiences when the photographic sequences in a film on sealing illustrated daily work conditions and music was used for reinforcement.

Helping producers become more knowledgeable about the unique conventions and capabilities of the television medium and how these can be used to convey meaning is one function of formative research. Another function is process research which provides viewers with feedback so that they may understand the medium and the ways in which they can use it (Baggaley, 1986; Smith & Baggaley, 1982).

Formative research does have limitations, however. Because of the time constraints, findings are often product-specific and sometimes not generalizable from series to series, or even from programme to programme.

Formative evaluation methods

Formative evaluation is that process whereby information representing feedback from members of the potential target audience is acquired during the production process to help shape the programme into its most effective form. It is the process of judging the worth of a given educational product at different points in time (Cambre, 1981). Outcomes of formative evaluation can be utilized to improve a product (Baggaley, 1986).

In formative evaluation projects, biased methods of sample selection and testing are often used because the first responsibility is to improve the product, not prove its empirical validity (Palmer, 1972). The message is re-shaped until the intent of the communicator is understood by the audience or subject of the evaluation (Cambre, 1982).

Although evaluation techniques were used to assess visual materials in the 1920's (Zirbes in Cambre, 1981), Scriven (1967; 1983) was responsible for differentiating between evaluation activities performed on an entity during its developmental or formative stage and the processes determining the effectiveness of a product after its completion or summative stage.

Four stages of formative evaluation have been identified by Sanders and Cunningham (1973; 1983): 1) Pre-developmental activities - audience needs assessments and other evaluation procedures occurring prior to actual product development; 2) Evaluation by objectives - assessment of the formal goals and objectives defined by the programme developer; 3) Interim evaluation activities - assessment of the production through empirical or qualitative analyses at its early stages of development - storyboards, scripts, short segments, rushes, rough cuts, pilots, etc.; and 4) Product evaluation activities - assessment of the product at its final draft stage. Evaluations which are carried out on products in their finished form are usually summative in design but the distinction between summative and formative evaluation disappears when the results of summative evaluations are used for formative purposes; i.e. to design and produce future programmes (Cambre, 1982; Baggailey, 1986).

Many techniques for collecting formative evaluation data exist. These range from the expensive and lengthy undertakings of CTW, i.e. distractor research (Rust, 1971), eye movement research (Flagg, 1982), and the use of

programme analyzers during screening sessions (Mielke & Chen, 1980) to the use of questionnaires, interviews, checklists, observations and electronic response gathering equipment such as conjugate analysis (Mitchell, 1979) and the PEAC/PROMPT systems (Nickerson, 1981).

Outcomes of formative evaluation often include the ability to: 1) make better decisions; 2) establish connections between production variables and viewer outcomes; 3) judge the merit of parts of a whole product; and 4) utilize a systems orientation to ETV programme design and production. If formative evaluation is conceptualized as a heuristic for improving an instructional programme, then each outcome becomes useful at some point in the design process (Borich & Jemelke, 1981).

Formative evaluation example

Background context

An example of a formative evaluation methodology used in designing and producing a 28:50 minute ETV programme, "Child Sense: Observing and Recording Children's Behavior" for The Alberta Educational Communications Corporation (ACCESS NETWORK) is outlined.

The four phases, as defined by Sanders and Cunningham (1973), were the basis for this methodology. They are described in a stepwise manner in Figure 1. As shown in Figure 1, consultation with content specialists and expert judgement were the primary modes of evaluation utilized throughout the formative stages of the ETV programme.

Formative Evaluation Plan		
Phase	Task	Participants
I. Pre-developmental Activities - Audience Research	1) Definition of target audience 2) Needs assessment (Adult (Albertan Cable Subscribers Degree of Interest in Specific Telecourse Topics, ACCESS/85)	Producer/content experts
II. Evaluation by Objectives - Content Research	1) Designing course curriculum/ goals 2) Writing programme objectives 3) Task/content analysis 4) Programme development 5) Script outline, treatment	All tasks within this phase were undertaken and evaluated by the producer in consultation with the content experts.
III. Interim Evaluation Activities - Mediation Research	1) Script drafts I and II 2) Script draft III 3) Storyboard 4) Raw videotape sequences 5) Off-line version of ETV programme 6) On-line version of ETV programme	Producer/content experts Producer/child care workers/experts Producer/content experts Producer/child care workers/experts Producer/content experts Producer/content experts
IV. Product Evaluation Activities	1) Pilot before broadcast 2) Broadcast evaluation	Regular day students Telecourse students

Figure 1.

Four phases of formative and summative research in the design and production of the ETV programme, "Child Sense: Observing and Recording Children's Behavior" for ACCESS NETWORK.

Pre-developmental activities - Audience research

ACCESS NETWORK must concern itself with the production of a variety of media products, the distribution and delivery of these products and the reception of its broadcast. While there are no formal training procedures in formative methods for staff designers or producers, they are expected to apply formative evaluation strategies during the design and production process (Bene, 1984).

One of the main programming objectives of the Corporation is to provide continuing distance education opportunities to adults who wish to upgrade their professional credentials or benefit personally from further education. After conducting a province-wide adult audience survey and needs assessment (Adult Albertan Cable Subscribers Degree of Interest in Specific Telecourse Topics, ACCESS, 1985), ACCESS proceeded to cooperate with a number of colleges and postsecondary institutions to offer telecourses to adults in specific subject areas.

One of the courses chosen on the basis of the audience survey was an introductory telecourse on early childhood education offered for credit by all the community colleges across the province. The Early Childhood Department at Red Deer College helped to design and administer the course (register students, distribute print support materials, organize teleconferences, tutor students, mark assignments and assign grades).

The purpose of the telecourse was to present a theoretical and practical framework for understanding how children grow and develop from conception to middle childhood. After the broadcasts, the video programmes were made available on videotape cassette so that students could review the material. Textbooks and other print support materials were also provided.

Evaluation by objectives - Content research

The overall goal of the ETV programme, "Child Sense: Observing and Recording Children's Behavior", is to develop the student's understanding of and ability to observe and record the behavior and developmental progress of children.

Six major content areas are presented in the programme: the rationale for observing and recording children's behavior; the influence of major child development theories and personal biases on the process of observing and recording behavior; specific techniques of observation and recording; the uses and benefits of observations and the steps in setting up observation sessions. The learner objectives that are congruent with this content are listed below.

After viewing this 28:50 minute programme, the members of the target audience will undertake the following tasks to the satisfaction of their instructor or tutor in either written, oral or behavioral form:

- 1) Explain the rationale for observing and recording children's behavior;
- 2) Describe the influences of various child development philosophies on the process of observing and recording children's behavior;
- 3) Predict and discuss some of the personal biases, values and attitudes which might affect the observer's objectivity;
- 4) List the steps that are required for setting up observation and recording sessions;
- 5) Outline the various uses of observations and recordings;
- 6) Compare and contrast the different techniques for observing and recording children's behavior listing advantages and disadvantages;
- 7) Choose one of the observational techniques and conduct an observation and recording session in a particular child care setting;

- 8) Demonstrate an appreciation of observation and recording skills through an account of a personal observation/recording experience and by a readiness to recommend the ETV programme to others.

These content concepts, goals and objectives were formulated in discussions between the ACCESS producer and content consultants.

Intended target audience and delivery system

Knowing and understanding the target audience is particularly important in those programming areas where learning or attitude change are the criteria for effectiveness. Thus, many educational media organizations carry out audience surveys and needs assessments.

The initial adult audience survey conducted by the ACCESS research department revealed that a large majority of telecourse students lived in rural areas not served by ACCESS cable networks. Therefore it was necessary to set up a tutor system with these students whereby they travelled to the nearest location with ACCESS receivership capabilities to view the broadcast. Then through a provincially-based teleconferencing system, they discussed the programme with a tutor provided by the co-sponsoring college.

Most of the students enrolled in the early childhood telecourse were females from rural Alberta between the ages of 20 and 40 years. They were interested in either pursuing a new career, upgrading their child care professional status or taking the course for personal enjoyment. Most were already involved in child care as child care workers, parents or pre-school teachers. Their average number of years of schooling was 13-14 years.

Rationale for media selection and production design

Other than the fact that telecourses are designed for television, additional reasons for choosing video for this programme included its ability

to: 1) demonstrate and visualize the skills involved in observing and recording behavior (Dwyer, 1978; Paluzzi, 1980); 2) model certain behaviors integral to the observing and recording process (Salomon, 1979) and; 3) provide continuity in action (Blake, 1976). Video was also chosen because it is less costly than film.

Two pertinent studies which point to the value of video for illustrating content and skills in training teachers are briefly described. The Teacher-On-Television Program at Iowa State University enabled entire college classes to observe the motivational techniques, teaching strategies and lesson objectives of an experienced teacher without leaving the college classroom (Merkeley & Hoy, 1985). In addition, Stoller and Lesser (1963) illustrated the effectiveness of recorded television for providing demonstrational material for an elementary education methods course.

Content development and scripting

Before undertaking the task of programme development, the producer consulted with the content experts and examined references on the topic of observing and recording behavior. Authors such as Bandura (1977), Bee (1985), Brandt (1972), Cartwright and Cartwright (1974), Dopyera and Lay (1982), Draper and Draper (1977), Kaushell and Skagen (1983), Medley and Mitzel (1966), Sylva and Painter (1980), Wilson (1977) and Wright (1960) confirmed the role of observational learning in human development. In addition several authorities on instructional design (Dick & Carey, 1978; Fleming & Levie, 1977; Gagne & Briggs, 1974; Mager, 1984 and Romiszowski, 1981) were referred to while conducting the task analysis, writing the performance objectives, sequencing the content and ensuring congruency between content and objectives.

Both the producer and client felt that the programme should be didactic in nature. As a result, some basic principles of media programme design were followed: 1) the topic was introduced at the beginning of the programme; 2) the main content concepts were discussed throughout; and 3) a review of the main concepts was provided at the conclusion of the programme. This design strategy is recommended by Lundgren (1972) who felt that a 'good educational television programme' should say the same thing in different ways to link up with the experience of the audience.

Only six major concepts were introduced in the programme. Some writers consider this the maximum number of main ideas that can be easily accommodated in 28:50 minutes (O'Bryan, 1981). Research and practical experience indicate that a clear presentation of a few key ideas with substantial repetition of these ideas is much more successful than the continuing development of many new ideas.

Following approval of the instructional design by the client, the producer initiated the scripting phase. This consisted of writing a script treatment outlining format and content delivery followed by three drafts of the actual script. As the blueprint for a production, the script allows the ETV practitioner to plan the programme before the actual production schedule takes place (Wilson, 1982).

Intuition or 'tacit reasoning' (Hutton, 1979) prompted the producer to decide in favor of a docu-drama format. The documentary portion illustrating an actual child care situation where workers interact with children was designed to serve as a guide for the target audience. In addition, the specific instructional material was facilitated through dramatic segments in which the audience could identify and empathize with the main characters.

Empirical support for the use of drama has been demonstrated by Morris (1983-84) in his examination of the effects of dramatic vignettes on student achievement and attitude.

In scripting, the producer followed both Knapper's (1980) advice that a script should have a recognizable beginning, middle and end, and Wilson's (1982) concept of 'triple redundancy', i.e. "reinforcing the same material in different ways" (p. 82). Various drafts of the script were evaluated by the content experts to ensure that both the educational integrity and production values were intact.

Before finalizing the script, it was given to a number of child care workers to informally evaluate. Script evaluations can validate a programme's content and organization as well as the cognitive outcomes or indications of the programme's instructional effectiveness. Evaluators can also indicate their general liking or dislike for the script (Nugent, 1980). With the feedback from these child care workers, the final draft was written. Several subsequent revisions were made to the script during the actual shooting to accommodate the needs and suggestions made by the actors. This enabled the actors to feel more comfortable and natural about their roles (Wilson, 1982).

Choice of production techniques and format factors

Production techniques such as those recommended by Kemp (1980), Wurtzel (1979) and Zetl (1976) were employed during the actual shooting. A storyboard was drawn up by the producer in consultation with the client. Upon its approval, it was used to prepare a photographic shot breakdown.

1) Camera shots and angles - Different types of camera shots and angles were needed to illustrate the instructional content in the programme. It is important that pictures allow the viewer to see the whole scene first, and

then focus on the exact details. When it was necessary to see what the child care workers were doing with the children, medium to long, objective shots were used. When it was necessary to see the children playing or to illustrate what the child care trainee was doing, medium close-ups and close-ups were used. Subjective perspectives were used to focus on the child who was being observed.

Grant and Merrill (1963) point to the advantages of the objective perspective in stimulating recognition learning of complex skills while the advantage of the subjective camera perspective relates more to simple motor skills. Transitions between shots can also facilitate learning (Coldevin, 1981; Salomon, 1979). Coldevin states, "A predominance of medium close-up to close-up shots combined with appropriate 'acting conventions' thus appears to provide the optimal mix for effective television" (p. 87).

Although there is no conclusive evidence pertaining to camera angles, a number of studies have been conducted on specific styles of shooting and their effects. Some suggest the use of low angle shots to enhance a presenter's style (McCain & Wakshlag, 1977) while others state that shots at the presenter's eye level are more effective (Kepplinger and Donsbach, 1982). Both Baggaley (1985) and Merritt (1984) discuss the effects of camera angle on a speaker's credibility. They concluded that certain camera angles which revealed unflattering images of Jimmy Carter and Jesse Jackson contributed to the public's loss of faith in these speakers in their respective televised presidential debates.

In addition to camera shots and angles, production techniques such as color, lighting, photography, sound, setting, and characterization which contributed to the realistic nature of the programme were carefully considered by the producer.

2) Color - Several studies have been conducted on the use of color versus black and white in television presentations. Most have found no significant differences in student achievement. Nevertheless, VanderMeer (1954) found evidence that color helped to facilitate learning. Reich and Meisner (1972) found that students were more involved in the actual visual experience of television when viewing color. For motivational elements, emotional impact or where it is essential to the content, color is preferred (Lundgren, 1972). Descy (1981-82) concluded that learners prefer color over black and white because they perceive these presentations to be of high quality, more aesthetically pleasing and significantly more interesting than identical black and white presentations. All of the above plus the desire to meet viewer expectations supported the use of color in the ETV programme.

3) Lighting - Lighting decisions were somewhat restricted by the shooting schedule, time and location. A number of the scenes were shot outside and required no additional lighting. However, the indoor scenes required extra lighting and problems with light bouncing off walls and curtains were encountered. Trohanis and Du Monceau (1971) comment on television's monochromatic limitation to respond to color brightness instead of hue.

4) Setting - A naturalistic or on-location setting for the video was chosen because of the documentary genre. Kaushell and Skagen (1983) state that there is a greater tendency to use natural settings because it allows for the understanding of the complex dynamics of real life interactions. All of the natural sounds and ambience integral to the on-location setting were also used in the programme.

5) Characterization - Child care workers who had some experience in the field were chosen to play the roles in the programme. The children were

real children enrolled in a child care centre. Few experiments have been conducted on roles or characterization in educational programmes other than the evaluation studies conducted by CTW (Palmer, 1973) and The Agency for Instructional Television (AIT). AIT is well-known for their effective mini-dramas which feature school children and adults who are real people rather than professional actors (Bryant, Alexander & Brown, 1983).

Both Coldevin (1979) and Baggaley (1980) have conducted a series of experiments on performance variables of news and interview presenters. Baggaley (1980), Coldevin and Bernard (1981) have delineated attribute clusters essential for presenters or performers in commercial news or interview settings: integrity, empathy, mastery and poise.

6) Pacing - It has been suggested by some studies (Schlacter, 1970) that instructional television should follow the pacing and rhythm of commercial television programmes. Others (Rice, 1984) have recommended slower pacing for educational programmes to allow the viewer to assimilate the content. Given this information, the telecourse programme was paced at a consistent and leisurely rate with built-in pauses so viewers could think about the content (Pockrass, 1969). Also, some attention was given to the balance and order of the segments with heavy content segments followed by lighter content (Rust, 1971).

7) Music - If instructional media producers were more cognizant of how certain music variables elicit emotions from audiences, they would select appropriate music to convey messages (Seidman, 1981). Music was used in the telecourse programme to contribute to pacing, gain and maintain attention, fill gaps and provide breaks in the information flow. Because the mood of the

music can reinforce attitudes or change opinions (Seidman, 1981; Baggaley, 1982), careful attention was given to the type of music (melodic, simple, medium tempo) selected for the ETV programme.

8) Narrative versus expository delivery of content - There is very little evidence on the learning advantages of narrative presentations versus expository presentations. In accordance with Lundgren's views (1972), however, narration in educational programming must be of the same professional quality as that in commercial programming. To supplement the dramatic essence of the programme, and introduce and reinforce certain items of content, a straight lecture-type narration was chosen.

9) Graphic material - The graphic materials in the ETV programme consisted of examples of observation recordings written on the screen. These graphics reinforced the visual illustrations and narration. There are two constraints of television which must be solved when superimposing graphics on the screen. First, the 3:4 aspect ratio permits information only within a critical area of the screen to be telecast. The 525 lines contain a relatively small number of electronic dots so picture, graphics, credits should be composed keeping the horizontal nature of television in mind (O'Rourke, 1983). Second, the graphics must be held for a certain number of frames to allow the viewer to read and make sense of the written material. Through eye movement research, Flagg (1982) suggested that central screen placement of print and non-print material determines the extent to which viewers attend to the words presented. Superimposition of statements over the visuals was used for demonstrating the procedures in the review and reinforcing the visual content (Weir, 1982).

In the ETV programme, the written text was placed in the center of the screen and the review statements were superimposed in the lower part of

the screen. Readability was determined through evaluation checks with the client and the target audience.

10) Content review - Another reinforcement technique used in the programme was an audiovisual review at the end of the programme. Coldevin (1975) found that review strategies facilitated significantly greater information recall. Bonner (1982) recommended that 'recall prerequisites' be used with adult learners. Tidhar (1973), also, illustrated that visual reminders helped viewers to remember significantly better than those who did not receive visual reminders. The audiovisual review made use of the 'triple redundancy' concept (Wilson, 1982) by using picture with voice-over and superimposed statements. Coldevin (1975) illustrated that only the superimposed and combined (text and voice-over) treatments produced significant differences on information acquisition when compared to simple voice-over.

Interim evaluation stages

Several interim evaluation stages were conducted after the video had been shot and before the final programme was completed. The raw videotape sequences from each day's shoot were screened with the content experts and a small sample of practising child care workers to ensure that the information presented in the scenes was understandable. Also, at the off-line stage, the client screened the programme and at this time, several changes involving scenes which were too long or irrelevant were made.

Product evaluation

Just prior to its air date, before the final touches were made, the programme was shown to a class of early childhood students in a regular college program. Following their suggestions, the written information and graphics examples were modified. They found the length of these parts of the film too short for reading and absorbing. In addition, they found the scrolling

method of writing on the screen distracting. As a result of their input, the scrolling method was discarded and the written information on the screen was extended to 20 seconds for each example.

Finally, during the broadcast of the programme, the producer implemented a informal summative evaluation of the programme by distributing a questionnaire to the viewers (via the tutor). The data collection instrument was a combined subjective (attitude) and objective (knowledge) questionnaire. Questionnaire use is an accepted practice in the area of applied research (Cambre, 1982; Palmer, 1973). In this case, the producer wished to determine if the programme had achieved its objectives and if the audiences were cognizant of the production techniques used to deliver the message.

This informal evaluation had several limitations. First, the producer had to rely on the telecourse tutor to distribute the questionnaire and provide the instructions to the target audience. Second, as in most educational media contexts, the producer had no control over the viewing or testing sessions. Third, due to the logistics of the telecourse, a pre-test questionnaire which accompanied the post-test was not used and therefore a measure of knowledge gain was not possible. Fourth, the post-test questionnaire did not include an overall criterion measure of the effectiveness of the programme. Fifth, many of the questionnaires were returned in an incomplete state and did not provide adequate demographic data from which to draw conclusions about the audience.

Although the analysis of the results from the preliminary study provided the basis for proposing the hypothetical model, the summative evaluation of the ETV programme required replication in a more rigorous manner in order to overcome the above limitations. In this study, the data were subjected to multivariate analysis.

Importance of Problem within Context of Available Research

A common theme which occurs throughout much of the above research literature on educational television is that even simple production, performance or presentation factors may influence the attitudes and learning of viewers. However, the many empirical studies and trends towards formative research on television effects have not culminated in a body of knowledge of practical value to educational television practitioners. Therefore, the evolution of a causal modeling approach to evaluation may be of value to ETV practitioners and media researchers in their attempts to apply research findings.

Causal modeling in conjunction with multivariate statistical analyses is a research approach which can reveal the relationships among production, performance and presentation variables and viewers' attitudes or learning. When applied by ETV media practitioners during the formative or summative phases of a production, this approach may lead to a better understanding of programming effects on viewers.

OBJECTIVES

Hypothetical Model

The traditional empirical method in formative research has been to make hypothetico-deductive conjectures before testing. Baggaley (1986) suggests that an "inductively-oriented" approach, which examines certain production effects in actual programme contexts and from which specific production guidelines can be inferred, might be more useful to ETV producers and designers.

Causal modeling is such an approach. An increasingly popular heuristic tool, it can be used to close the gap between the languages of theory and applied research that is currently prevalent in the field of educational media research. There are numerous examples of causal modeling in the social sciences as documented by Duncan, 1966; Goldberger, 1970; Land, 1973; Bentler, 1980 and Rushton and Murray, 1985. By proposing a hypothetical model, certain predictions can then be tested. As Asher (1983) states, "Thinking causally about a problem and constructing an arrow diagram that reflects causal processes may often facilitate the clearer statement of the hypotheses and the generation of additional insights into the topic..." (p. 8).

Models are typically stochastic rather than exact or deterministic (Land, 1973); i.e. there is an "if...then" quality about the assumptions in the model. A simple definition of a causal model as offered by Blalock (1961) follows, "If X is a cause of Y, then a change in X produces a change in Y" (p. 9). Three conditions must be satisfied for a model to be considered causal in nature: 1) there must be a variation or covariation between X and Y; 2) there must be a temporal sequence to the relationships, i.e. the change in X must occur before

the change in Y; 3) the relationship between X and Y must not vanish when confounding variables are removed (Blalock, 1961).

The formative evaluation model designed by CTW is not a causal model as such, but rather, it is a description of the operational components in their formative evaluation process. However, it can be used as an example of how the modeling process works. See Figure 2, p. 30.

In the CTW model, the major attributes in column 1 are the independent variables under study. These attributes are manipulated through the employment of various design and production features (column 3) to affect viewer outcomes (column 2).

The operational premise within this descriptive model is that certain programme features can affect viewer outcomes in the direction of appeal, comprehensibility, activity-eliciting potential and internal compatibility. Another configuration of this formative process might be as follows:

<u>Programme Attribute</u>	<u>Programme Feature</u>	<u>Viewer Outcome</u>
For example: Appeal	→ Fast paced animation	→ High attention

If it is discovered that a certain programme feature does not contribute to a high level of attentiveness, then another programme feature that may increase the viewers' attention is substituted.

Cook and Curtain (1985) provide an assessment of the the CTW formative evaluation model and discuss the reasons for its non-adaptability from one series or context to another. "Sesame Street", which was the testing ground for the model, appeared to provide evidence that pedagogic functions and entertainment could be combined to capture large audiences and achieve certain cognitive and affective objectives. As a result, many media

Major Program Attributes Independent Variables	Viewer Outcomes Dependent Variables	Principles of Program Design Statements linking variables
Appeal	Visual orientation, attention, attitude, channel selection, etc.	Within each attribute category, any number of specific features may operate to affect viewer outcomes. Statements linking specific and well-defined program features to learning outcomes belong in this column.
Comprehensibility	Comprehension	
Activity-Eliciting Potential	Verbalization, gross physical acts, imitation. Arousal, attitude, etc. Synthesizing, forming concepts, etc.	
Internal Compatibility	Attention to signal vs. noise, integration of elements.	

Legend: Major attribute categories are dimensions of the televised presentation. Viewer outcomes represent the effects of the presentation on the viewer. Within each attribute category, any number of specific program features may operate to affect viewer outcomes. Principles of program design are hypothesized on well-validated relationships between program features and specific viewer outcomes (Palmer in M. Meyer, 1983, p. 263).

Figure 2.

CTW model for research on presentational learning.

practitioners at CTW concluded that the model could successfully be generalized to other series and to other contexts.

However, the failure of CTW's adult health series, "Feeling Good" and the inability of other media organizations to copy the CTW model revealed its fallibility. Its non-adaptability stemmed from the assumptions on which it was based in the "Sesame Street" context. These include: long pre-broadcast periods; large research budgets; and permanent, cooperative teams of producers and researchers working together during the entire programming process (Cook & Curtain, 1985).

Also, since no clear empirical support for the CTW model exists, it is difficult to evaluate how much it enhances the quality of media production and the likelihood of subsequent changes in knowledge, motivation or behavior.

These limitations of the CTW model do not detract from its usefulness. In fact, the whole purpose of a model is to serve as a framework. Therefore, it can be modified to meet individual needs. In many cases, other educational media organizations have taken what they find useful from the CTW model and formulated their own versions.

Because of its empirical foundation, causal modeling is more rigorous than descriptive modeling. It allows one to make inferences that causal relationships exist among the variables on the basis of patterns observed in one's data (Asher, 1983). It can be used as a strategy in the formative evaluation process either to guide ETV practitioners in their production decisions or to test the results of their decisions on the intended viewing audiences during the summative phase of a product.

Based on the outcome of the informal preliminary evaluation of the ETV programme, relationships between attitudes or knowledge and production,

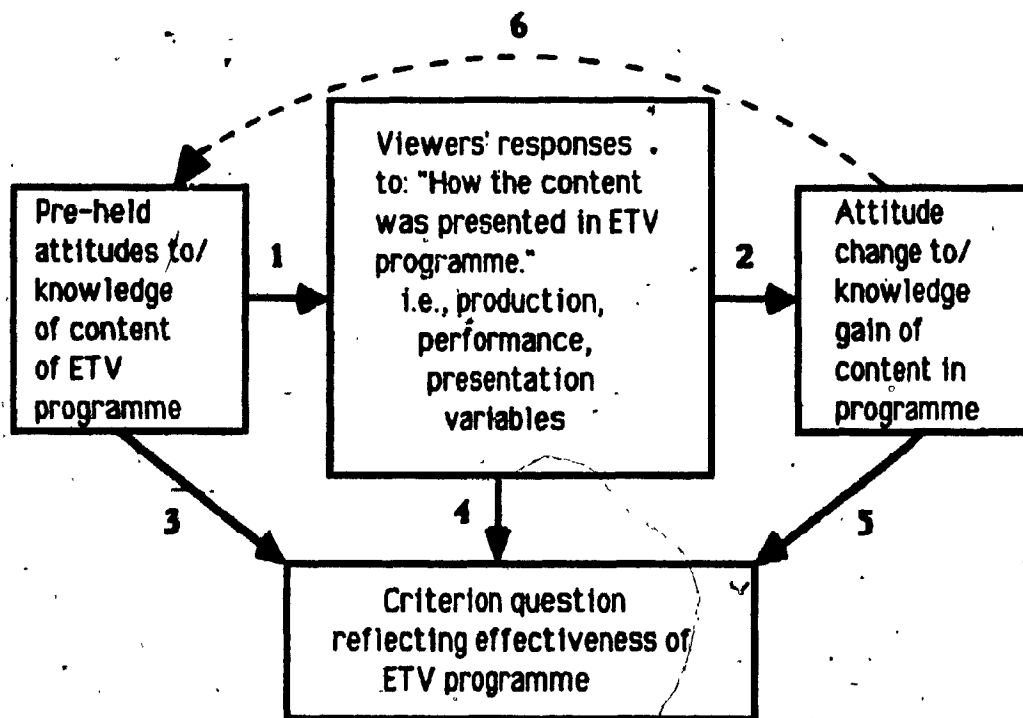
performance and presentation variables appeared to exist. A hypothetical model predicting the causal links among these three groups of variables and an overall criterion of programme effectiveness, as in Figure 3, was proposed and tested in this study. The model is relatively simple in accordance with Blalock's (1961) advice that, "the larger the number of variables, the simpler our assumptions must be about how they all fit together" (p. 4). A simple model with its assumptions can then be gradually modified and made more complex.

Definition of Variables in Study

Attitudes

Attitudes are preferences for groups, institutions, objects or ideas, and may include interests in activities, opinions (verbal expressions of attitude) or judgements of ideas or products, and values or abstractions (Sax, 1982, p. 493-494). In this particular study, attitudes were defined as the target audiences' preconceived opinions about the content in the programme and their judgements of how well the content was presented (the production, performance and presentation variables used in the programme) as influenced by these preconceived opinions.

Osgood, Suci and Tannenbaum (1957) established three dimensions for attitude definition: evaluative (general judgements of goodness), potency or strength of the attitude and activity or willingness to express an attitude in an overt or covert form. To these dimensions, Sax (1982) added: 1) direction which refers to whether an individual views something with favor or disfavor; and 2) consistency which is the range to which an individual feels favorably or unfavorably inclined towards something over a long period of



Legend: 1, 2, 3, 4 and 5 are recursive causal relationships which imply progression in one direction only. They can be delineated as follows:

- 1- Between pre-held attitudes/knowledge and viewers' responses to the production, performance and presentation variables;
- 2- Between responses to the production, performance and production variables and attitude change/knowledge gain;
- 3- Between pre-held attitudes/knowledge and viewers' responses to the criterion question;
- 4- Between viewers' responses to the production, performance and production variables and their responses to the criterion question;
- 5- Between attitude change/knowledge gain and viewers' responses to the criterion question;
- 6- Relationship was not tested due to the short term nature of this study.

Figure 3.

Hypothetical model predicting causal relationships among viewers' pre-attitudes to/knowledge of and attitude change to/knowledge gain of content in ETV programme as these relate to how the content is presented and a criterion question which reflects viewers' opinions of the effectiveness of the programme.

time. In this study, only the evaluative aspect, strength and direction of attitudes were considered.

Pre-held attitudes and attitude change were operationally defined as the subjects' responses on two identical attitude surveys that were administered prior to and immediately after screening the ETV programme.

Learning

"Learning is a change in human disposition or capability which is not ascribable to the process of growth" (Gagne, 1970). The change may be an increase in knowledge or capability for some type of performance or it may be an altered disposition, attitude, interest or value. In this study, learning was defined as that cognitive process which results in short term knowledge gain; thus, the terms learning and knowledge gain were considered synonymous. Attitude change and knowledge gain were measured as separate domains whereas behavioral change or permanence in knowledge gain were not measured.

Prior knowledge and knowledge gain were operationally defined as those subjects' responses on identical knowledge questionnaires that were administered immediately before and after viewing the ETV programme.

Production/Performance and Presentation Variables

How the content in the ETV programme was presented was further classified into its production, performance and presentation variables. Coldevin's (1981) definition of production and presentation variables was adapted for use in this study. He described a production variable as "a definitive process, method or technique of television production" which may influence the effectiveness of a given programme (p. 86).

Coldevin goes on to delineate production variables into 'technical' or

'hardware' factors and 'content organization' or 'software' strategies (p. 86). Technical variables may be described as production techniques such as lighting, picture composition, editing, sound quality, etc. which are dictated by the uniqueness of the medium. Content organization or presentation variables are the general dimensions of the programme, i.e. the clarity, relevance and motivational quality of the content, its sequence, pacing and length.

In addition, there are performance variables which are concerned with the physical appearance, delivery capabilities and credibility of the performers or presenters.

The production, performance and presentation variables were operationally defined as those responses given by subjects to the evaluation items on questionnaire Form B (p. 99 - 101) after screening the ETV programme.

Criterion Question

The common practice in most ETV programming contexts is to define objectives during the design phase of a product. It is also essential to establish some criterion of the programme's overall effectiveness in achieving its objectives. The criterion is therefore a measure of the programme's effectiveness. It is often attitudinal in nature because it represents overall viewer opinions or judgements of the ETV programme.

Operationally defined as the viewers' responses to Question 17 on the post-knowledge questionnaire, the criterion question asked them to state to what extent they would recommend the ETV programme to other colleagues taking similar courses. The producer regarded this question as one measure of the extent to which the programme's objectives had been fulfilled.

Rationale for Hypothetical Model

The hypothetical model was based on the findings of the informal evaluation of the ETV programme, "Child Sense: Observing and Recording Children's Behavior", with the telecourse audience.

A semantic differential scale (Osgood et al., 1957) was used to measure twenty attitude and eleven knowledge questions. Results revealed that responses towards certain presentation factors (course relevance and understanding) predicted a significant positive relationship with such production factors as narration and photography in the ETV programme and a significant negative relationship with the written information on the screen.

Thus the hypothetical model in Figure 3 was derived in an inductive manner based on the analysis of the above variables and the overall criterion of the ETV programme's effectiveness. The relationships defined in the model were tested using multivariate techniques to determine if their predictions could be substantiated. Relationship #6, between attitude change/knowledge gain and the prediction of future attitudes/knowledge, was not tested due to the short term nature of this study.

Although this study was summative in nature, the results could be used in the production of future ETV programmes for similar audiences. In addition, this hypothetical model could be employed in a formative manner on successive occasions during the design and production of a new ETV programme on a similar theme or topic.

PROCEDURES

Sample

The sample was composed of four groups of 80 volunteers who represented the target audience for the video programme, i.e. 1) students or teacher trainees taking courses in early childhood development; 2) experienced school teachers and child care workers; and 3) parents.

Group I included twenty (20) second year early childhood teacher trainees from McGill University of which nineteen were female and one was male. The age range for this group was between 16 and 30 years and all had some experience working with children as student teachers. Three of the subjects were also parents and one other subject had previously been a child care worker. Their mean average number of years of experience with children was 2.3 years, ($SD = 1.13$).

Group II consisted of twenty (20) mature students taking a child development course at Vanier College for evening credit. Nineteen members of this group were female and one was male. The age range of this group was between 19 and 50 years. Members of the group had a mean average of 2.95 years of experience ($SD = 1.40$) as parents, child care workers or teachers working with children.

Group III was also comprised of evening credit mature students from Vanier College. Consisting of eleven female students, this group's average age was between 21 and 40 years. The group included parents, child care workers and teachers who had a mean average of 3.46 years ($SD = 1.21$) of experience working with children.

Group IV consisted of twenty-nine day students (28 females and 1 male) enrolled in a two year early childhood training program at Vanier College. The age range of this group was between 16 and 30 years and the members

possessed a mean average of 2.07 years ($SD = 1.10$) of experience working with children. Three members of the group were also parents and three others had some experience as child care workers.

Research Design

The one sample pre/post test design which examines knowledge gain and attitude shift towards the content as a result of the production, performance and general presentation variables in an ETV programme is a standard design in many formative ETV evaluation studies. It was employed in this study.

All of the subjects in the groups received the same treatment, i.e. exposure to the 28:50 minute educational video (ETV) programme, "Child Sense: Observing and Recording Children's Behavior". As well, all subjects were required to complete two questionnaire forms. The first form (Form A - p. 92) consisted of a pre-attitude and pre-knowledge survey of the subjects' attitudes to and knowledge of the content within the video. It was administered prior to viewing the programme. The second form (Form B - p. 97) consisted of a post-attitude and post-knowledge survey, as well as three sections which required that subjects provide evaluative judgements and reactions to the presentation factors in the programme, the characters and the production variables, and quality. In addition, a demographic section asked subjects to provide certain information about themselves. This second form was administered after viewing the ETV programme.

Instrumentation and Data Collection

A two-part pre-test (Form A) and a four-part post-test (Form B), illustrated in Appendices I and II respectively, comprised the instruments used in this study.

Part A of the pre-test consisted of a fourteen item (Questions 1-14) survey of attitudinal beliefs about observing and working with children. Both negative and positive statements were included in this survey. Subjects were asked to rate their beliefs towards the statements on a five point Likert scale from 'Strongly Disagree' to 'Strongly Agree' with 'Undecided' being the midpoint. The Likert scale was chosen for three reasons: its ability to provide interval measurements, its facilitation of the question answering and scoring processes and its high reliability (Edwards & Kenney in Fishbein, 1967). These items were scored on a scale from 1 to 5, or 5 to 1 depending on their positive or negative nature (Henerson, Morris & Fitz-Gibbon, 1978; Shaw & Wright, 1967).

Part B of the pre-test (Form A) consisted of fourteen multiple choice questions (Questions 1-14) and one open-ended question (Question 15). It was designed to assess prior knowledge of the skills involved in observing and recording children's behavior. The fourteen multiple choice items were scored dichotomously, 1 indicated a correct answer and 0 indicated an incorrect answer. The responses on the open-ended question were examined for their qualitative content (Oppenheim, 1966; Tuckman, 1972).

Except for a change in order, the same fourteen attitudinal statements used in Form A were used in the post-attitudinal survey (Part C) of Form B. The programme evaluation part of the study, designed to obtain audience judgements to the presentation, performance and production variables in the

ETV programme through the application of semantic differential scales was labelled Part D of Form B.

The first section of Part D contained fourteen bipolar and six monopolar adjectives which describe general presentation variables that are important to all ETV programmes as defined by Douglas and Cauley, (1985) and MacLean and Kell (1967). The monopolar adjectives were formed by separating the scales of the bipolar adjective sets that defined amount of information, pacing and length into their monopolar equivalents. For example, 'too much information' compared with 'too little information' contained both 5 to 1 and 1 to 5 intervals in one scale. These were split into two scales: 'too much information' with 'just the right amount' and 'too little information' with 'just the right amount'. In the final analysis, three of these monopolar adjectives were deleted from the final scoring of the test due to their redundancy. Once the subjects had answered the first monopolar set dealing with amount of information, length or pacing, their answers on the second monopolar set dealing with the same concept were redundant.

The second section of Part D consisted of three sets of ten bipolar adjectives (Baggaley, 1980; MacLean & Kell, 1967; Osgood et al., 1957; Smith, 1978) that described each of the three characters or performer groups. The third section of Part D asked for bipolar response ratings of the technical quality and certain format variables used in the production of the ETV programme (ACCESS NETWORK, 1984; Cauley & Douglas, 1985).

All of the adjective sets were balanced for positive and negative direction and an adapted five-point scale rather than the original seven point scale developed by Osgood et al. (1957) was used to differentiate between the adjectives. Thus each of the adjectives sets was scored 5 to 1 or 1 to 5 depending on its positive or negative direction.

Part E of Form B or the post-test knowledge questionnaire contained exactly the same questions (Questions 1-15) as the pre-test but arranged in different order. Due to the short term nature of this study, not all of the learner objectives were tested. However, an open-ended question (Question 16) which asked subjects to describe their favorite part in the programme and a criterion question (Question 17) which asked subjects to recommend the programme to others on a scale of 1 (not recommend) to 5 (totally recommend) were added. The criterion question was regarded as one measure of whether the ETV programme had achieved its effectiveness.

Testing Procedures

Each of the four testing sessions took approximately 90 minutes to administer. Beginning with a 7 minute introduction, the test administrator thanked the subjects for their participation, explained the purpose of the study, described the test session and distributed Form A. At no point during the introduction was the topic of the video programme revealed to the subjects. They were told only that they would be watching and evaluating an ETV programme.

The subjects were requested to write the last five digits of their telephone number or student ID on the front of Form A and to turn to page 1. Instructions for filling out the pre-attitude survey (Part A) and the pre-knowledge survey (Part B) were read aloud and any questions about these sections answered. The subjects were then asked to complete the form proceeding directly to Part B as soon as they had finished Part A. They were encouraged to answer all of the questions to the best of their ability. After completing Form A, subjects were asked to place it in the enclosed envelope

and hand it in. The administration of Form A took approximately 13-15 minutes.

Immediately following this, subjects viewed the 28:50 minute ETV programme about observing and recording children's behavior. They were instructed to critically focus on and attend to the content, presentation factors, performances and production variables (specifically, picture composition, sound, editing, photography, music, narration, film location, written information, dialogue and summary review). A list of these qualities and their descriptions was provided.

Following the screening of the programme, Form B was distributed to the subjects and they were again requested to write the last five digits of their telephone or student number on the front. Instructions for each of the sections of Form B were read aloud, examples of the questions were provided and any questions answered. Subjects were then instructed to fill out Form B, responding to all questions, and proceeding logically from one section to the next section until they had completed the entire form. They were asked to base their evaluative responses on their critical assessment of the video programme and to reflect on the impact of the programme in changing their attitudes or providing them with new knowledge. Upon its completion, subjects placed Form B in the envelope provided and handed it into the test administrator. The administration of this part of the testing session took approximately 25-30 minutes.

During a debriefing session of 3-5 minutes, subjects were given the opportunity to voice their comments on the experience and ask any other questions. At the close of each session, participants were again thanked for their involvement.

Data Preparation and Analysis

Because of the type of evaluative data collected in this study and its inductive nature, multivariate statistical programs from the Statistical Package for the Social Sciences were employed extensively to test and revise the hypothetical model (Nie, Hull, Jenkins, Steinbrenner & Bent, 1975). A flow chart of the data analysis procedures is presented in Figure 4.

However, before beginning the multivariate analyses, it was necessary to check for missing values, the presence of outliers, skewness and linearity (Tabachnick & Fidell, 1983).

Missing Values

Since subjects were encouraged to attempt every question, there were very few missing values in the results. Those missing from the Likert type or semantic differential questions were recoded as 'Undecided' or 3 and those missing from the knowledge tests were scored 'Incorrect' or 0.

Univariate Outliers

Condescriptive statistics were used to obtain the Z scores for all subjects (N=80) on all of the items in Forms A and B: the pre/post attitude surveys, the pre/post knowledge tests and the programme evaluation sections. Condescriptives were also calculated for attitude shift scores and knowledge gain scores. Since there were many potential threats to internal validity and reliability using overall shift and gain scores, the shift and gain scores for each item were compared and recoded. The following recodings occurred on the pre-/post-attitude items: a) a shift from 'Disagree/Don't Know' in the 'Agree' direction was coded as 1; b) a shift from 'Disagree' to 'Disagree' was coded as 2; c) a shift from 'Don't Know' to 'Don't Know' was coded as 3; d) a shift from 'Agree' to 'Agree' was coded as 4; and e) a shift from 'Agree/Don't Know' in the 'Disagree' direction was coded as 5. For the

Data Analysis Flow Chart

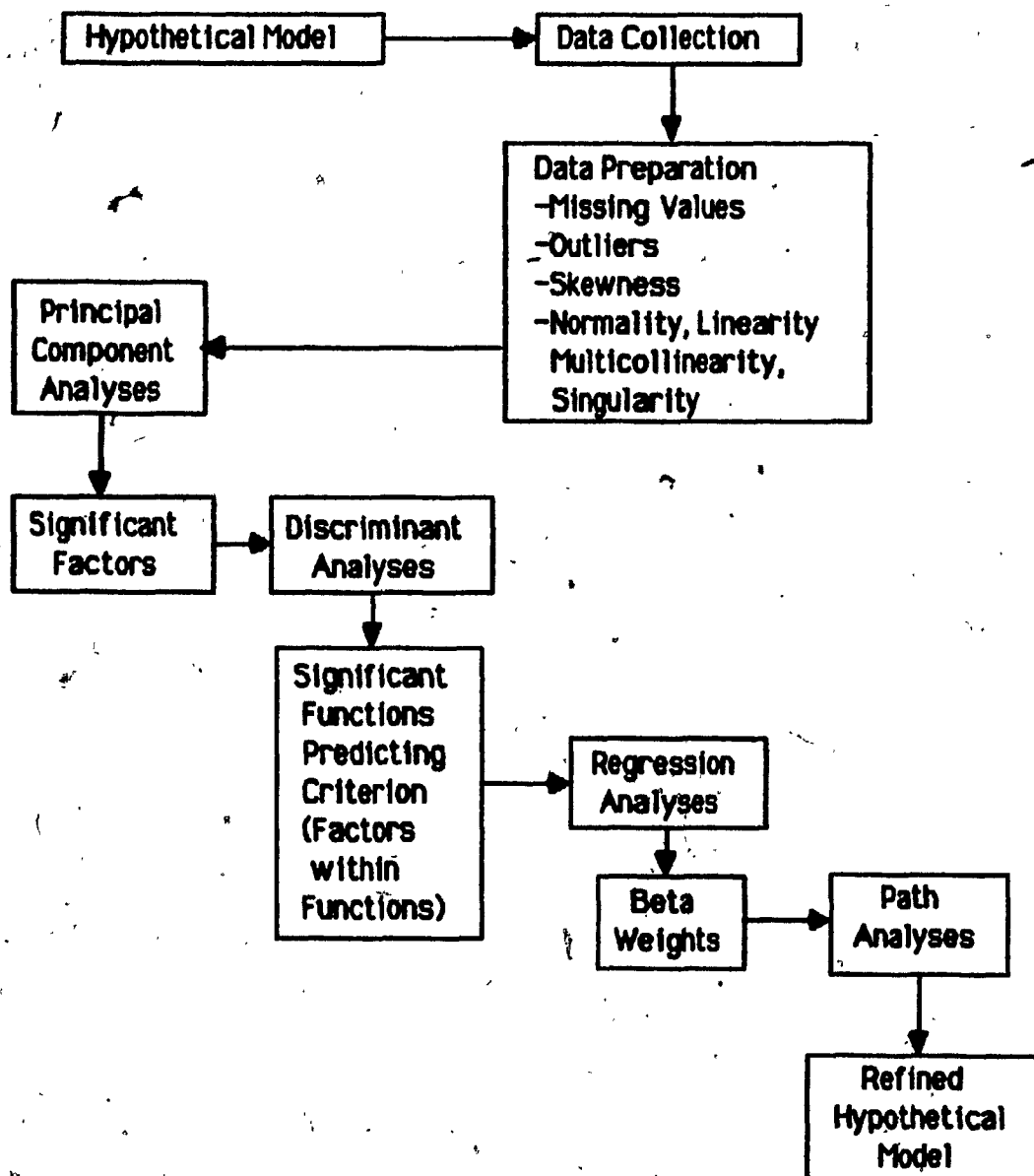


Figure 4.

Flow chart illustrating data analysis procedures.

knowledge questions, a shift from 'Incorrect' to 'Incorrect' received a 1, from 'Correct' to 'Incorrect' received a 2, from 'Incorrect' to 'Correct' received a 3 and from 'Correct' to 'Correct' received a 4.

To detect univariate outliers, Z scores of $> \pm 3.00$ were isolated and examined (Tabachnick & Fidell, 1983). Most of the outlying Z scores were found in the programme evaluation data. Six univariate outlying subjects were identified and deleted accordingly. This included all three of the men in the sample. Possible reasons for outlying responses include the following:

- 1) some subjects responded according to the way they thought the test administrator wanted them to respond;
- 2) some subjects had a particular acquiescence response pattern (Sax, 1981);
- 3) some subjects did not know how they felt and checked each item with the same rating (Labaw, 1980);
- 4) the male subjects appeared to have different attitudes towards child care and ETV programming (Comstock, 1981). This is congruent with the differences in reactions between the sexes towards certain health education messages that have been noted by Baggaley (1986).

Once the univariate outliers were deleted, the data were submitted to another Z score analysis which revealed that extreme Z score deviations were within expected proportions.

Skewness

Next, the data were examined for skewness via the Frequencies routine from the SPSS package (Nie et al., 1975). Z scores $> \pm 2.58$ were found on Item 14 of the knowledge gain scores. From an examination of the raw data on this item, it appeared that most subjects had prior knowledge of the correct answer. According to item analysis procedures (Borich & Kubiszyn, 1984), this item does not differentiate adequately among respondents.

Therefore it was deleted from the pre- and post-test knowledge and gain scores on all follow-up analyses.

Normality, Linearity, Multicollinearity and Singularity

To safeguard against violations of normality, linearity, multicollinearity and singularity, Principal Component Analyses were conducted on the remaining data. The factor scores resulting from these analyses were used in subsequent statistical analyses.

Results

Principal Component Analyses

Researchers primarily interested in reducing a large number of variables to a smaller number of variables through an iterative process may make use of Principal Component Analysis, PAI type (Tabachnick & Fidell, 1983). To complement this procedure, the varimax rotation procedure allows the experimenter to maximize the variance of the loadings across the variables within the factors.

In employing principal component analyses (PCA), a number of requirements of the data were satisfied. These included sample size, outlying variables, normality and multicollinearity. Small sample sizes (<100) may be adequate provided that the subjects are homogeneous and the number of variables are reduceable to a few distinct factors with strong correlations. In this study, the number of variables was reduced so that there were more cases than factors in each analysis. According to Tabachnick and Fidell (1983), a sample size of 50 may be adequate if these standards are met.

Assumptions regarding normality and linearity do not pose a problem when PCA is used to summarize the relationships in a large set of data. It is assumed that all variables and linear combinations of variables are normal. Multicollinearity is also not a problem when there is no necessity for inverting a matrix and the eigenvalues of the major factors are greater than one (1) (Tabachnick & Fidell, 1983, p. 380).

Eleven PA1 principal component analyses with varimax rotation were performed on the variables in each section of Forms A and B. In preference to making an arbitrary decision regarding the number of factors to be specified, these were set to equal the number of items or variables in each section as listed: 1) Pre-Attitudes (14 items); 2) Pre-Knowledge (13 items); 3) Post-Attitudes (14 items); 4) Post-Knowledge (13 items); 5) General Presentation Variables (17 items); 6) Character Group I (10 items); 7) Character Group II (10 items); 8) Character Group III (10 items); 9) Production Variables (11 items).

As well, two PCA's with varimax rotation for each of the attitude shift and knowledge gain scores were conducted: 10) Attitude Shift scores (14 items); 11) Knowledge Gain scores (13 items).

An eigenvalue > 1 was applied as an estimate of significant, well-defined factors and resulted in the following findings:

- 1) Pre-attitude survey - six factors.
- 2) Pre-knowledge questionnaire - five factors.
- 3) Post-attitude survey - five factors.
- 4) Post-knowledge test - five factors.
- 5) Evaluation of the programme presentation traits - five factors.
- 6) Evaluation of character group I - three factors.
- 7) Evaluation of character group II - three factors.

- 8) Evaluation of character group III - two factors.
- 9) Evaluation of production /format variables - three factors.
- 10) Attitude shift - six factors.
- 11) Knowledge gain - six factors.

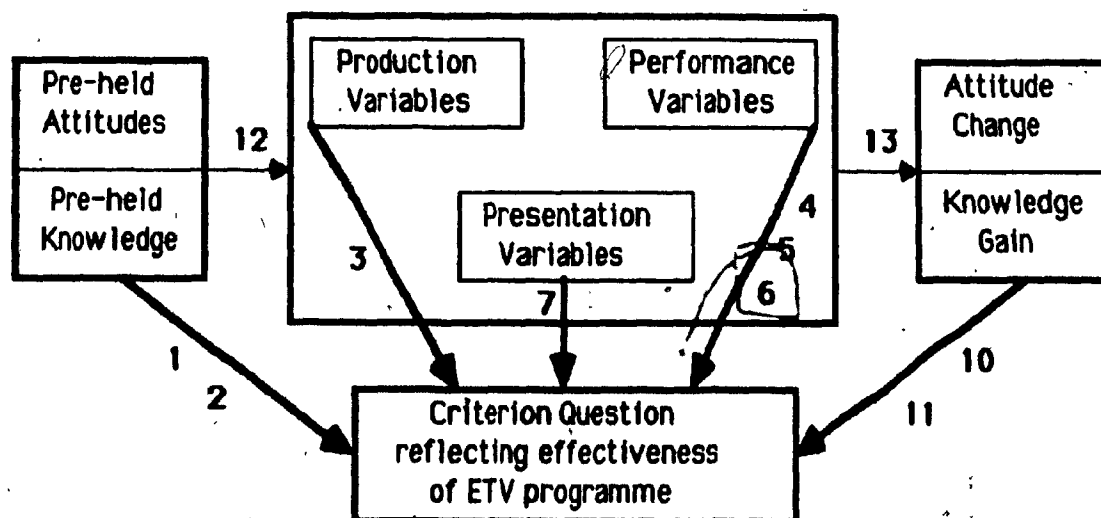
Another set of eleven PCA's, PAI type with varimax rotation was repeated to ensure that the solutions might be optimized for the number of significant factors defined above and to provide factor scores for use in subsequent analyses. Specific interpretations of these factors will be discussed once their significance has been established by Discriminant Analyses.

Discriminant Analyses

Discriminant Analysis (DA) tests the predictive relationship of a number of predictor variables on an overall criterion measure. Question 17 on the post-knowledge test was used as a criterion to determine whether the ETV programme had achieved its objective of effectiveness. It required subjects to indicate on a five point scale to what extent they would recommend this programme to others. Since there were no ratings below 2, responses to this question were recoded into two distinct groups (Group I - Recommend somewhat; Group II - Recommend quite alot).

When the criterion and attitude shift/knowledge gain scores were inserted into the original hypothetical model, as shown in Figure 5, eleven hypotheses were formulated to test out the assumptions that the subjects' responses on each of the sections in Forms A and B would predict their membership in one of the two groups within the criterion question.

Direct DA's were employed to test the hypotheses in the model because there was no logic to suggest that the variables should be entered into the analyses in any particular order (Tabachnick & Fidell, 1983, p. 309). Findings



Legend: The following relationships were tested via discriminant analysis:

- 1 - Viewers' pre-held attitudes to content predicting responses to the criterion question;
- 2 - Viewers' pre-held knowledge of content predicting responses to the criterion question;
- 3 - Viewers' responses to the production variables predicting responses to the criterion question;
- 4 - Viewers' responses to the performance of character I predicting responses to the criterion question;
- 5 - Viewers' responses to the performance of character II predicting responses to the criterion question;
- 6 - Viewers' responses to the performance of character III predicting responses to the criterion question;
- 7 - Viewers' responses to the presentation variables predicting responses to the criterion question;
- 8 - Viewers' post-held attitudes of content predicting responses to the criterion question (not shown);
- 9 - Viewers' post-held knowledge of content predicting responses to the criterion question (not shown);
- 10 - Viewers' attitude change towards content predicting responses to the criterion question;
- 11 - Viewers' knowledge gain of content predicting responses to the criterion question;
- 12 & 13 - Relationships were not tested at this time.

Figure 5.

Expanded hypothetical model resulting from Principal Component Analyses with the production, performance and presentation variables separated into their individual factor clusters.

revealed three significant discriminant functions indicating a prediction of the criterion measure by responses to the production variables ($p < .05$), the characters in group III, ($p < .05$) and general presentation variables ($p < .01$). See Table 1.

A more detailed description of the results for the above significant functions is presented in Table 2. Each of the resulting discriminant functions accounted for 100% of the variance in their individual analyses.

With the significant discriminant functions defined, the factors within them can also be identified. Factors were labelled according to either the highest loading variable or an interpretation of the composite variable loading. A loading of $> .55$ was denoted as an acceptable level of identification with the factor (Comrey, 1973). See Tables 3, 4 and 5.

As illustrated in Table 3, the production variable factors are: Packaging, Information Review and Content Delivery. Packaging is the significant factor within the discriminant function, $E(1,72) = 5.71, p < .05$.

In Table 4, the character or performance factors are: Credibility and Warmth. Credibility is the significant factor within the discriminant function, $E(1,72) = 7.13, p < .01$.

In Table 5, the presentation factors are: Quality, Accuracy, Comprehension, Amount of Information and Interest. Quality is the significant factor within the discriminant function, $E(1,72) = 6.10, p < .05$.

Based on these findings, the original hypothetical model was modified. The respective relationships between pre-held attitudes, pre-held knowledge and the criterion question were deleted due to their lack of ability to predict the criterion. In addition, the links between attitude shift and knowledge gain and the criterion question were deleted due to their lack of ability to predict the criterion. A t-test comparing pairs of raw scores from the pre-

Table 1

Discriminant Function Analyses with Factors from Pre/Post- Attitude Surveys, Pre/Post-Knowledge Surveys, Evaluation of Production, Character Group I, Character Group II, Character Group III, Presentation Variables and Attitude Shift/Knowledge Gain Predicting the Criterion Question 17

<u>Hypotheses and Predictors</u>	<u>Criterion</u>	<u>df</u>	<u>Eigenvalue</u>	<u>χ^2</u>
H1-Pre-Attitude Factors	Q17	6	.04	2.61
H2-Pre-Knowledge Factors	Q17	5	.04	2.44
H3-Post-Attitude Factors	Q17	5	.03	2.31
H4-Post-Knowledge Factors	Q17	5	.05	3.22
H5-Production Variables	Q17	5	.12	8.18*
H6-Character in Group I	Q17	3	.10	6.72
H7-Character in Group II	Q17	3	.01	1.03
H8-Characters in Group III	Q17	2	.11	7.34*
H9-Presentation Variables	Q17	5	.31	18.97**
H10-Attitude Change Factors	Q17	6	.04	2.52
H11-Knowledge Gain Factors	Q17	6	.06	4.06

*p < .05

**p < .01

Table 2

Discriminant Analyses with Production, Character, III and
Presentation Factors Predicting Criterion

Predictors	Univariate F(1,72)	Pooled Within Groups Correlation Function with Largest r.
<u>Production Factors</u>		
		<u>Function 1</u>
1	5.17*	.80
2	.92	.32
3	1.73	.44
<u>Character III Factors</u>		
		<u>Function 1</u>
1	7.13**	.95
2	.60	.28
<u>Presentation Factors</u>		
		<u>Function 1</u>
1	6.10*	.52
2	4.40	.44
3	2.49	.33
4	3.99	-.42
5	1.27	-.24

*p < .05

**p < .01

Table 3

Principal Component Analysis after Varimax Rotation of the Responses to the Production Variables in the ETV Programme

Items	Factors		
	1	2	3
Q1 Picture Composition	.07138	.54295	.57256*
Q2 Sound Quality	.09004	.59703*	.54658
Q3 Editing	.82378*	-.01994	.20136
Q4 Photography	.72289*	.14092	-.00226
Q5 Music	.79718*	-.02902	.17323
Q6 Film Location	.60253*	-.07384	.48827
Q7 Scene Order	.69543*	.18872	-.05605
Q8 Narration	.11438	-.01915	.78204*
Q9 Written Info.	.12897	.59988*	.09539
Q10 Dialogue	.40307	.62826*	-.27528
Q11 Review	-.14431	.65063*	.00849
% of Variance	31.1	16.1	11.3
Eigenvalue	3.42	1.77	1.24
	Packaging Components	Information Review	Content Delivery

Note. * Variable loadings on factors > .55

Table 4

Principal Component Analysis after Varimax Rotation of the Responses to the Characters in Group III in ETV Programme

<u>Items</u>	<u>Factors</u>	
	<u>1</u>	<u>2</u>
Q1 Realistic	.11067	.87874*
Q2 Warm	.01973	.88171*
Q3 Competent	.67482*	.19782
Q4 Strong	.76884*	.04415
Q5 Sincere	.69368*	.28633
Q6 Relaxed	.67322*	.43339
Q7 Believable	.78291*	.04759
Q8 Knowledgeable	.68266*	.07524
Q9 Likeable	.76482*	.07558
Q10 Natural	.64407*	.17397
% of Variance	43.10	16.60
Eigenvalue	4.31	1.66
	Credibility	Warmth/Realism

Note. * Variable loadings on factors > .55

Table 5

Principal Component Analysis after Varimax Rotation of Responses to the
Presentation Variables in the ETV Programme

Items	Factors				
	1	2	3	4	5
Q1 Interest	.07293	.16235	.01513	.07604	.86736*
Q2 Info Amt	-.05574	.06734	.00927	.83356*	-.19515
Q3 Relevance	.75446*	.18829	.05704	.21473	-.04200
Q4 Attend	-.16648	.46365	.65702*	.09502	.05821
Q5 Understand	.26087	.05036	.71651*	-.03099	-.02074
Q6 Pacing	.66514*	.21043	.09047	-.05085	.04635
Q7 Entertain	.04391	.78884*	.19545	-.09430	-.08643
Q8 Accurate	.09908	.79325*	.03742	.05241	.18805
Q9 Length	.82481*	.08190	.05108	.00797	-.06451
Q10 Useful	.37716	.02729	.61502*	.28526	.32576
Q11 Quality	.56316*	.07359	.11788	.43736	.18280
Q12 Inform	.53066	.31415	.27502	-.17868	-.04477
Q13 Motivate	.56020*	.00093	.17650	.49984	.16264
Q14 Smooth	.40948	-.29752	.22439	-.02109	-.13306
Q15 Clear	.60771*	-.18601	.49780	-.02263	-.07427
Q16 Enjoyable	.34080	.35818	.01229	.07301	-.50864
Q17 Straight	.37449	.72916*	-.03641	.24991	-.05797
% of Variance	28.3	12.3	8.1	7.1	6.8
Eigenvalue	4.80	2.09	1.37	1.20	1.15

Quality Accuracy Comprehension Info. Amt. Interest

Note. *Variable loadings on factors > .55

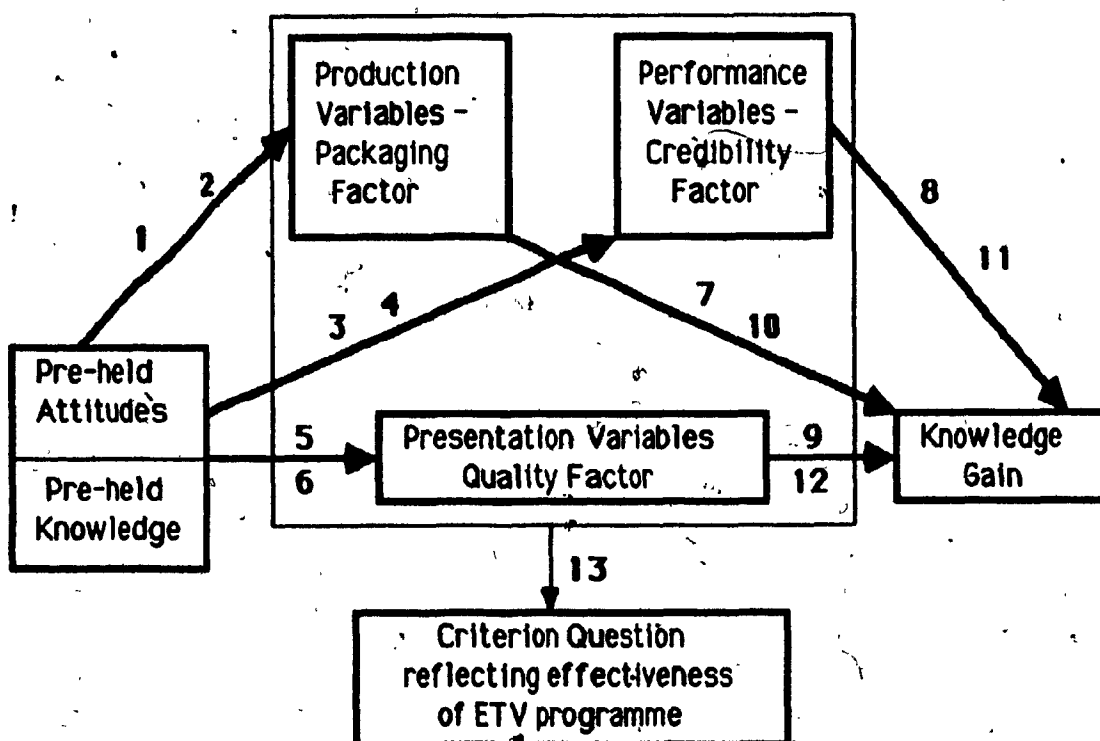
and post-attitude tests determined that the attitude change scores were not significant and therefore attitude change was also deleted from the model. The refined hypothetical model is shown in Figure 6.

Six other discriminant analyses were performed to see if pre-attitudes and pre-knowledge responses predicted production factors, characters in group III or presentation factors. Composite raw scores from each of the production, characters in group III and presentation responses were recoded into two groups and used as criteria for each of these discriminant analyses. No significant discriminant functions resulted from these six analyses.

A t-test between pre-knowledge and post-knowledge scores proved to be significant at $p < .001$. Therefore three DA's were carried out to determine if production, performance and presentation factors predicted knowledge gain. Also, three stepwise hierarchical DA's were undertaken using production, ~~performance and presentation factors as the predictors~~ and pre-knowledge raw scores as the covariates. In these tests, knowledge post-test scores and knowledge gain scores were recoded into two discriminating groups and used as the criteria in their respective tests. The resulting discriminant functions were not significant.

The final refined version of the hypothetical model resulting from these findings is given in Figure 7. Note that pre-attitudes/knowledge variables have been deleted due to their lack of ability to predict the criterion question and the production/performance and presentation variables. In addition, knowledge gain was deleted due to its inability to predict the criterion question.

A number of causal relationships in this model were defined and tested. They were: 1) the recursive causal relationship between the performance and presentation variables; 2) the recursive causal relationship between the

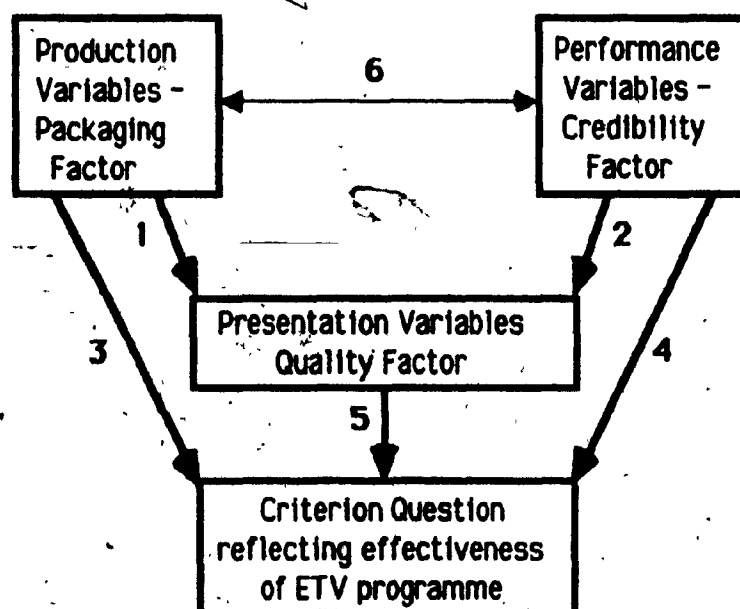


Legend: The following relationships were tested via discriminant analyses:

- 1 - Viewers' pre-held attitudes predicting production variables (packaging factor);
 - 2 - Viewers' pre-held knowledge predicting production variables (packaging factor);
 - 3 - Viewers' pre-held attitudes predicting performance variables (credibility factor);
 - 4 - Viewers' pre-held knowledge predicting performance variables (credibility factor);
 - 5 - Viewers' pre-held attitudes predicting presentation variables (quality factor);
 - 6 - Viewers' pre-held knowledge predicting presentation variables (quality factor);
 - 7 - Viewers' responses to production variables predicting knowledge gain;
 - 8 - Viewers' responses to performance variables predicting knowledge gain;
 - 9 - Viewers' responses to presentation variables predicting knowledge gain;
 - 10 - Viewers' responses to production variables with pre-knowledge predicting knowledge gain;
 - 11 - Viewers' responses to performance variables with pre-knowledge predicting knowledge gain;
 - 12 - Viewers' responses to presentation variables with pre-knowledge predicting knowledge gain;
- Relationships 10, 11 and 12 were stepwise hierarchical discriminant analyses.
- 13 - Relationship was not tested as it had been confirmed in previous analysis.

Figure 6.

Refined hypothetical model resulting from first set of Discriminant Analyses which illustrates the relationships between the significant production, performance and presentation factors and the criterion question.



Legend: The following recursive relationships were tested via regression analyses:

- 1 - Between production variables and presentation variables;
- 2 - Between performance variables and presentation variables;
- 3 - Between production variables and the criterion question;
- 4 - Between performance variables and the criterion question;
- 5 - Between presentation variables and the criterion question with production variables as the covariate;
Relationship 5 was a hierarchical multiple regression analysis.
- 6 - Tested using Pearson Product correlation method.

Figure 7.

Refined hypothetical model resulting from second set of Discriminant Analyses and illustrating potential causal relationships among production, performance and presentation variables and the criterion question.

production and presentation variables; 3) the recursive causal relationship between production variables and the criterion; 4) the recursive causal relationship between performance and the criterion; and 5) the recursive causal relationship between presentation variables and the criterion. However, since performance variables are an integral part of the production process, no causal relationship between performance and production variables was inferred and a Pearson Product correlation (6) was calculated.

Regression Analyses

Regression Analyses (RA) using composite raw scores from each of the respective production, presentation and performance factors and the criterion question were employed to test the relationships in the revised model. One exception was the Pearson Product correlation which measured the relationship between the performance and production variables. An $r = .40$, $p < .001$ was disclosed. Table 6 summarizes the findings of the regression analyses.

The significant correlation between performance and production variables supports the evidence that characterization and other production variables are part of the same production decision-making process. The linear regressions between production variables and characters in group III with criterion and between production variables and general presentation variables were significant. However, the linear regression between performance and presentation was not significant.

Due to the significant relationship between the production and presentation variables, a stepwise hierarchical multiple regression was conducted using presentation variables as predictors of the criterion question and

Table 6

Linear Regression Analyses of Production Variables/Characters in Group III with Criterion and Production Variables/Characters in Group III with Presentation

	<u>Independent Variables</u>	<u>Dependent Variables</u>	<u>B</u>	<u>Linear R</u>	<u>R²</u>	<u>F</u>
	Production	Criterion Q17				
M	22.10	3.80	.29	.29	.08	6.47*
SD	2.23	0.52				
	Characters III	Criterion Q17				
M	34.95	3.80	.27	.27	.07	5.46*
SD	4.16	0.52				
	Production	Presentation				
M	22.09	1.53	.27	.27	.07	5.79*
SD	2.23	0.50				
	Characters III	Presentation				
M	34.95	1.53	.14	.14	.02	1.40
SD	4.16	0.50				

*p < .05

production variables as the covariate (Kerlinger & Pedhazur, 1973). Again composite raw scores of the appropriate presentation/production factors and the criterion question were used. Table 7 displays the correlations between the variables, the standardized regression coefficients (B), the Multiple R, the R variance value and the adjusted R² after the entry of both independent variables. R was significantly different from zero at the end of both steps. Thus the contribution of the production variables as a covariate of the presentation variables was partialled out in the estimation of the relationship between the presentation variables and the criterion measure.

Table 7

Hierarchical Multiple Regression - Presentation Variables and Criterion with Production as Covariate

<u>Correlation Matrix</u>						
<u>Independent Variables</u>	<u>Criterion</u>	<u>Production</u>	<u>B</u>	<u>Multiple R</u>	<u>R²</u>	<u>F</u>
Production	.29		.29	.29	.08	6.47*
Presentation	.33	.43	.37	.37	.14	5.55**
Adjusted R ² = .11						

* p < .05

** p < .01

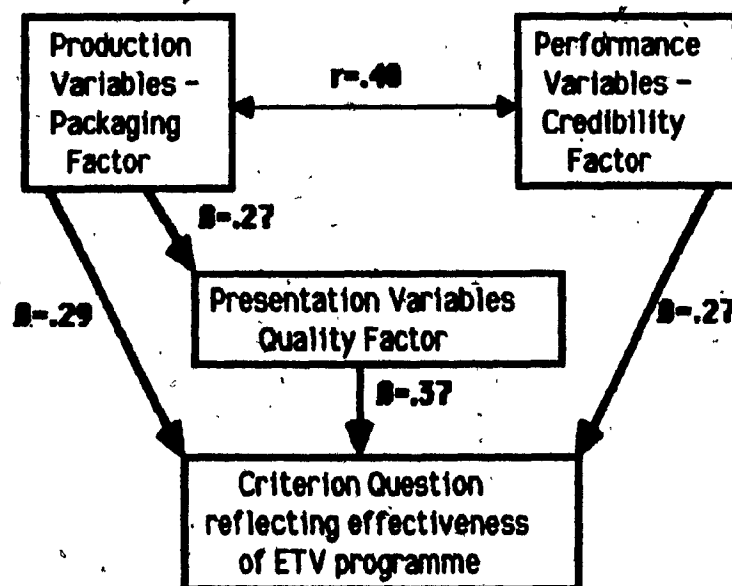
Path Analyses

Path Analyses are concerned with estimating the magnitude of the linkages between the variables and measuring the effects of one variable on another (Asher, 1983). Findings from the above significant regression analyses provided the standardized regression coefficients or beta weights

which were then assigned to the paths between the variables in the model during the path analysis procedure. This enabled the strength of these relationships and the causal relationships to be established (Asher, 1983; Blalock, 1961). See Figure 8. The results of the linear regressions revealed that: 1) production variables account for .08 of the variance associated with the criterion question; 2) characters in group III account for .07 of the variance associated with the criterion question; 3) production variables account for .07 variance associated with presentation variables. Results of multiple regression revealed that presentation variables account for .14 of the variance associated with the criterion question after production variance has been partialled out.

As illustrated by this model, the packaging components of production, the credibility of the characters and the overall quality of the programme's presentation were of major importance in determining to what extent subjects would recommend this ETV programme to their colleagues.

Finally, in order to establish the possible relationships between demographics, group membership and the criterion question, Chi-Square statistics were applied. Question 1 of the demographics section was the determination of the sex of the subjects. Since all N = 74 cases were female, this question was not included in the nonparametric analyses. The findings of these analyses are given in Table 8. None were significant.



Legend: The following significant recursive relationships were illustrated via path analysis:

- 1 - Between production variables and the criterion question;
- 2 - Between production variables and presentation variables;
- 3 - Between performance variables and the criterion question;
- 4 - Between presentation variables and the criterion question after the covariate production variables were extracted;
- 5 - A significant Pearson Product correlation was found between production variables and performance variables.

Figure 8.

Final hypothetical model illustrating the path analysis and strength of the relationships among production, performance and presentation variables and the criterion question reflecting effectiveness of the ETV programme.

Table 8**Chi-Square Statistics Between Demographic Variables and Criterion Question**

<u>Demographics</u>	<u>Criterion</u>	<u>df</u>	<u>χ^2</u>	<u>p value</u>
Q2 Age	Q17	3	1.27	n.s.
Q3 Education	Q17	3	4.26	n.s.
Q4 Occupation	Q17	4	1.57	n.s.
Q5 T.V. Viewing Hours	Q17	4	8.24	n.s.
Q6 Viewing ETV	Q17	1	0	n.s.
Q7 Child Care Capacity	Q17	4	7.18	n.s.
Q8 Years of Experience	Q17	4	2.74	n.s.
Group Membership	Q17	3	4.40	n.s.

Comments resulting from the open-ended questions

All of the comments on Question 15 of the pre-knowledge questionnaire reflected some general knowledge of the skills and attitudes required for observing and recording children's behavior among the respondents. Some specific examples are presented below:

Subject 5 - "be open to anything the child has to offer, be accepting".

Subject 10 - "truth, objectivity and confidentiality".

Subject 12 - "to gain insight into children; develop programs which lead to the overall development of child".

Subject 19 - "know how to reinforce positive behaviors".

Subject 23 - "every child is different, must record his/her motives".

Subject 33 - "unbiased attitude, love".

Subject 45 - "gather likes and dislikes of children".

Subject 50 - "not label children; each child develops at own rate".

Subject 61 - "fulfill the needs of the child".

Subject 64 - "have a purpose in mind, know which method is appropriate, be accurate and objective".

The responses to Question 15 of the post-knowledge questionnaire were much more specific and skill-oriented. Fewer opinions and more factual statements were volunteered. For example:

Subject 1 - "do not pass value judgments on the child, discuss inferences with other workers".

Subject 17 - "observe the child in different settings".

Subject 20 - "write just what you see and hear, don't judge".

Subject 23 - "have a sense of purpose, clarity".

Subject 31 - "sit in unobtrusive area, little interaction with child, make frequent observations".

Subject 43 - "unbiased approach, make detailed notes, conference with others".

Subject 63 - "do not interact with child, be sensitive to your feelings and only discuss child with parents".

Subject 73 - "respect rights of individual child, develop skills for coping with stress".

Responses to Question 16 of the post-knowledge survey indicated positive feelings towards: watching the children play by themselves and with each other; the handling of the children in the water play scene; the overall interaction between the workers and the children; the teaching of observing and recording skills to the child care trainee and the reviewing of

the important content concepts at the end of the programme. Specific comments include:

Subject 9 - "watching the three different approaches to the water play scene made me wonder how I would handle a similar situation".

Subject 15 - "fun to watch the children play, see their interactions and facial expressions".

Subject 17 - "the summary at the end made everything clear".

Subject 30 - "watching someone else observing instead of having to do the observing yourself".

Subject 31 - "how the children were free to play but the workers were always present".

Subject 44 - "hearing the small girl singing the bus song".

Subject 49 - "when the director was showing the trainee some of the necessary observing skills".

Subject 55 - "the film was not rushed, was calming, relaxing; close-ups of children were pleasurable".

Subject 58 - "watching the children helped me develop an understanding of them".

Subject 73 - "narration was enlightening and interesting".

Subject 74 - "informal ways of taking notes".

The main weaknesses of the programme, as pointed out by the respondents, were the performances by both the child care trainee and director of the child care centre. In addition, subjects generally felt that the presentation of the written information on the screen was too quick for absorption and in some cases, unreadable. Some of their comments on weaknesses follow:

Subject 1 - "written information went by too fast".

Subject 11 - "two main characters were too stiff; camera should have zoomed in on child being observed; was left hanging at end; did not get to see the final conference".

Subject 16 - "too broad a view of observation".

Subject 19 - "last scene before the review was extremely phony".

Subject 23 - "the director was the weakest, her information was accurate but her manner and voice were disturbing".

Subject 26 - "felt programme was not realistic view of real day care".

Subject 44 - "interactions between director and trainee seemed contrived and unnatural".

Subject 55 - "written information not centered".

Subject 68 - "not enough information".

Subject 74 - "the programme was pretty superficial and some of the dialogue was false".

As illustrated above, most of the subjects who made critical comments seemed to have a basic understanding of some of the variables that are integral to the design and production of an ETV programme. Furthermore, their comments supported the findings of the statistical analyses.

Discussion

This study has considered the dilemma faced by ETV practitioners in deciding what research strategies and production variables to utilize in the design and production of ETV programmes. It has also focused on some of the contributing issues in this dilemma: 1) the lack of accessible, clearly written research results or models that are easy to implement; 2) the measurement of the effects of isolated variables on viewer attitudes and

achievement, and 3) the use of a specific formula for predicting viewer reactions. This study suggested that one possible method of dealing with this dilemma is the practical approach of causal modeling.

A simple hypothetical model (see Figure 3, p. 33), which evolved through an inductive process using a preliminary informal evaluation of the ETV programme, was proposed. The informal evaluation resulted in certain significant variables which were placed into the hypothetical model for further examination. Choosing variables to insert into the model is often based on the assumptions of the ETV practitioner. As Asher (1983) has stated, "there is no limit to the potentially infinite universe of variables which can be infused into the model...we must choose variables in which we have some confidence and... examine the relationships among them..." (p. 9). In this case, the producer's confidence in the chosen variables was confirmed by the literature.

Through the techniques of principal component, discriminant and regression analyses, the relationships among production, performance, presentation variables and a criterion of overall effectiveness were examined within the framework of the hypothetical model. Results from these analyses were inserted into the model and tested for their significance. Several revisions of the hypothetical model were made until empirically significant relationships among the variables could be discerned.

In this study, Question 17 on the post-knowledge survey was established as the criterion because it revealed the subjects evaluation of the ETV programme's quality and effectiveness. Question 17 asked viewers to indicate to what extent they would recommend the ETV programme to their colleagues.

There are several possible reasons for the non-significant relationships between the respective pre/post attitude and attitude shift scores and the criterion. The most probable explanation is that one ETV programme cannot change respondents' attitudes towards observing children and working with them. The influence of one programme is limited while the influence of several is cumulative (Dwyer, 1978). Audiences often need repeated exposure to the same ideas over a long period of time before their attitudes change (Carpenter, 1972; Wortman, 1975). This apparent lack of attitudinal change may also be due to ' sleeper effects ' (Kelman & Hovland in Baggailey, 1980; Aronson, 1973) or the lack of awareness of the programme's impact until a stimulus spontaneously triggers its effect at some later date.

Another reason may be the programme's relatively uncontroversial and straightforward presentation of the content. If the programme had focused on the observing and recording of child abuse victims, changes in attitude might have been more prevalent. According to Dwyer (1978), an ETV programme can be designed to change attitudes, opinions, knowledge and skills only if it extends what the learner already knows or believes.

Other possibilities for the noticeable lack of attitude change include the fact that the attitude statements in the questionnaire were: 1) not written to elicit strong feelings from the participants; 2) may have been misinterpreted; or 3) may have elicited predominantly positive responses from those subjects who have aspirations towards obtaining employment in the child care field (Labaw, 1980; Sax, 1981).

Although a comparison between pre-test and post-test knowledge scores was significant, $p < .001$, neither the pre-test knowledge, post-test nor knowledge gain scores predicted the criterion. In other words, there does not appear to be a relationship between learning from the ETV programme and

viewers' overall recommendations of the programme. Instead, viewers' overall recommendations of the programme appear to be based on their reactions to the production, performance and presentation factors in the programme. Other researchers have described similar findings. Barrington (1972) and Carpenter (1972) showed that even though students may prefer it, a technically slick ETV programme may not generate greater increases in learning than a programme which is less elaborate. These conclusions are in direct contrast with Morris' (1983-84) studies in which he demonstrated a close interrelationship among student interest, learning and the use of quality production techniques in an ETV programme. As well, Salomon (1979) has stated that often audiences will only put effort into the viewing process if the programme's quality is high. However, there may be some validity to Paluzzi's argument that instructional producers err in utilizing production techniques simply for the purpose of gratifying audience sensibilities when a simple format which delivers the message clearly will suffice.

The disclosure of a significant relationship between production variables with respect to the criterion indicates that the adult viewers hold high expectations for the standards in television programming. These conclusions have also been confirmed by Davis (1980) and Green and Matsui (1981). 80% of the subjects in this study stated that they had watched ETV programmes before and spent an average of 3.18 hours per weekday watching television. Such constant exposure to the television medium leads one to infer that these viewers have probably learned about some of the production conventions used in television programming. Therefore, their high expectations for quality programming were reflected in their concern for the packaging of the final product or its "look and sound".

Characterization is one of the most important decisions that ETV designers and producers must make during the process of production. This was supported by the strong correlation between characters and production variables in this study. The choice to go with actors versus real people can strongly affect the success of the ETV programme, as illustrated by Wardwell (1976) who found that achievement scores of students watching trained communicators were higher than those who watched untrained communicators. In addition, Sturm (1976) demonstrated the lasting emotional impact that performers or characters in a television programme can have on viewers.

The fact that only one of the character groups (Group III - the child care workers) was significant in predicting the criterion supports the importance of perceived credibility in ETV performers (Baggaley, 1980; Coldevin & Bernard, 1981). Audiences' final judgements of a programme are often based on how well the characters perform. In this programme, the real child care workers were considered the most credible performers. This credibility was based on the viewers' high ratings of the believable, strong, likeable, sincere, knowledgeable, competent, relaxed and natural performances of the workers.

A significant relationship was also observed between the presentation variables or general dimensions of the ETV programme and the criterion question. Thus viewers' responses to the pacing, length, professional quality, relevance, motivation and clarity in this ETV programme influenced their recommendation of the programme to others. Green and Matsui (1981), who conducted a study of adult viewers in relation to viewing behaviors and attitudes towards various television formats, found that the qualities of realistic dramatization, believable characters, and action were foremost in

the minds of television audiences. Along with characterization, presentation variables may be more obvious or intuitively recognizable to audiences than production variables such as editing or picture composition, variables which require some understanding of the production process.

Although there were differences with regard to age, level of education, capacity and years of experience dealing with children among the subjects in this study, none of these traits were statistically significant when cross-tabulated with the criterion question. Neither group membership nor any of the other demographic characteristics influenced the subjects' recommendations of the ETV programme to others. There are two possible reasons for this. One may be that the group compositions were quite homogeneous. In other words, the fact that all the groups were made up of postsecondary students studying the topic of child development might have outweighed any of the other differences among the subjects. Another reason may be that the consistency among groups to react with the same response ratings to the production, performance and presentation factors in the programme overruled any differences among them.

Employing multivariate statistics to reduce data and illustrate their relationships in a hypothetical model helped to expose the important elements in the design and production of this ETV programme. Credible performances, attractive packaging and the professional quality of the final product prompted viewers to judge it effective and recommend it to others. These findings can now be applied in the production of future ETV programmes of a similar nature. Future ETV programmes on the topic of child development that are designed for audiences of this type should therefore include the use of: 1) realistic, credible characters with whom the audience can identify; 2) quality presentation factors (the content should be

relevant, motivational, clear, well-paced and of an appropriate length); and 3) technically sound packaging factors (editing, photography, music, setting and sequencing of content) should be utilized.

As has been illustrated in the above example, the causal modeling approach is useful for ETV practitioners because it confirms the importance of working with a certain set of variables to determine which are effective in a particular learning situation with a particular audience.

The value of causal modeling lies not only in its ease of implementation or ability to reveal relationships among variables in the design and production of an ETV programme but also in its flexible application to any stage of the programming process. This is an advantage that other types of models such as the CTW model do not have. Causal modeling can occur either at the formative stage, where prototype programmes or segments of programmes are tested, or at the summative stage (as in this study), where end-products are tested to determine what techniques, variables or strategies are influential in promoting student liking, learning or attitude change. What the ETV media practitioner has established as the criterion for the programme, will affect the manner in which the evaluation is conducted and the end results of the study. If during the evaluation of a prototype programme, the researcher or producer determines that technical slickness is not necessary for learning, then perhaps a simpler product will suffice. On the other hand, if high learner interest among experienced television viewers is required, then the use of more complex production and presentation techniques may be necessary. Salomon and Cohen (1977) showed that media literate learners of high intelligence require different production techniques to media literate learners of low intelligence.

As with all research tools, causal modeling has some limitations. First, most models are based on theoretical assumptions made by the researcher. In this case, the producer used her experience and the literature from previous studies on ETV programming effects as the basis for her assumptions that there were relationships among audience attitudes/knowledge, production/presentation/performance variables and the effectiveness of the programme.

A second limitation of causal modeling is the over-simplification of the process being tested. In this case, the initial hypothetical model was simple in nature. It became even less complex after the multivariate analyses were conducted and a number of the variables were partialled out due to their non-significance. This does not suggest that the design and production processes in ETV programming are simple. On the contrary, the many interrelationships among the production, performance and presentation variables and the criterion of effectiveness in the final hypothetical model are varied and complex in nature. These complex interactions require definition and confirmation through further testing. In addition, research should be conducted into the types of statistical violation which may have occurred in this investigation i.e., multivariate outliers and the ways to deal with them in evaluation research.

A third problem with causal modeling arising from the first and second limitations is that the researcher/producer cannot state conclusively that a change in X has produced a change in Y. Only assumptions can be made about the causal relationships among variables. Therefore, most causal models remain probabilistic in nature. However when researchers/producers: 1) are aware of uncontrollable or confounding variables; 2) use the same model on different products; or 3) use different analyses to test the assumptions or configure other models for the same variables, they can draw reliable

conclusions. There are many interactions among the variables which have not been tested in this study, but the relationships which were validated confirm outcomes found by other ETV researchers and therefore can be applied with a certain degree of confidence.

Different types of tests which could be conducted with the variables proposed in this hypothetical model are outlined. One extension of this study could be the delineation of prior attitudes/ knowledge which subjects have of the actual production and presentation process (i.e. their media literacy) and how this affects their recommendation of the programme. Also, depending on what producers or researchers establish as the objectives for their ETV programmes, replications of this design could be conducted using different criteria as measures of effectiveness. Instead of using Question 17, which asked respondents for a recommendation of the programme, responses on other knowledge questions or certain attitudinal statements could be established as criteria for the determination of the programme's effectiveness. For example, answers on either Question 12 of the knowledge questionnaire (name one of the most important results of observations) or Question 13 of the attitudinal survey (working with children is often stressful) could be used as criteria. Composite scores on combinations of questions could also be used as criteria for programme effectiveness.

Other extensions of this inquiry might include testing for attitudinal change or learning both immediately after screening the ETV programme and at some later time. The permutations in test designs and varied findings which might result from repeating this study could reveal even more specific information on the effects of production, performance and presentation variables on viewers' attitudes and learning.

Discovering the actual moments within the ETV programme which affected the subjects knowledge/attitude or overall liking of the programme could be conducted via electronic means such as the Programme Evaluation Analyzer Computer (PEAC). Using inductive hypothesis formulation or causal modeling, formative evaluation designs and the means for electronic response measurement, "we should ultimately be in a position to define the techniques required for effective television on any topic and for all types of audiences" (Baggaley, 1986, p. 21).

More work is needed before it will be possible to predict the impact of all production methods on audiences of ETV programming. However, causal modeling appears to be a valuable evaluation approach which encourages the examination of the relationships between audiences' attitudes to/knowledge of the content related to a certain topic and the production, performance and presentation variables used in the ETV programming process. Eventually this may lead to the formation of a hierarchy of techniques which can be used to promote learning or attitude change within certain audiences in specific learning situations with a high degree of success.

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Appendix I
Evaluation of Educational
Television Programme
Form A

All of the information requested in this questionnaire is for research purposes only. It is given anonymously and will remain confidential.

A. Attitudes

Please indicate how you feel about the following statements by circling one of the letters on the right of each statement. SD (Strongly Disagree), D (Disagree), U (Undecided), A (Agree), SA (Strongly Agree).

1. Adults should rely on their common sense when working with children. SD D U A SA
2. Children should be praised often. SD D U A SA
3. Keeping track of children's behavior takes too much time. SD D U A SA
4. Children's behaviors should be judged in terms of what they are actually doing. SD D U A SA
5. It is easy to eliminate one's personal biases when interacting with children. SD D U A SA
6. Only inappropriate behaviors in children should be modified. SD D U A SA
7. A child's life should be structured by adults. SD D U A SA
8. Disobedient children should be reprimanded. SD D U A SA
9. A good understanding of children can be developed in a short period of time. SD D U A SA
10. Adults can learn about themselves by observing children. SD D U A SA
11. Adults should be objective when recording children's behavior. SD D U A SA
12. Coercion should be used to motivate children, if necessary. SD D U A SA
13. Working with children is often stressful. SD D U A SA
14. Observation is the best technique for learning about children. SD D U A SA

B. Learning

Please indicate the correct response by circling one option for each item.

1) The easiest formal method for recording observations is:

- a) note taking.
- b) writing a descriptive narrative.
- c) using a checklist.
- d) time sampling.

2) The first step in undertaking observations of children is:

- a) writing down your feelings about the child.
- b) talking with the child.
- c) keeping observations to yourself.
- d) setting an objective for the observation task.

3) Inferences about a child's behavior are best described as:

- a) guesses of the child's feelings and motives for behavior.
- b) conclusive statements about a child.
- c) recordings of a child's discussion with a child care worker.
- d) results from standardized tests on the child.

4) Observations of children can be made more accurate when adults:

- a) identify those factors which limit their sensitivity to children.
- b) desensitize feelings towards children.
- c) develop rapport with parents.
- d) implement time management systems.

5) A story about a child in his/her particular setting is also called:

- a) a running format.
- b) a descriptive narrative.
- c) an event sample.
- d) a comprehensive picture.

6) When adults are aware of their philosophical orientations they are able:

- a) to determine an optimal range of functioning in the job.
- b) to refine their perceptions of and reactions to children.
- c) to guide the development of a child.
- d) to modify their child care programmes.

7) The three steps of recording observations are:

- a) reporting, inferring and evaluating.
- b) observing, recording and concluding.
- c) inferring, consulting and valuing.
- d) focusing, estimating and evaluating.

8) Inaccuracy in event samples is primarily due to the observer's tendency:

- a) to describe the child in a natural setting.
- b) to record all of the behaviors in a child at one time.
- c) to neglect noting the duration of the event.
- d) to focus on negative or unusual behaviors in children.

9) One of the foremost rules for conducting observations is to:

- a) discuss the child with co-workers.
- b) become involved in the child's activity.
- c) sit in an unobtrusive area when observing a child.
- d) interact with other children.

10) The main way of confirming evaluations of a child is by:

- a) reading detailed files on the child.
- b) conferencing with other colleagues who have observed the child.
- c) interviewing the child.
- d) conducting standardized tests of the child.

11) When making notes on a child's behavior, an observer should always:

- a) give a general perspective of the child's actions.
- b) describe the child's behavior in specific and detailed terms.
- c) note a particular philosophy of child development.
- d) provide value judgements about the child.

12) One of the most important results of observations is;

- a) the formation of social relationships with children.
- b) the development of a child sense.
- c) the employment of effective child care skills.
- d) the ability to practise stress coping skills.

13) Inferences about a child's motives for behavior can only be made after:

- a) event sampling.
- b) a single observation of the child.
- c) talking to the child's parents.
- d) many observations of the child.

14) The main rationale for observing and recording children's behavior is to:

- a) determine when to cater to children's requests.
- b) become sensitized to parents' feelings.
- c) discover personal biases within child care workers.
- d) gain insight into children and understand their individual needs.

15) What do you feel are the most important attitudes and skills for setting up observational and recording sessions?

16) What are the last five digits of your phone number/student ID? _____
(This response is required for coding purposes only)

Appendix II**Evaluation of Educational
Television Programme
Form B**

All of the information requested in this questionnaire is given anonymously
for research purposes only and will remain confidential.

C. Attitudes

Please indicate how you feel about the following statements by circling one of the letters on the right of each statement. SD (Strongly Disagree), D (Disagree), U (Undecided), A (Agree), SA (Strongly Agree).

- | | |
|--|-------------|
| 1. Children's behaviors should be judged in terms of what they are actually doing. | SD D U A SA |
| 2. Coercion should be used to motivate children, if necessary. | SD D U A SA |
| 3. It is easy to eliminate one's personal biases when interacting with children. | SD D U A SA |
| 4. Children should be praised often. | SD D U A SA |
| 5. Observation is the best technique for learning about children. | SD D U A SA |
| 6. Keeping track of children's behavior takes too much time. | SD D U A SA |
| 7. A child's life should be structured by adults. | SD D U A SA |
| 8. A good understanding of children can be developed in a short period of time. | SD D U A SA |
| 9. Only inappropriate behaviors in children should be modified. | SD D U A SA |
| 10. Adults should rely on their common sense when working with children. | SD D U A SA |
| 11. Adults can learn about themselves by observing children. | SD D U A SA |
| 12. Working with children is often stressful. | SD D U A SA |
| 13. Disobedient children should be reprimanded. | SD D U A SA |
| 14. Adults should be objective when recording children's behavior. | SD D U A SA |

D. Evaluation of the Programme

Place an **X** in the space between the descriptive words which best describe your feelings about the television programme you have just viewed.

Example: reliable X unreliable.

In the example, the evaluator thinks the programme is somewhat reliable.

interesting	_____	_____	_____	_____	boring
too much information	_____	_____	_____	_____	amount, just right
irrelevant	_____	_____	_____	_____	relevant
able to hold attention	_____	_____	_____	_____	unable to hold attention
easy to understand	_____	_____	_____	_____	hard to understand

pacing, too fast	_____	_____	_____	_____	pacing, just right
entertaining	_____	_____	_____	_____	dull
accurate	_____	_____	_____	_____	inaccurate
too little information	_____	_____	_____	_____	amount, just right
too long	_____	_____	_____	_____	length, just right

useful	_____	_____	_____	_____	useless
professional quality	_____	_____	_____	_____	unprofessional quality
pacing, too slow	_____	_____	_____	_____	pacing, just right
informative	_____	_____	_____	_____	uninformative
unmotivational	_____	_____	_____	_____	motivational

smooth	_____	_____	_____	_____	lumpy
too short	_____	_____	_____	_____	length, just right
clear	_____	_____	_____	_____	unclear
enjoyable	_____	_____	_____	_____	unenjoyable
confusing	_____	_____	_____	_____	straightforward

Place an X in the space between the descriptive words which best describe your feelings about the following characters in the TV programme.

A. Child care trainee

realistic	_____	_____	_____	_____	unrealistic
warm	_____	_____	_____	_____	cold
incompetent	_____	_____	_____	_____	competent
strong	_____	_____	_____	_____	weak
insincere	_____	_____	_____	_____	sincere
relaxed	_____	_____	_____	_____	tense
unbelievable	_____	_____	_____	_____	believable
knowledgeable	_____	_____	_____	_____	unknowledgeable
likeable	_____	_____	_____	_____	unlikeable
stilted	_____	_____	_____	_____	natural

B. Director of the child care centre

realistic	_____	_____	_____	_____	unrealistic
warm	_____	_____	_____	_____	cold
incompetent	_____	_____	_____	_____	competent
strong	_____	_____	_____	_____	weak
insincere	_____	_____	_____	_____	sincere
relaxed	_____	_____	_____	_____	tense
unbelievable	_____	_____	_____	_____	believable
knowledgeable	_____	_____	_____	_____	unknowledgeable
likeable	_____	_____	_____	_____	unlikeable
stilted	_____	_____	_____	_____	natural

C. Experienced child care workers (in general)

realistic	_____	_____	_____	_____	unrealistic
warm	_____	_____	_____	_____	cold
incompetent	_____	_____	_____	_____	competent
strong	_____	_____	_____	_____	weak
insincere	_____	_____	_____	_____	sincere
relaxed	_____	_____	_____	_____	tense
unbelievable	_____	_____	_____	_____	believable
knowledgeable	_____	_____	_____	_____	unknowledgeable
likeable	_____	_____	_____	_____	unlikeable
stilted	_____	_____	_____	_____	natural

Rate the following elements according to their **technical quality** in the TV programme.

	Poor	Fairly Poor	Neither	Fairly Good	Good
A) Picture Composition (use of close-ups and wide shots)	_____	_____	_____	_____	_____
B) Sound Quality (voices, background sound and music)	_____	_____	_____	_____	_____
C) Editing (transitions between pictures)	_____	_____	_____	_____	_____

Rate the following elements according to their **relevance to the topic** in the TV programme.

	Irrelevant	Fairly Irrelevant	Neither	Fairly Relevant	Relevant
A) Photography	_____	_____	_____	_____	_____
B) Music	_____	_____	_____	_____	_____
C) Film Location (where the action takes place)	_____	_____	_____	_____	_____
D) Order of Scenes	_____	_____	_____	_____	_____
E) Narration (voice over the scenes)	_____	_____	_____	_____	_____
F) Written Information (on screen)	_____	_____	_____	_____	_____
G) Dialogue (between characters)	_____	_____	_____	_____	_____
H) Review (at programme end)	_____	_____	_____	_____	_____

E. Learning

Please indicate the correct response by circling one option for each item.

1) Inferences about a child's behavior are best described as:

- a) conclusive statements about a child.
- b) recordings of a child's discussion with a child care worker.
- c) results from standardized tests on the child.
- d) guesses of the child's feelings and motives for behavior.

2) A story about a child in his/her particular setting is also called a:

- a) a running format.
- b) a descriptive narrative.
- c) an event sample.
- d) a comprehensive picture.

3) One of the most important results of observations is:

- a) the formation of social relationships with children.
- b) the development of a child sense.
- c) the refinement of recording skills.
- d) the ability to practise stress coping skills.

4) The three steps of recording observations are:

- a) reporting, inferring and evaluating.
- b) observing, recording and concluding.
- c) inferring, consulting and valuing.
- d) focusing, estimating and evaluating.

5) The first step in undertaking observations of children is:

- a) writing down your feelings about the child.
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- c) many observations of the child.
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10) One of the foremost rules for conducting observations is to:

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- d) interact with other children.

11) Inaccuracy in event samples is primarily due to the observer's tendency:

- a) to focus on negative or unusual behaviors in children.
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- c) to record all of the behaviors in a child at one time.
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13) Observations of children can be made more accurate when adults:

- a) identify those factors which limit their sensitivity to children.
- b) desensitize feelings towards children.
- c) develop rapport with parents.
- d) implement time management systems.

14) The main way of confirming evaluations of a child is by:

- a) reading detailed files on the child.
- b) conferencing with other colleagues who have observed the child.
- c) interviewing the child.
- d) conducting standardized tests of the child.

15) What do you feel are the most important attitudes and skills for setting up observational and recording sessions?

16) What was your favourite part of this TV programme? Please explain.

17) To what extent do you feel this television programme would help others to learn about observation and recording skills?

1	2	3	4	5
Not at all	A little	Somewhat	Quite alot	Completely

F. Demographic Information

Please provide the following demographic information. All responses to these questions are given anonymously and will be kept confidential.

1) Sex: Male _____ Female _____

2) Age: 16 - 20 years _____
21 - 30 years _____
31 - 40 years _____
41 - 50 years _____
51 + years _____

3) What level of schooling have you reached?

Elementary (Grades 1-6) _____
Secondary (Grades 7-12) _____
CEGP/College _____
University undergraduate _____
University postgraduate _____

4) What is your occupation?

Housewife _____
Teacher _____
Student _____
Child care worker _____
Other _____ Specify: _____

5) a) How many hours of television do you watch on a regular weekday?

0 - 1 hours _____
2 - 3 hours _____
4 - 5 hours _____
6 - 7 hours _____
8 + hours _____

b) What is your current favourite programme and why:

6) a) Do you ever watch educational television?

Yes _____

No _____

b) Which programme(s) on educational TV have you watched? _____

7) a) In what capacity have you dealt with children?

As a parent _____

As a teacher _____

As a student _____

As a child care worker _____

In some other capacity _____ Specify: _____

b) For how many years have you worked in this capacity?

less than 1 year _____

1 - 2 years _____

3 - 4 years _____

5 - 6 years _____

7+ years _____

8) What was the location for viewing this television programme?

9) What are the last five digits of your phone number/student ID? _____

(The last two responses are required for coding purposes only).

Thank you for your cooperation!